Admin. Rec
790

CLIENT DRAFT

MERRIMACK STATION FISHERIES SURVEY RESULTS OF 2004 AND 2005 AND HISTORICAL TRENDS ANALYSIS OF 1967 TO 2005 SURVEYS

Privileged and Confidential
Attorney Work Product
Prepared at the Direction of Counsel
Prepared in Anticipation of Litigation

MAY 2006

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

CLIENT DRAFT

MERRIMACK STATION FISHERIES SURVEY RESULTS OF 2004 AND 2005 AND HISTORICAL TRENDS ANALYSIS OF 1967 TO 2005 SURVEYS

Privileged and Confidential
Attorney Work Product
Prepared at the Direction of Counsel
Prepared in Anticipation of Litigation

Prepared for
PUBLIC SERVICE OF NEW HAMPSHIRE
780 North Commercial Street
Manchester, New Hampshire

Prepared by
NORMANDEAU ASSOCIATES, INC.
25 Nashua Road
Bedford, NH 03110

R-20410.003

May 2006

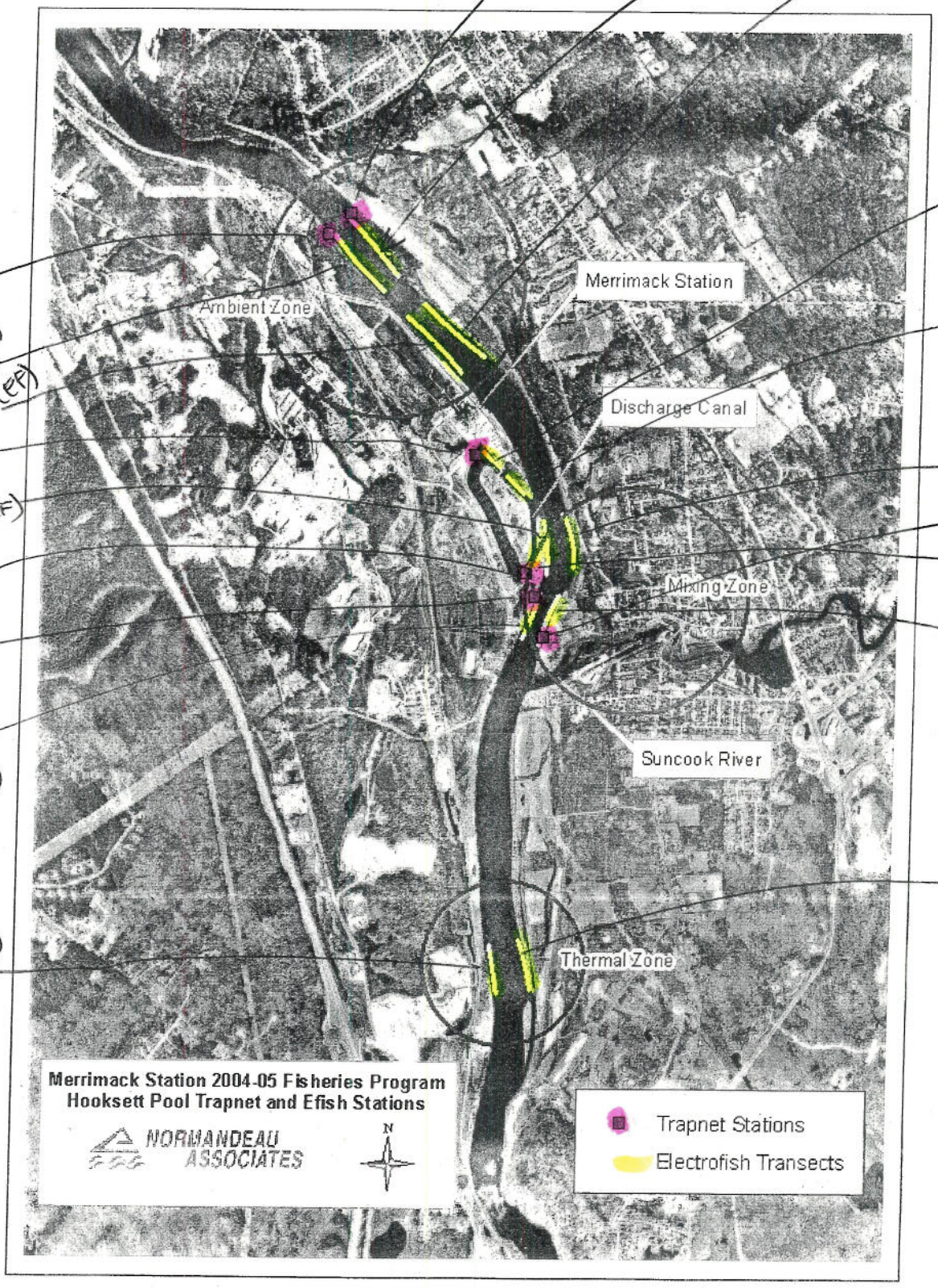


Figure 2-1. Location of trapnet and electrofish sampling stations, Merrimack River Monitoring Program, Hooksett Pond, New Hampshire 2004 to 2005.

Table of Contents

LIST OF FIGURES

Page

LIST OF TABLES

LIST OF ACRONYMS

1970s	=	Efish: 1972, 1973, 1974, 1976 Trapnet: 1974, 1975, 1976
2000s	=	2004, 2005
ANCOVA	=	analysis of covariance
cfs	=	cubic feet per second
cm	=	centimeter
cms	=	cubic meters per second
CPUE	=	Catch Per Unit Effort
EPA	=	U.S. Environmental Protection Agency
ft	=	Foot,feet
h	=	Hour(s)
LCL	=	lower confidence limit
m	=	meters
mgd	=	million gallons per day
min	=	minutes
mm	=	Milimeter
MW	=	MegaWatt
N,n	=	sample size
NH	=	New Hampshire
NHFG	=	New Hampshire Fish and Game Department
NS	=	not significant
PSM	=	Power Spray Modules
PSNH	=	Public Service of New Hampshire
SOP	=	Standard Operating Protocol
tl	=	Total length
UCL	=	upper confidence limit

1.0 INTRODUCTION

Merrimack Station is a 470 MW coal-fired electrical generating facility located on the west bank of the Merrimack River in Bow, New Hampshire. Unit 1 is a 120 MW generator that has operated since 1960. Unit 2 is a 350 MW generator that has operated since 1968. Combined, the Merrimack Station's once-through intake system withdraws and discharges about 252 mgd (390 cfs; 11.0 cms) of non-contact cooling water from the Hooksett Pool section of the Merrimack River.

The Merrimack River fisheries survey was conducted in Hooksett Pool during the 1967-1978 period to characterize the river biota in this reach of the Merrimack River for the purpose of detecting long-term trends in relationship to Merrimack Station operations. The New Hampshire Fish and Game Department (NHFG) began the Merrimack River fisheries survey in Hooksett Pool in 1967, and repeated the same sampling program in each year 1967 through 1969 (Wightman 1971). Normandeau Associates, Inc. (Normandeau), on behalf of Public Service of New Hampshire (PSNH), performed thermal and biological monitoring in Hooksett Pool from 1972 through 1978 (Normandeau 1973, 1974, 1975, 1976, 1977, 1979). Normandeau repeated the monitoring program during 1995 (Normandeau 1996), and again during 2004 and 2005, to obtain more recent observations of the current population levels of target fish species and to compare these observations to the historic abundance patterns.

The objective of the 2006 Merrimack Station Fisheries report is to provide a current assessment of the fish community of Hooksett Pool as sampled during 2004 and 2005. Additionally, a second objective of this evaluation is to present the entire time series of comparable abundance trapnet and electrofish data for fish population trend analysis during the Merrimack River years of study period 1967 through 2005.

2.0 METHODS

Trap net and electrofishing sampling was conducted in Hooksett Pool and the Merrimack Station discharge canal during both 2004 and 2005. Figure 2-1 shows the locations of all trapnet stations and electrofishing transects. The study area was split into four zones for analysis: ambient stations (located upstream from entrance of discharge canal into mainstem), mixing zone stations (located between the entrance of the discharge canal into the mainstem and the confluence of the Suncook River with the mainstem), canal stations (located in both the new and old discharge canals), and thermally-influenced stations (located downriver from the confluence of the Merrimack and Suncook Rivers).

2.1 TRAPNET SAMPLING

Trapnet sites and stations were kept consistent between 2004 and 2005. One trapnet station (two sites, the east and west banks) in the ambient zone, two stations within the mixing zone (one east bank, one west bank), and two stations within the new discharge canal (one upstream and one downstream from the pressure spray modules (PSM)) were fished monthly for a total of six nets. During April, May, June, July, August, September, October and December of 2004, the six sites were sampled by trapnet with two consecutive 48-h sets. A total of 96 samples were collected, that is,8 months times 6 nets times 2 sets per month, or 96 total sets). Trapnetting effort during 2005 was hindered by high flows through Hooksett Pool. During April, high flows and water levels (monthly mean at Goff's Falls was 19,120 cfs) prevented sampling at the four mainstem trapnet sites. The two locations in the canal were fished. High Hooksett Pool flows and water levels during October (monthly mean at Goff's Falls was 19,824 cfs) prevented sampling at all trapnet locations. Additionally, trapnet sampling was not conducted during December due to a combination of high flows in the early part of the month and ice-over conditions during the latter part. During May, June, July, August, and September, the five stations were sampled by trapnet with two consecutive 48-h sets. The only exception occurred during July when the two 48-h sets at one of the mixing zone stations were separated by one week. This occurred due to problems with net-tampering. A total of 62 samples were collected such that 5 months times 6 nets times 2 sets per month, plus 2 April canal sets was 62 sets.

In addition to the above sampling program, additional 2-inch mesh trapnets were fished throughout Hooksett Pool during 2004 and 2005. Two inch mesh nets were fished at two randomly selected mainstem net stations during 2004 and at all four mainstem net stations during 2005. These nets were fished as part of a comparison study that was designed in an effort to derive an adjustment factor that could adjust the catch of a 2-inch mesh net to reflect that of a ¾-inch net. This adjustment factor was to be applied to the 1995 trapnet data which had been collected using 2-inch mesh nets rather than the program standard ¾-inch mesh. For a full description of the methods and results of this analysis please see the accompanying Normadeau report "A method for adjusting the catch of a ¾-inch mesh trapnet and a 2-inch mesh trapnet deployed in Hooksett Pool of the Merrimack River near Bow, New Hampshire during 2004-2005" (Normandeau Unpublished).

Trap nets used to sample the six sites were constructed with 3-ft diameter hoops, a single 50-ft lead, and two 20-ft wings. The netting used was ¾ inch stretch mesh knotted nylon made of #42 twine. The net lead was secured to the shore and then perpendicularly extended outward into the river.

Wings were set with anchors and floats at an approximately 45 to 90 degree angle off of the main lead. The codend of the hoops was anchored in place and was retrievable by a float. After each 48-h set, all fish were removed from the trap and placed in totes of water in the boat. Each fish was then counted, identified to species, weighed to the nearest gram, and measured to the nearest millimeter total length. Water temperature and dissolved oxygen concentration were measured at 30 cm below the surface and 10 cm above the bottom of each trapnet station at the time the fish sample was removed from the net. Additional details of the field and data collection methods are described in the SOP that governed all sampling activities during 2004 and 2005 (Normandeau 2004, 2005).

2.2 ELECTROFISHING SAMPLING

Four electrofishing stations were located within the ambient zone, four within the mixing zone, two within the thermally-influenced zone, one within the old discharge canal and two within the new discharge canal (one upstream and one downstream from the PSM). During April, May, June, July, August, September, October, and December of 2004, electrofishing was conducted at ten river stations and three discharge canal stations. During December of 2004, electrofishing was not conducted at three of the ten river stations due to ice cover. A total of 101 samples were collected, which was 7 months times 13 stations plus 1 month times 10 stations. During April, May, June, July, August, September, November and December of 2005, electrofishing was conducted at 10 river stations and three discharge canal stations. Electrofish sampling did not occur in October of 2005 as scheduled in the SOP due to high flows and water levels in Hooksett Pool. This sample was rescheduled during November 2005 during a lower flow period. During December 2005, electrofishing was not conducted at one of the ten river stations due to ice cover. A total of 103 samples were collected [illegible] stations.

Electrofishing in Hooksett Pool was conducted during daylight hours (½ hour after sunrise to ½ hour before sunset). Electrofishing followed shoreline transects in a downstream to upstream direction in water depths of 6 to 8 ft for a distance of 300 m (in two 150-m segments), taking about 15-20 min to complete the two segments of each transect. Transects in the discharge canal were 150-m long.

Each fish was counted, identified to species, weighed to the nearest gram, and measured to the nearest millimeter total length. Water temperature and dissolved oxygen concentration were measured at 30 cm below the surface and 10 cm above the bottom of each electrofishing transect after the completion of the electrofishing run. Additional details of the field and data collection methods are described in the SOP that governed all sampling activities during 2004 and 2005 (Normandeau 2004, Normandeau 2005).

2.3 STATISTICAL ANALYSIS

Catch per unit effort (CPUE) was calculated for all species captured by trapnet or electrofishing gear. Unit of effort for trapnets was defined as a single 48-h set. The actual duration of soaktime for each individual sample was calculated by noting the starting and ending times of the deployment. Duration in hours was calculated for each sample. Total catch by species was also determined on a per-sample basis. CPUE was then derived by merging the catch and effort data, by sample. CPUE was standardized [illegible]

$$CPUE_{ij} = (catch_{ij} / hours_j) * 48$$

One unit of effort for electrofishing sampling was considered to be a 1,000-ft transect of shocking in the ambient, thermally-influenced and mixing zones. Within the canal zone, the effort was a 500-ft transect of shocking. Electrofishing CPUE was standardized to number of fish per 1,000-ft transect which was equivalent to the total catch for a taxon within a sample in the ambient, thermally-influenced and mixing zones. Within the canal zone, CPUE was standardized by simply doubling the total catch of a taxon within a sample.

Prior to calculating any mean CPUE values, whether by zone or month or a combination thereof, the data were "zero filled" for each taxon, such that each taxon collected in the study is represented in every sample. Therefore "replication" in this study is at the sample level. All zero catch samples (no fish of any species collected) are included in this matrix.

3.0 2004 Field Season Results

Trapnet General Catch Characteristics

Eighteen species were captured by trapnet during the eight months of sampling in Hooksett Pool in 2004 (Table 3-1), yielding a total of 642 individuals (Table 3-2). Smallmouth bass were the most abundant species sampled, representing 34.9% of the total catch. Smallmouth bass, combined with spottail shiner (20.6%), rock bass (11.2%) and bluegill (10.7%) represented greater than 75% of the total trapnet catch for the year. Trapnets fished within the ambient zone (Station 1) captured 17 species (266 individuals; Table 3-2). Trapnets fished within the mixing zone (Stations 2 and 3) captured 13 species (227 individuals); while trapnets fished at stations within the new discharge canal (Stations 4 and 5) captured a total of eight species (149 individuals; Table 3-2). Smallmouth bass were the most abundant species within the canal (45.6%) and mixing zones (41.9%) and the second most abundant species captured in the ambient zone (22.9%). Spottail shiners were the dominant species captured by trapnet in the ambient zone, representing 37.6% of the total catch. Bluegill were the second most abundant species captured within the mixing (15.0%) and canal (20.8%) zones. Rock bass represented approximately 11% of the total catch within all three zones during 2004.

Spottail shiner, a species not previously captured by trapnet from Hooksett Pool, along with black crappie and Eastern silvery minnow, two species not previously collected by any method, were captured in Hooksett Pond for the first time during the 2004 season. In addition, bluegill and rock bass, first observed in large numbers during the 1995 Normandeau study, continued to be present in the fish community of Hooksett Pool (Normandeau 1996). A table presenting total trapnet catch and CPUE sorted by month, station, site, date and species can be found in Appendix A of this report.

Trapnet Catch-Per-Unit-Effort

Table 3-3 presents the CPUE of all species captured by trapnet in Hooksett Pool during the 2004 sampling season. The average catch per 48 h of trapnet soak time was 6.98 fish for all zones of Hooksett Pool combined. Smallmouth bass yielded the greatest CPUE (2.43) followed by spottail shiner (1.43), rock bass (0.78) and bluegill (0.75). Trapnet CPUE was greatest in the ambient zone with 8.31 fish captured per 48 h followed by 7.09 fish per 48 h in the mixing zone and 5.32 fish per 48 h in the canal. Spottail shiner had the greatest trapnet CPUE within the ambient zone (3.13) followed by smallmouth bass (1.91) and rock bass (0.97). Smallmouth bass had the greatest trapnet CPUE within the mixing zone (2.97) followed by bluegill (1.06) and spottail shiner (1.00). Within the canal, smallmouth bass (2.43) had the greatest CPUE followed by bluegill (1.11) and rock bass (0.61).

Electrofishing General Catch Characteristics

Twenty-two species were captured by electrofishing during the eight months of sampling in Hooksett Pool in 2004 (Table 3-1), yielding a total of 3,677 individuals (Table 3-4). Spottail shiner were the most abundant species sampled, representing 56.9% of the total catch. Spottail shiner were followed by largemouth bass (11.2%), bluegill (6.0%) and smallmouth bass (5.1%). The remaining seventeen species each comprised 3% or less of the remaining total catch. Electrofishing within the ambient zone captured 18 species (1,961 individuals; Table 3-4). Electrofishing within the thermally-influenced zone captured a total of 13 species (199 individuals); while electrofishing at

stations within the new and old discharge canal (3 transects) captured a total of 12 species (307 individuals; Table 3-4). Spottail shiner dominated the electrofishing catch within Hooksett Pool, accounting for 71.2% of the total catch in the ambient zone, 59.2% in the mixing zone and 21.6% in the thermally-influenced zone. They were the most abundant species in both the ambient and mixing zones and second most abundant in the thermally-influenced zone. No spottail shiners were recorded in the electrofishing catch within the canal. Largemouth bass were the most abundant species in the thermally-influenced zone (26.6%) and second most abundant within the ambient (5.6%) and mixing (19.8%) zones. Bluegill (33.6%) and largemouth bass (28.7%) comprised a large portion of the electrofishing catch in the canal area.

Five species not captured in the previous Normandeau assessments during the 1970s and 1995 were recorded during the 2004 sampling season; alewife, Atlantic salmon, brown trout, Eastern silvery minnow and black crappie were captured in Hooksett Pond during the 2004 season. The Atlantic salmon was a tagged hatchery-release fish. Juvenile alewives were present in the fall months and were predominantly captured within the ambient zone as they outmigrated from upriver areas. A table presenting total electrofishing catch and CPUE sorted by month, station, site, date and species can be found in Appendix A, Table 2.

Electrofishing Catch-Per-Unit-Effort

Table 3-5 presents the CPUE of all species captured by electrofishing in Hooksett Pool during the 2004 sampling season. The average catch per 1,000 ft transect was 37.14 fish for all zones of Hooksett Pool combined. Spottail shiner yielded the greatest CPUE (21.13) followed by largemouth bass (4.16), bluegill (2.24) and smallmouth bass (1.88). Electrofishing CPUE was greatest in the ambient zone with 75.75 fish captured per 1,000 ft, followed by 23.27 fish per 1,000 ft in the mixing zone, 13.95 fish per 1,000 ft in the canal zone and 13.27 fish per 1,000 ft in the thermally-influenced zone. Spottail shiner (56.06, 8.50), largemouth bass (4.44, 4.30) and smallmouth bass (2.72, 1.90) had the greatest electrofishing CPUE within the ambient and mixing zones, respectively. Within the thermally-influenced zone, largemouth bass had the largest CPUE with a value of 3.53, followed by spottail shiner (2.87), and redbreast sunfish (2.73). CPUE in the canal was dominated by bluegill (4.68) and largemouth bass (4.0).

4.0 2005 Field Season Results

Trapnet General Catch Characteristics

Thirteen species were captured by trapnet during the five months of sampling in Hooksett Pool in 2005 (Table 3-1), yielding a total of 205 individuals (Table 3-6). Smallmouth bass were the most abundant species sampled, representing 59.5% of the total catch, followed by redbreast sunfish (11.7%), bluegill (10.2%), rock bass (5.9%) and black crappie (3.9%). The other eight species each comprised 2% or less of the total trapnet catch. Trapnets fished within the ambient zone (Station 1) captured eight species (39 individuals; Table 3-6). Trapnets fished within the mixing zone (Stations 2 and 3) captured seven species (97 individuals); while trapnets fished at stations within the new discharge canal (Stations 4 and 5) captured a total of eight species (69 individuals; Table 3-6). Smallmouth bass were the dominant species captured within all three zones sampled by trapnet, comprising 43.6% of the ambient zone catch, 58.8% of the mixing zone catch and 69.6% of the canal catch. Rock bass (15.4%) and white sucker (10.3%), redbreast sunfish (20.6%) and bluegill (10.3%), and bluegill (11.6%) and black crappie (10.1%) were the second and third most abundant species in the ambient, mixing, and canal zones, respectively.

There were no previously unrecorded species captured by trapnet. Tessellated darter and white perch were the only two species captured by trapnet in 2005 that were not observed in 2004. Seven species: American eel, brown bullhead, chain pickerel, fallfish, golden shiner, largemouth bass, and yellow bullhead which had been captured by trapnet during 2004, were not observed during 2005. A table presenting total trapnet catch and CPUE sorted by month, station, site, date and species can be found in Appendix A, Table 3.

Trapnet Catch-Per-Unit-Effort

Table 3-7 presents the CPUE of all species captured by trapnet in Hooksett Pool during the 2005 sampling season. The average catch per 48 h of trapnet soak time was 3.25 fish for all zones of Hooksett Pool combined. Smallmouth bass yielded the greatest CPUE (1.94) followed by redbreast sunfish (0.38) and bluegill (0.33). Trapnet CPUE was greatest in the mixing zone with 4.62 fish captured per 48 h followed by 3.14 fish per 48 h in the canal and 1.95 fish per 48 h in the ambient zone. Smallmouth bass had the greatest CPUE value within the mixing (2.71), ambient (0.85) and canal (2.18) zones. Smallmouth bass were followed by redbreast sunfish (0.95) and bluegill (0.48) in the mixing zone, rock bass (0.3) and white sucker (0.2) in the ambient zone, and bluegill (0.36) and black crappie (0.32) in the canal.

Electrofishing General Catch Characteristics

Twenty-one species were captured by electrofishing during the five months of sampling in Hooksett Pool in 2005 (Table 3-1), yielding a total of 1,218 individuals (Table 3-8). Similar to 2004, spottail shiner (14.9%) were the most abundant species captured by electrofishing throughout Hooksett Pool. However, their percentage of the total catch was much less than 2004 when they represented 56.0% of the total electrofishing catch. In addition to spottail shiner, bluegill (14.4%), largemouth bass (14.1%), fallfish (12.6%), white sucker (10.4%) and yellow perch (9.4%) were also abundant.

Electrofishing within the ambient zone captured a total of 11 species (127 individuals); electrofishing within the mixing zone captured a total of 15 species (477 individuals); electrofishing within the thermally influenced zone captured a total of 11 species (127 individuals);

While electrofishing at stations within the new and old discharge canal (3 transects) captured a total of 16 species (186 individuals; Table 3-8). Largemouth bass were the dominant species within the ambient zone accounting for 19.6% of the total catch, followed by spottail shiner (14.5%), yellow perch (14.5%) and white sucker (12.0%). Within the mixing zone, spottail shiner (23.2%) was the dominant species, followed by fallfish (22.9%), bluegill (12.9%) and white sucker (10.9%). Redbreast sunfish (23.6%) were the dominant species within the thermally-influenced zone, followed by largemouth bass (21.3%), bluegill (18.1%), and white sucker (11.8%). Within the canal, yellow perch (23.7) and bluegill (23.1%) were the two most abundant species sampled. — When ?

The common carp, a species previously unreported from Normandeau electrofishing catch during the 1970s and 1995 was observed for the first time in Hooksett Pool during 2005. Common carp and white perch were the only two species captured by electrofishing in 2005 that were not observed in 2004. Three species; alewife, brown bullhead, and common shiner which had been captured by electrofishing during 2004, were not observed during 2005. A table presenting total electrofishing catch and CPUE sorted by month, station, site, date and species can be found in Appendix A, Table 4.

Electrofishing Catch-Per-Unit-Effort

Table 3-9 presents the CPUE of all species captured by electrofishing in Hooksett Pool during the 2005 sampling season. The average catch per 1,000 ft transect was 11.83 fish for all zones of Hooksett Pool combined. Spottail shiner yielded the greatest CPUE (1.77) followed by bluegill (1.70) and largemouth bass (1.67). Electrofishing CPUE was greatest in the ambient zone with 18.04 fish captured per 1,000 ft, followed by 16.0 fish per 1,000 ft in the mixing zone, 8.47 fish per 1,000 ft in the thermally-influenced zone and 7.75 fish per 1,000 ft in the canal. Largemouth bass had the greatest electrofishing CPUE within the ambient zone (3.40) followed by spottail shiner (3.20). Within the mixing zone, spottail shiner (3.72), fallfish (3.66) and bluegill (2.06) had the greatest CPUE values. Redbreast sunfish (2.0) had the greatest CPUE within the thermally-influenced zone, followed by largemouth bass (1.8) and bluegill (1.5). CPUE in the canal was dominated by yellow perch (1.8), bluegill (1.8) and largemouth bass (1.5).

?

In winter, when they should be expected to aggregate

5.0 INTERANNUAL ABUNDANCE TRENDS FROM THE 1967-2005 SAMPLING PROGRAM

5.1 DATA SELECTION

For the purpose of species trend analysis in this report, we will present the annual electrofish and trapnet data for 1967 to 2005 among gear, stations, months, and monthly efforts that are of known and certain documentation to be comparable.

Table 5-1 presents the sampling design comparison of the Merrimack Station electrofishing surveys conducted in Hooksett Pool during select years between 1967 through 2005. Data collected by the NHFG during 1967, 1968, and 1969 was removed from consideration due to imprecise locations of electrofish stations and questions regarding the lengths of the transects sampled. Electrofish data collected by Normandeau during 1972 to 1976, 1995, 2004 and 2005 was consistent in the size and locations of the sampling stations, and effort applied. Months sampled varied among years. Based on consistent sampling, the time period of August and September for the years 1972, 1973, 1974, 1976, 1995, 2004, and 2005 was selected for use in the population trends analysis. This decision was based on selecting the maximum number of months that would cover the greatest number of years of historic data.

Trapnet surveys were conducted in Hooksett Pool during select years between 1967 and 2005. Table 5.2 presents a summary of the sampling design utilized during each year of sampling. Data collected by the NHFG during 1967, 1968, and 1969 was removed from consideration for this comparison due to imprecise locations of trapnet stations and questions regarding the lengths of the transects sampled. Trapnet data collected by Normandeau during 1972 to 1976, 1978, 1995, 2004 and 2005. As reported in the methods sections of the annual reports, trapnets used during all years of Normandeau sampling were of ¾-inch mesh with the exception of 1995 where a 2-inch mesh was used. For this reason, 1995 was dropped from the data set because an analysis of paired samples with ¾-inch and 2-inch mesh sets showed that ¾-inch nets caught more species and more small fish than 2-inch nets. In addition, 2-inch nets captured more large fish than ¾-inch net sets. Consequently, the 2-inch mesh nets were not compatible for trend analysis. For a detailed analysis of the catch from the paired sample study, see the companion report entitled "A method for adjusting the catch of a ¾-inch mesh trapnet and a 2-inch mesh trapnet deployed in Hooksett Pool of the Merrimack River near Bow, New Hampshire during 2004-2005" (Normandeau 2006).

A close examination of the methods and equipment used during the 1970s and Normandeau's recent sampling (2004 and 2005) revealed discrepancies in the sampling design and possible inconsistencies in set duration and set frequency among years. Prior to trends analysis of historical trapnet catch these discrepancies were addressed.

To verify that set duration (48 h sets) and frequency (twice monthly at each station) were consistent between the 1970s and Normandeau's recent sampling (2004 and 2005), the gear deployment sections of report methods were analyzied for each report. The following list presents the methods description for each year of trapnet sampling within the 1970s.

- 1972: "Four fyke netting stations (N-10 East, N-10 West, S-4 East and S-2 West) were sampled monthly from August through October… Nets were set twice within one-week for periods of two days each month."
- 1973: "Four fyke netting stations (N-10 East, N-10 West, S-3 East and S-2 West) were sampled monthly from June through October… Nets were set twice per week for two day periods for a total of 16 net days each month."
- 1974: "Four fyke netting stations (N-10 East, N-10 West, S-3 East and S-2 West) were sampled monthly from May through October… Nets were set twice per week for two day periods for a total of 16 net-days per month."
- 1975: "Four fyke netting stations (N-10 East, N-10 West, S-3 East and S-2 West) were sampled monthly from May through October… Nets were set twice per week for two-day periods for a total of 16 net-days each month at each station."
- 1976: "Four fyke netting stations (N-10-E, N-10-W, S-3-E and S-2-W) were sampled monthly from May through October… Paired nets were set twice per week for two-day periods, yielding 16 net-nights per month."
- 1978: "Four fyke netting stations (N-10-E, N-10-W, S-3-E and S-2-W) were sampled monthly from May through October… Paired nets were set twice per week for two-day periods, yielding 16 net-nights per month."

Upon examination of the annual reports, sampling dates were listed on the total catch tables for 1974, 1975 and 1976. One week per month was sampled based on reported beginning and ending dates of monthly sampling in the previous years, limiting the potential number of 48 hour sets to two. The number of samples were determined for data used in analysis of variance (ANOVA) calculated by the number of degrees of freedom in the residual term for most reports. In the 1975 report, the reported means for stations were based on different N sizes indicating missed or voided samples. Furthermore, mean values reported for stations and months where only one fish was caught, could only be derived if counts were adjusted to a CPUE expressed as number of fish per 24 hour ($CPUE_{24}$ was total catch divided by two) for each sample followed by $\log_{10}(x+1)$ transformation, and then averaged. Back-transformation of the mean values provided geometric means that when divided into the total catch at a station for a month provided an approximate value of the N size the mean was based. This method always provided an estimate slightly more than the integer value of N, because of the difference between arithmetic and geometric means. This method provided a method to determine when missing samples occurred in a particular station and month. The results of this review suggested that trapnets were fished for two 48-h sets during each month and at each station within a given year.

To confirm our observations of duration (48 hour) and frequency (twice month per station), the original field data sheets for each year sampled within the 1970s were obtained and keypunched. Each sampling event was assigned a unique sample number and a Use Code based on the presence or absence of catch and field notes detailing problems encountered with each set. Use Codes were defined by the 2004 and 2005 SOP's that governed all sampling activities (Normandeau 2004, 2005).

Total catch tables were generated for each year in a format that corresponded to their respective [illegible] reports presented for the 1972 and 1973 [illegible] monthly total for each station "north" and "south" of Merrimack Station. The complete set of 1972 and 1973 field data sheets were not available and as a

result, the summary table of trapnet catch for those two years could not be duplicated for verification of sampling design. Due to this, 1972 and 1973 were removed from the historical trends analysis. For the years 1974, 1975, 1976, and 1978, a complete set of field data sheets were available. Due to a discrepancy in the stations fished between that recorded on the field data sheets and that presented in the annual report, 1978 was dropped from the historical trends analysis. Original total catch tables from the 1974, 1975 and 1976 reports were compared with those generated from the field data sheets (all Use Codes). Table 5.3 presents the differences between the reported values and those from the field data sheets, sorted by species, station and month. A total of 34 table disagreements were discovered among the three years of reporting (seven in 1974, two in 1975 and 25 in 1976). The tables of mean CPUE were then generated for each year using the corrected total catch from the original field datasheets for all Use Code 1 samples. To compare to the means reported in the 1974 report, mean CPUE was calculated by averaging the $\log_{10}(x+1)$ $CPUE_{24}$ (fish per 24 h soak time) for each station per month. For 1975 and 1976, mean CPUE was calculated by averaging the $\log_{10}(x+1)$ $CPUE_{24}$ (fish per 24 h of soak time) for each station per month.

Mean CPUE values (fish per 24 h) corresponded between those values reported in the annual reports and the tables generated from the original field data sheets. Instances where the two values did not agree were due to either the use of samples that under current classification would not be considered valid for CPUE calculation (for example a twisted or rolled net that was not in proper fishing position for the entire 48 hour period) or the use of a miss-entered catch value from the annual report table.

Sampling months varied among years, therefore a comparable time period of May through September for the years 1974, 1975, 1976, 2004, and 2005 were selected for use in the population trends analysis. This decision was based on selecting the maximum number of months that would cover the greatest number of years of data. Due to the lack of the 1970s data for the decadal trends analysis, the remaining years were pooled into groups of the 1970s and 2000s to provide a "then and now" comparison as opposed to the decadal trends analysis that was performed for the electrofishing data.

5.2 Data Analysis

To identify long term trends in the Hooksett Pool fish community, electrofishing and trapnet data was analyzed and year to year changes were assessed by comparing species specific CPUEs. The Hooksett Pool fish community structure was also compared through time based on the results of three indices: taxa richness, rank-abundance and the Bray-Curtis index. Length-weight regression equations were generated for four abundant Hooksett Pool species and a composite condition [illegible] using guild groups was also conducted.

Catch Per Unit Effort (CPUE)

CPUE was calculated for all species captured by electrofishing during August and September and all species captured by trapnet during May and September of the selected years. Electrofishing data available from the 1970s time period provided a total number of each individual species by zone for each month of sampling. By using the known number of 1,000 ft transects electrofished in each zone monthly, a CPUE was calculated (number of individuals per 1,000 ft transect) for each month and [illegible]. Each species caught in the data were zero filled [illegible] such that [illegible] within a given year of the study is represented in all three zones of Hooksett Pool. Although data

based on the monthly catch per transect, yielding a higher statistical power to trend comparisons, the CPUE for these years were calculated as those from the 1970s for the purpose of comparability. Similar to the electrofishing data, 1970s trapnet data provided a total number of each individual species by zone for each month of sampling. By using the known number of 48 hour sets fished in each zone monthly, a CPUE was calculated (number of individuals per 48 hour set) for each month and monthly values were than averaged to provide a yearly value for each species. Similar to the electrofishing data, trapnet data was zero-filled.

Comparison of Fish Community Structure

Taxa Richness – Taxa richness was calculated as the number of distinct species present in the ambient zone, mixing zone, thermally-influenced zone or the entirety of Hooksett Pool within a given year.

Rank Abundance – Rank abundance of species was calculated for each year of electrofishing sampling. Total catch of each taxon was used to order species in terms of abundance.

Bray-Curtis Index – The Bray-Curtis index of community similarity was used to quantitatively compare the fish communities within the Hooksett Pool between the three decades of sampling. The Bray-Curtis index compares percent similarity among the fish taxa common in two sets of survey data (Clarke 1993).

Comparison of Length-Weight Relationships

Length-weight relationships were generated for the comparison of four species, smallmouth bass, largemouth bass, bluegill and yellow perch, captured by electrofishing from Hooksett Pool. Sample years were restricted to 1995, 2004, and 2005 due to a lack of length and weight data from the 1970s. The months of May through September were included in this analysis for all years examined to increase sample sizes.

ANCOVA was used to compare differences in condition of the four selected species among the three years in the Hooksett Pool Fisheries Survey. The data were first examined using scatter diagrams of $\log_{10}$ weight vs. $\log_{10}$ length to insure an adequate sample and a representative range of sizes (points not clustered). Length-weight scatter plots were also used to identify outliers, and the original data values were examined to determine if they were valid or in error. Erroneous values of length or weight for individual fish were corrected if possible, or deleted from the length-weight regression analysis if sufficient information was not available to correct the data. Outliers with no information indicating that they were in error were retained for analysis. Regression equations were developed to compare these growth curves among the three years of available data.

Examination of Changes in Species Guild Biomass

Species present in Hooksett Pool were classified into six trophic guilds; filter feeder, generalist, herbivore, insectivore, omnivore and piscivores (Barbour et al. 1999). Changes in abundance within trophic class were examined across years using analysis of covariance (ANCOVA). Sample years were restricted to 1995, 2004, and 2005 due to a lack of length and weight data from the 1970s. The

6.0 RESULTS OF ELECTROFISHING TRENDS ANALYSIS

6.1 GENERAL CATCH CHARACTERISTICS

Table 6-1 shows the electrofishing species catch during August and September of all years with consistent sampling effort. A total of 22 species were sampled by electrofishing during the two selected months, within Hooksett Pool, over the seven years included in this analysis. The total number of species observed between years varied, ranging from a high of 18 during the 2004 sampling season to a low of 12 during 1972 and 1976. The total catch of individuals during August/September ranged from a low of 446 (2005) fish to a high of 2,486 fish (1995). The total catches for the remaining five years included in this analysis were 1,204 (1972), 692 (1973), 946 (1974), 722 (1976), and 956 (2004) fish (Table 6-2). Of the 22 species captured, chain pickerel, largemouth bass, pumpkinseed, redbreast sunfish, smallmouth bass, white sucker and yellow perch were present in Hooksett Pool during all seven years of sampling. Two species, brown and yellow bullhead, were present in electrofishing samples only during the 1970s. During the 1995 sampling, bluegill and rock bass first appeared in the electrofishing catch of Hooksett Pool. Likewise, eastern silvery minnow, black crappie and alewife first appeared in the Hooksett Pool electrofishing catches during the months of August and September during 2004. American eel, present during the 1970s, was absent from electrofishing catches during 1995, but were recorded again in Hooksett Pool during 2004 and 2005. Spottail shiner were first identified in the Hooksett Pool catch during 1974, however, they did not show up in abundance until the 1995, 2004, and 2005 surveys.

Figure 6-1 presents the CPUE of all taxa captured by electrofishing in Hooksett Pool during August and September of years with consistent sampling effort. The 1995 sample had the highest CPUE for all three zones; ambient, mixing and thermally-influenced, as well as the highest CPUE for the entire Hooksett Pool. The second highest CPUE for Hooksett Pool occurred in 2004, for the ambient zone occurred in 2004, for the mixing zone occurred in 1974, and for the thermally-influenced occurred in 1972. The lowest CPUE of the seven years selected occurred in 1973. Within the ambient zone, the lowest CPUE occurred in 1973, in the mixing zone during 2005, and in the thermally-influenced zone, 1976. The overall CPUE value for the August/September sample period during 1995 was more than double any of the previous four years included in this analysis. One factor that could have caused this variation was the introduction and establishment of bluegill in the Hooksett Pool community. Figure 6-1 presents the CPUE of bluegill captured by electrofishing during August and September of the years with consistent sampling effort. Bluegill CPUE was zero throughout the 1970s and dramatically increased within all three zones during the 1995 sample year. CPUE values for the August/September period were lower during 2004 and 2005 in all three zones of Hooksett Pool. Typical of a successfully introduced species, bluegill numbers rose quickly upon initial introduction to the system before leveling off. Bluegill comprised a dominant portion of the total number of fish captured during August and September of 1995; representing nearly 40% of the total catch across all three zones.

Other species selected for trends analysis due to current or past abundances, along with management interest, Table

6-3 presents the yearly CPUE values for these 10 species along with all taxa combined for the ambient, mixing, thermally-influenced zones, along with all of Hooksett Pool.

Figure 6-3 presents the CPUE for smallmouth bass captured in Hooksett Pool during August and September of the years with consistent sampling effort. Smallmouth bass CPUE within Hooksett Pool peaked during 2004. Smallmouth bass have been present within all three zones of Hooksett Pool during each of the seven years of sampling. CPUE values for the August/September period were greatest in 2004 for the ambient and mixing zones. CPUE values within both of these zones rebounded after they were near their lowest recorded levels during the 1995 sampling. Smallmouth bass CPUE within the thermally-influenced zone have appeared to be steadier, with peaks in 1973 and 2005.

Figure 6-4 presents the CPUE for largemouth bass captured in Hooksett Pool during August and September of the years with consistent sampling effort. Largemouth bass CPUE within Hooksett Pool peaked during 2004. Largemouth bass CPUE values within the ambient, mixing, and thermally-influenced zones have shown an upward trend since the 1976 sampling and were each at their highest recorded levels during 2004. CPUE values for largemouth bass decreased somewhat during 2005 but remain near or greater than any level previously recorded during the 1970s or 1995 sampling years within all zones.

CPUE for pumpkinseed has shown a downward trend since peaking during the early 1970s (Figure 6-5). Pumpkinseed CPUE peaked within Hooksett Pool and within all three sampling zones during 1972. During the 1970s pumpkinseed CPUE was the highest of any species within the ambient, mixing, thermally-influenced zones, and Hooksett Pool. CPUE values decreased during the 1970s and 1995 sampling efforts. CPUE values for pumpkinseed have increased slightly from 1995 but have not returned to levels reached during the 1970s. Potential competition with introduced species, such as bluegill, may have contributed to the decline in pumpkinseed. The two species share similar habitat requirements and have overlapping prey bases.

Figure 6-6 presents the CPUE for yellow perch captured in Hooksett Pool during August and September of the years with consistent sampling effort. Yellow perch CPUE within Hooksett Pool peaked during 1972. This species showed a decline in Hooksett Pool CPUE during the 1970s and reached its lowest recorded CPUE values during 1995. During 2005, CPUE values for yellow perch were at their highest recorded levels since 1973. Yellow perch CPUE during 2005 increased within all three zones and was the highest recorded since 1972 within the ambient zone, 1974 within the mixing zone, and 1976 within the thermally-influenced zone.

Figure 6-7 presents the CPUE for white sucker captured in Hooksett Pool during August and September of the years with consistent sampling effort. Overall Hooksett Pool CPUE values for this species have been steady during the other six years of sampling. White sucker have been recorded within the mixing zone in three of the seven years of sampling with their greatest CPUE occurring in 1974 and have been recorded in the thermally-influenced zone during five of the seven years with their greatest CPUE occurring during 1972. Ambient zone CPUE for white sucker peaked during 1974 and this species has been recorded there during each year of sampling.

Figure 6-8 presents the CPUE for redbreast sunfish captured in Hooksett Pool during August and

Pool peaked during 1976. Redbreast sunfish CPUE peaked for the ambient and mixing zones during 1976 and in the thermally-influenced zone peaked during 2004.

Figure 6-9 presents the CPUE for American eel captured in Hooksett Pool during August and September of the years with consistent sampling effort. American eel CPUE within Hooksett Pool peaked during 1974 and this species was absent from the electrofishing catch during 1995. After their low catch in 1995, electrofishing catch of American eel increased during 2004 and 2005 within the ambient and mixing zones and remained at zero within the thermally-influenced zone.

Similar to the bluegill, rock bass CPUE was zero throughout the 1970s and this species was first observed in Hooksett Pool during the 1995 sample year (Figure 6-10). Rock bass CPUE within Hooksett Pool peaked during 2004 although they were only recorded in the ambient zone during that year. Rock bass have been recorded in the ambient zone each sample year since 1995, within the mixing zone during 1995 only, and have yet to be recorded within the thermally-influenced zone.

Black crappie first appeared in Hooksett Pool in the 2004 sample (Figure 6-11). CPUE values for this species peaked during 2005. Black crappie were captured by electrofishing in the ambient zone during 2005 and the mixing zone during 2004. No individuals have been recorded in the thermally-influenced zone as of yet. At early life stages, this species shares similar food requirements with the sunfish species that inhabit Hooksett Pool. As adults they shift to a forage fish diet. With an abundance of shiner species found in Hooksett Pool, this species may continue to increase as time goes on.

6.3 COMMUNITY INDICES

Community trends were analyzed through three indices; taxa richness, rank abundance, and the Bray-Curtis Index. Taxa richness varied within Hooksett Pool during August and September for the selected years (Table 6-4). The number of taxa observed during the years of 1972 and 1976 was the lowest of the seven years sampled (12 species) while the taxa richness during 2004 (18 species) was the greatest of the seven years sampled. The number of species captured within the ambient zone ranged from a low of 11 (1973, 1976 and 1994) to a high of 17 (2004). Taxa richness within the mixing zone ranged from a low of seven species (1995) to a high of 12 (1973 and 1974), and taxa richness within the thermally-influenced zone ranged from a low of eight species (2004) to a high of 11 (1972, 1974 and 1976).

Comparison of the abundance rankings for fish caught by electrofishing during the 1972, 1973, 1974, 1976, 1995, 2004 and 2005 sampling years indicates changes in the abundance rankings for fish species caught within all three zones of Hooksett Pool. During the years sampled in the 1970s, pumpkinseed were the first ranked fish taxon during all four years. Yellow perch were the second ranked taxon during 1972 and 1973 and near the top five species during 1974 and 1976. Pumpkinseed have decreased in the abundance rankings of the species in Hooksett Pool, as shown by lower abundance rankings during the 1995, 2004, and 2005 sample years. Yellow perch decreased in the abundance rankings during 1995 and 2004 but rebounded to be the third most abundant species during the 2005 sampling. Rank abundance values for bluegill and the shiner, two species either absent or present in low numbers during the 1970s

during all seven years sampled with largemouth bass being the most abundant species sampled in Hooksett Pool during 2005.

Tables 6-6, 6-7 and 6-8 present the abundance rankings for the ambient, mixing, and thermally-influenced zones respectively. Similar to the overall pattern observed for Hooksett Pool, pumpkinseed declined in the rank abundance during 1995, 2004, and 2005 after being the first ranked species during all four years sampled within the 1970s in the ambient zone. Yellow perch also declined in the rankings after being the second most abundant species during 1972 and 1973. However, yellow perch were the second most abundant species in the ambient zone during 2005. Spottail shiners were the first ranked species during the years of 1995 and 2004, dropping to fifth ranked during 2005. Bluegill, absent during the 1970s were the second ranked species during 1995 and the third most abundant during 2005. Largemouth bass were ranked among the five most abundant species during six of the seven years sampled and were the top ranked species during 2005. During 2004, downstream migrating, juvenile alewives were the third ranked species within the ambient zone.

Within the mixing zone, pumpkinseed were the first ranked species during all four years sampled during the 1970s. They were replaced in 1995 and 2005 by bluegill and in 2004 by smallmouth bass. Bluegill first appeared in the 1995 sample and have been within the two most abundant species in years sampled since. Smallmouth and largemouth bass have both been within the five most abundant species during the majority of the years sampled within the mixing zone. Redbreast sunfish have been the second ranked species during four of the seven years of sampling and fourth ranked during the other three years. Yellow perch, a species absent from the mixing zone during 1995 and 2004 were the sixth ranked species during 2005.

Within the thermally-influenced zone, pumpkinseed were the first ranked taxon during the four years of sampling in the 1970s. They decreased in relative abundance during the 1995 sampling and were not sampled within the thermally-influenced zone during the 2004 season. Pumpkinseed were again present in the thermally-influenced zone during 2005. Yellow perch were the second or third ranked taxon during the four years sampled in the 1970s. They decreased in relative abundance during both the 1995 and 2004 sampling years, rebounding slightly in 2005. Bluegill were the first ranked taxon during 1995, after having not been sampled within the thermally-influenced zone during the 1970s. Largemouth bass rose to be the third ranked taxon during 1995, the second ranked taxon during 2004 and the top ranked taxon in 2005, after having been lower in abundance rankings during the 1970s. Redbreast sunfish have maintained a ranking within the top five positions during all seven seasons sampled in the 33 year period.

Table 6-9 presents a decadal comparison of the fish community within Hooksett Pool, as computed by the Bray-Curtis Percent Similarity Index. The 1970s fish community showed a greater similarity to the current 2000s Hooksett Pool fish community than that found in 1995. Bray-Curtis similarity between the 1970s and the 2000s was 33% while Bray-Curtis similarity between the 1970s and 1995 fish communities was 14%. The percent similarity between the 1995 and 2000s fish communities was the greatest between any two of the three decades compared (38%). Comparing the 1970s versus 1995 and 2000s, the Bray-Curtis similarity was greatest for the mixing zone (23 and 34 % respectively), followed by the thermally-influenced zone (11 and 31 %, respectively) and the ambient zone (10 and 29 %). The comparison between the 1995 and 2000s fish communities showed similarities between the three zones when comparing the 1995 and 2000s fish communities. It was slightly greater than the thermally influenced (33%) zone.

6.4 LENGTH-WEIGHT RELATIONSHIPS

The length-weight relationships for four species (bluegill, largemouth bass, smallmouth bass and yellow perch) are presented numerically in Table 6-10 and graphically in Figures 6-12 through 6-15. The magnitude of the slope in the regression equation reflects the condition or robustness of the fish; a higher slope indicates a greater weight relative to a constant increase in length. Since juveniles usually have a lower length-weight slope than older individuals, variation in the length-weight slope may also result from changes in the age composition of the samples.

Yellow perch (Figure 6-12) and largemouth bass (Figure 6-13) did not show any significant differences among slopes and y-intercepts between the three years of sampling. The slopes and y-intercepts varied significantly between 1995 and 2005, and 2004 and 2005, but not between 1995 and 2004 for smallmouth bass (Figure 6-14; Table 6-10). Smallmouth bass during 2005 was more robust than those sampled during 1995 or 2004. Bluegill slope and y-intercept values varied significantly during all three years of sampling (Figure 6-15; Table 6-10). During 2004, bluegill was more robust than those sampled during either 1995 or 2005. Bluegill sampled during 1995 was the least robust. During this sampling year, the population of these fish was booming with large numbers of juveniles sampled throughout Hooksett Pool. The lower length-weight slopes associated with juvenile fish may have impacted the overall value for bluegill, resulting in a lower robustness relative to other years.

6.5 SPECIES GUILD BIOMASS

Table 6.11 presents the fish species captured in Hooksett Pool during the 1995, 2004 and 2005 seasons. Trophic guilds were assigned to each species based on their life history characteristics. Due to [illegible] (fallfish) and herbivorous (creek chub) species, as well as species that were rare (minnow) were not included in the ANCOVA analysis. Generalist species within Hooksett Pool included fallfish and creek chub. Within generalist species, there was significantly more biomass present in Hooksett Pool during 1995 than in 2004 (ANCOVA, $p = 0.0032$) where as there was no significant differences between 1995 and 2005 or 2004 and 2005 (ANCOVA, $p>0.05$). Bluegill, pumpkinseed, bullhead, and yellow perch were among the eleven species classified as insectivores in Hooksett Pool. There were no significant differences detected in the biomass present during any of the three study years for insectivore species (ANCOVA, $p>0.05$). Omnivorous species within Hooksett Pool included common carp, golden shiner and white sucker. Biomass of this species guild was greater during 2004 (ANCOVA, $p<0.0001$) and 2005 (ANCOVA, $p<0.0001$) than that present in 1995. There were no significant differences in the biomass present during 2004 from that present in 2005 (ANCOVA, $p = 0.0994$). American eel, smallmouth and largemouth bass [illegible] was greater during 2004 (ANCOVA, $p = 0.0003$) and 2005 (ANCOVA, $p = 0.0449$) than that present in 1995. There were no significant differences in the biomass present during 2004 from that present in 2005 (ANCOVA, $p = 0.1098$).

Any comparison of it in Guild dominance?

7.0 RESULTS OF TRAPNETTING TRENDS ANALYSIS

7.1 GENERAL CATCH CHARACTERISTICS

Table 7-1 shows the trapnet catch during May through September of all years with consistent sampling effort. The 1970s are represented by the 1974, 1975, and 1976 sampling efforts and the 2000s are represented by the 2004 and 2005 sampling efforts. A total of 25 species were sampled by trapnets during the five selected months, within Hooksett Pool, over the five years included in this analysis. A total of nineteen species were observed during the 1970s and seventeen species during the 2000s with 6,201 individuals sampled during the 1970s and 1,521 individuals sampled during the 2000s. Fourteen of the 25 species sampled were present during both decades. Five species, brook trout, common carp, common shiner, tadpole madtom, and walleye, were present during the 1970s trapnet sampling but absent during the 2000s. Six species that had not been present in the 1970s trapnet catch, black crappie, bluegill, eastern silvery minnow, rock bass, spottail shiner, and tessellated darter were observed during the 2000s. During the 1970s brown bullhead represented 37.0 and 34.9 % of the total catch from the ambient and mixing zones respectively. White sucker (20.9%) and yellow perch (15%) were the second and third most abundant species within the ambient zone while pumpkinseed (25.8%) and white sucker (16.4%) were the second and third most abundant species within the mixing zone. Brown bullhead (36%), pumpkinseed (25.8%) and white sucker (18.2%) represented 80% of the total catch for all of Hooksett Pool during the 1970s. Spottail shiner (36.5%), smallmouth bass (29.3%) and rock bass (13.3%) were the dominant species present within the ambient zone of Hooksett Pool during the 2000s. Smallmouth bass (56.6%) accounted for over half of the fish captured in the mixing zone. Smallmouth bass, spottail shiner (15.4%) and rock bass (11.1%) were the three dominant species captured by trapnet in all of Hooksett Pool during the 2000s.

7.2 CATCH PER UNIT EFFORT (CPUE)

Table 7-2 presents the CPUE (fish per 48 hour set) for all species captured in the ambient and mixing zones along with all of Hooksett Pool for the 1970s and 2000s trapnet efforts. Trapnet CPUE was greater in the ambient zone (45.8 vs. 6.6), the mixing zone (74.0 vs. 6.4), and Hooksett Pool (59.6 vs. 6.5) during the 1970s than during the 2000s. Trapnet values for nine of the ten most abundant species captured in trapnets during the 1970s showed a decline in CPUE during the 2000s as evidenced by the separation of the 95% confidence limits associated with the decadal CPUE values. These species included brown bullhead, pumpkinseed, white sucker, yellow perch, redbreast sunfish, yellow bullhead, golden shiner, and chain pickerel. One species, the smallmouth bass, had a similar CPUE value for both the 1970s and 2000s. Three of the five most abundantly captured species during the 2000s; spottail shiner, bluegill, and rock bass, were not present at all in the trapnet catches of the 1970s.

7.3 COMMUNITY INDICIES

Similar to the [illegible] slightly within each of the [illegible] and [illegible] for the two decades (Table 7-3) with

nineteen species observed during the 1970s and seventeen species observed during the 2000s. Taxa richness within the ambient zone was similar between decades with a total of sixteen species [illegible] during the 2000s.

Comparison of the abundance rankings for fish caught by trapnets during the 1970s and 2000s revealed changes in relative abundances within Hooksett Pool. Table 7-4 presents the abundance rankings for fish species caught within Hooksett Pool. During the 1970s, brown bullhead were the first ranked fish taxon captured by trapnet. They were followed by pumpkinseed, white sucker, yellow perch and smallmouth bass. During the 2000s, smallmouth bass were the species most frequently captured by trapnet, followed by spottail shiner and rock bass. The latter two species were not sampled by trapnet during the 1970s. Redbreast sunfish and bluegill, another species absent from the 1970s trapnet catch, were the fourth and fifth most abundant species in the trapnet catch from the 2000s. Brown bullhead, the most abundant species during the 1970s was the thirteenth most abundant during the 2000s and pumpkinseed, the second most abundant species during the 1970s dropped to fifteenth place. White sucker and yellow perch also decreased in the rank abundance, third to eight and fourth to sixth rank, respectively. Within the ambient zone, brown bullhead, white sucker and yellow perch were the three most abundant species in the 1970s. During the 2000s, spottail shiner, smallmouth bass and rock bass were the three most abundant while brown bullhead, white sucker and yellow perch decreased to thirteenth, sixth, and fifth, respectively. Within the mixing zone in the 1970s, brown bullhead, pumpkinseed, and white sucker were the three most abundant species. During the 2000s, smallmouth bass, bluegill, and redbreast sunfish were the three most abundant while brown bullhead, pumpkinseed and white sucker decreased to twelfth, eleventh, and sixth, respectively.

Table 7-5 presents a "then and now" comparison of the fish community within Hooksett Pool during the 1970s and 2000s, as computed by the Bray-Curtis Percent Similarity Index. The fish communities from these two time periods show limited similarity. The fish community of Hooksett Pool during the 1970s is only 12.1% similar to the current community. Fish communities within the ambient zone (11.1%) and mixing zone (12.6%) show a similar difference between what was present in the 1970s and what currently resides there.

thermally influenced zone?

in effectiveness, limitations, etc...?

are F&D, PWS, Lab personnel

8.0 SUMMARY

The fish community within Hooksett Pool has undergone changes since the Merrimack River Surveys conducted during the 1970s. Hooksett Pool supported a warm-water fish community that was dominated by centrarchids, minnows, white suckers and bullhead (Normandeau 1979). The current community in Hooksett Pool is still one that is dominated by centrarchids and minnows although the species composition has shifted. Pumpkinseed and yellow perch, both abundant during the 1970s have declined. Bullhead species, abundant during the 1970s, were not detected during recent electrofishing surveys and only a few individuals were recorded in 2004 and 2005 trapnet catches. White sucker continue to be present in Hooksett Pool although they have somewhat declined from their numbers during the 1970s. Redbreast sunfish, largemouth bass and smallmouth bass continue to be present within all three zones of the Hooksett Pool. Several species, bluegill, rock bass and black crappie have become established in Hooksett Pool since the initial surveys conducted during the 1970s. The diversity of minnow and shiner species has increased during the last two decades. Golden shiner have been present in Hooksett Pool during the majority of the years sampled. They peaked in abundance during the 2004 sampling year. Common shiner and spottail shiner, two species present in low abundance during the 1970s showed increases in catch during the 1995, 2004 and 2005 seasons. Spottail shiner were the most abundant species captured during 1995 and 2004. Eastern silvery minnow, a species not recorded during the 1970s surveys, became established in Hooksett Pool during the 2004 and 2005 sampling seasons. Although shifts in species composition have occurred over the 33 year period of these surveys, Hooksett Pool continues to support a diverse finfish community. The increases of recently introduced species and the declines of several past abundant species will continue to play a role in defining this community.

9.0 LITERATURE CITED

Barbour et al. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers. Second Edition. EPA 841-B-99-002.

Clarke, K.R. 1993. Non-parametric multivariate analyses of changes in community structure. Australian Journal of Ecology. 18: 117-143.

Normandeau (Normandeau Associates, Inc.). 1973. Merrimack River Monitoring Program. A report for the study period 1972. 91 pp.

Normandeau (Normandeau Associates, Inc.). 1974. Merrimack River Monitoring Program. A report for the study period 1973. 109 pp. plus appendix.

Normandeau (Normandeau Associates, Inc.). 1975. Merrimack River Monitoring Program. A report for the study period 1974. 112 pp. plus appendix.

Normandeau (Normandeau Associates, Inc.). 1976. Merrimack River Monitoring Program. A report for the study period 1975. 148 pp. plus appendix.

Normandeau (Normandeau Associates, Inc.). 1977. Merrimack River Monitoring Program. A report for the study period 1976. 172 pp. plus appendix.

Normandeau (Normandeau Associates, Inc.). 1979. Merrimack River Monitoring Program. A report for the study period 1978. 179 pp. plus appendix.

Normandeau (Normandeau Associates, Inc.). 1996. Merrimack Station (Bow) Fisheries Study. A report for the study period 1995. 20 pp. plus appendix.

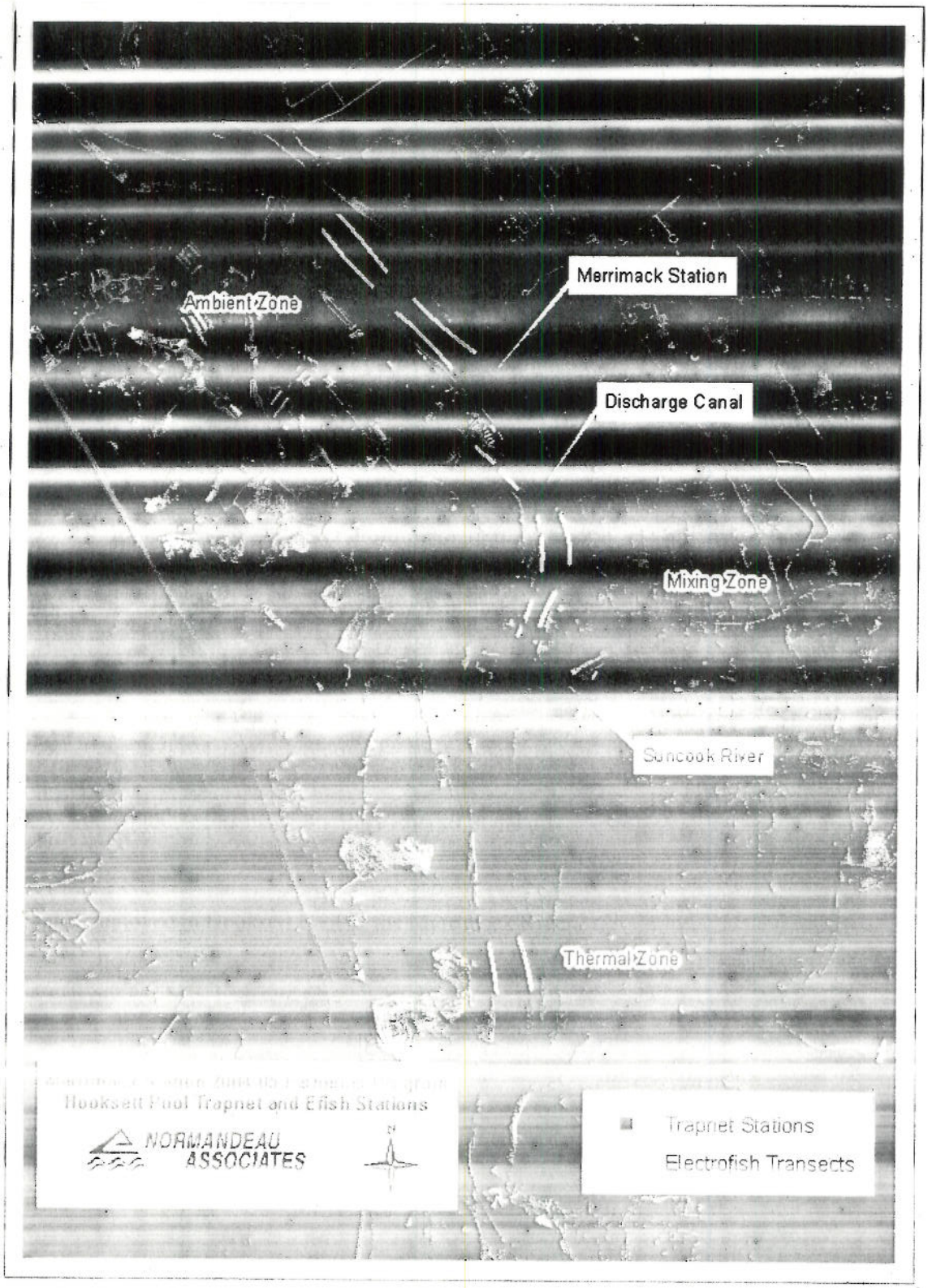
Normandeau (Normandeau Associates, Inc.). 2004. 2004 Merrimack Station Fisheries Standard Operating Procedures.

Normandeau (Normandeau Associates, Inc.). 2005. 2005 Merrimack Station Fisheries Standard Operating Procedures.

Normandeau (Normandeau Associates, Inc.). 2006. A method for adjusting the catch of a ¾-inch mesh trapnet and a 2-inch mesh trapnet deployed in Hooksett Pool of the Merrimack River near Bow, New Hampshire during 2004-2005. 30 pp. plus appendix.

Wightman, P. 1971. Merrimack River Thermal Study. N.H. Fish and Game Department, Division of Inland and Marine Fisheries. 111pp.

FIGURES


Merrimack Station
Ambient Zone
Discharge Canal
Mixing Zone
Suncook River
Thermal Zone
Hooksett Pool Trapnet and Efish Stations
NORMANDEAU ASSOCIATES
N
Trapnet Stations
Electrofish Transects

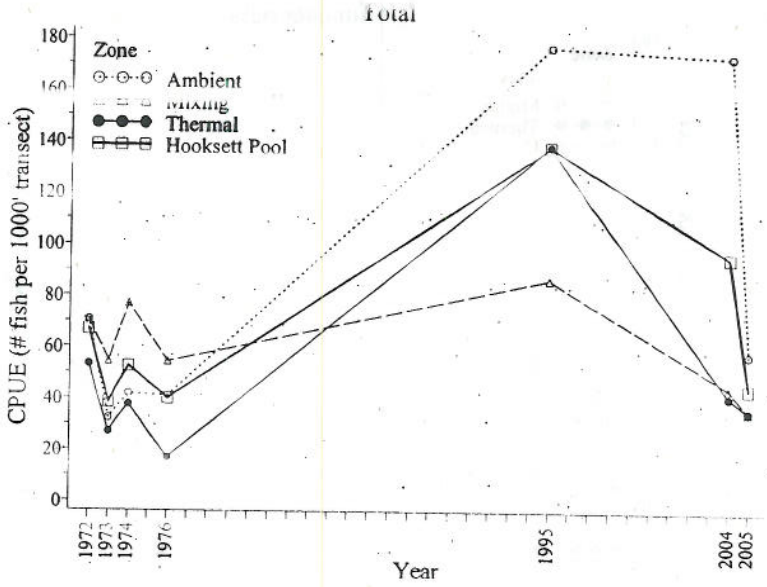


Figure 6-1. Electrofish CPUE for all fishes during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

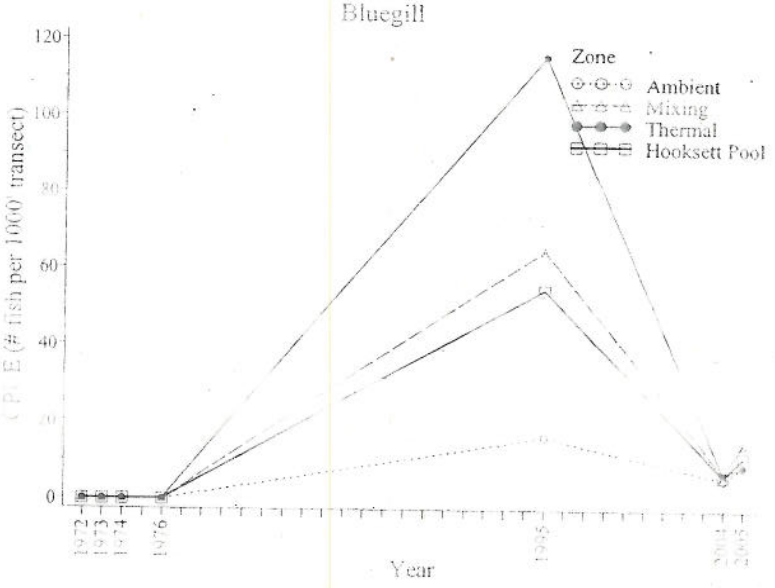


Figure 6-2. Electrofish CPUE for bluegill during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

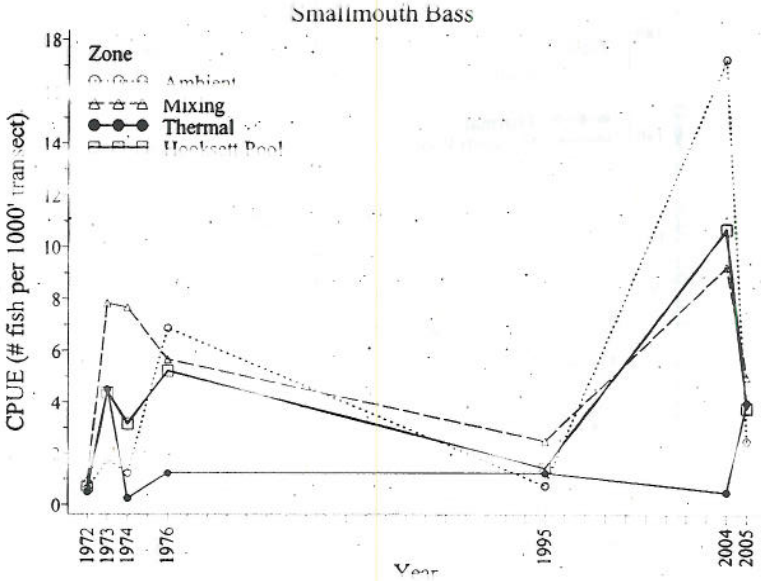


Figure 6-3. Electrofish CPUE for smallmouth bass during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

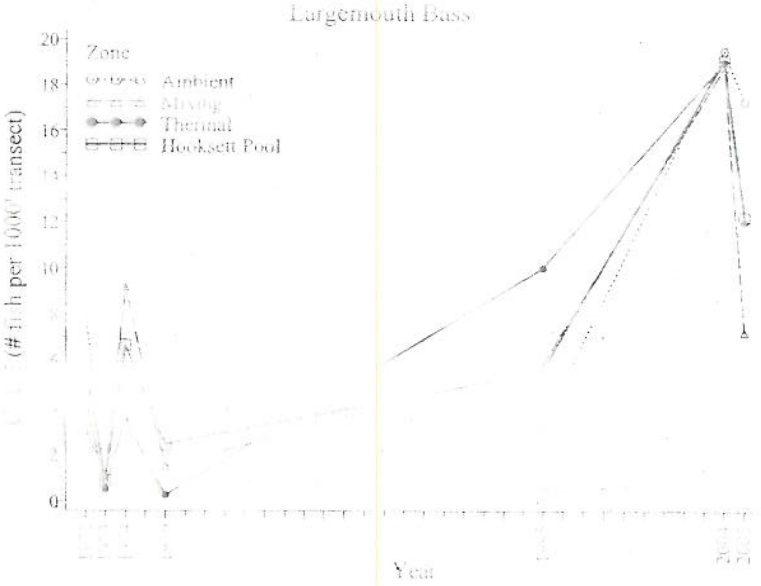


Figure 6-4. Electrofish CPUE for largemouth bass during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near

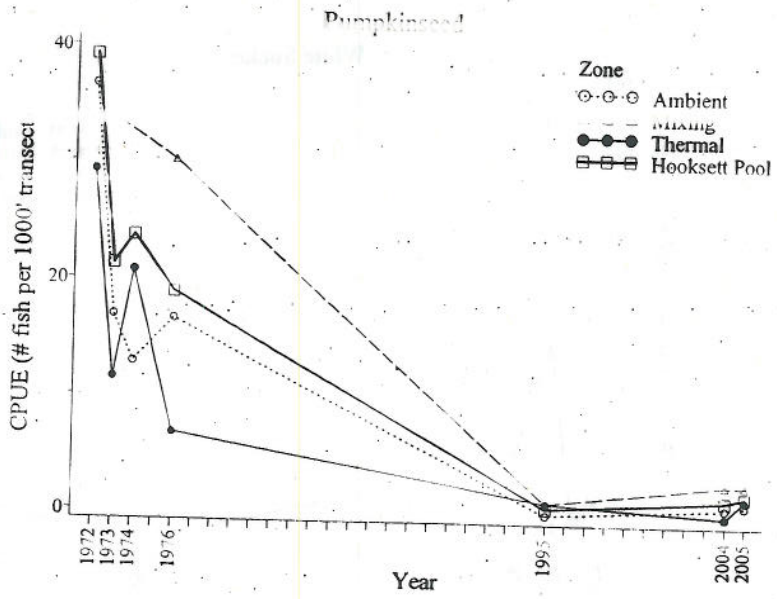


Figure 6-5. Electrofish CPUE for pumpkinseed during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

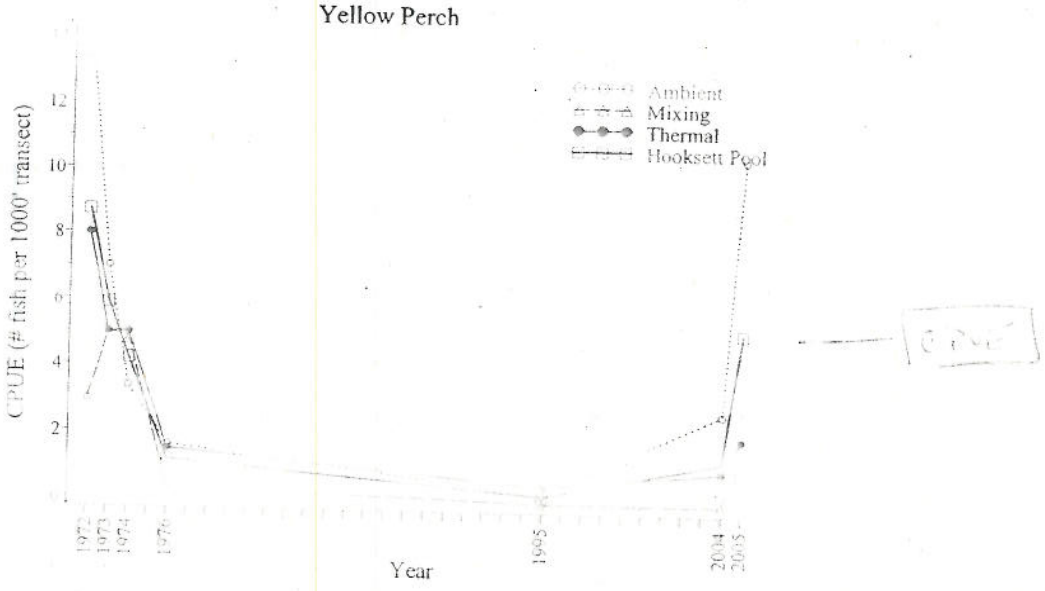


Figure 6-6. Electrofish CPUE for yellow perch during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

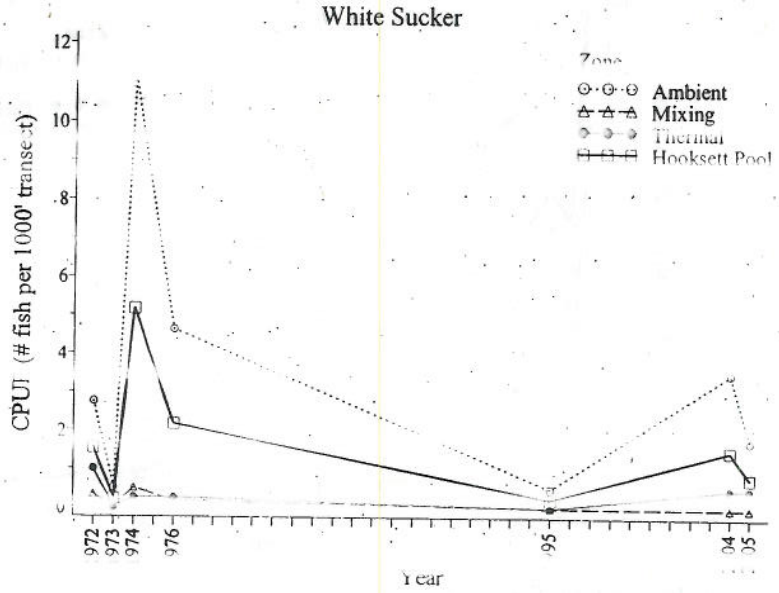


Figure 6-7. Electrofish CPUE for white sucker during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

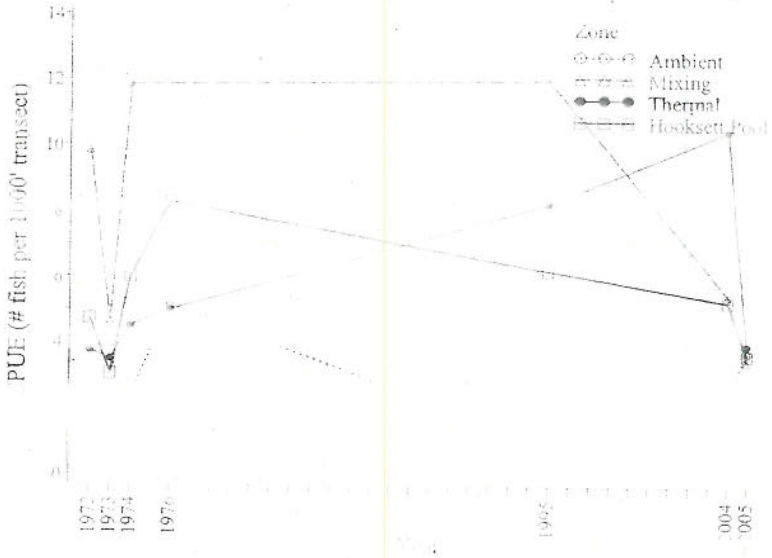


Figure 6-8. Electrofish CPUE for redbreast sunfish during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

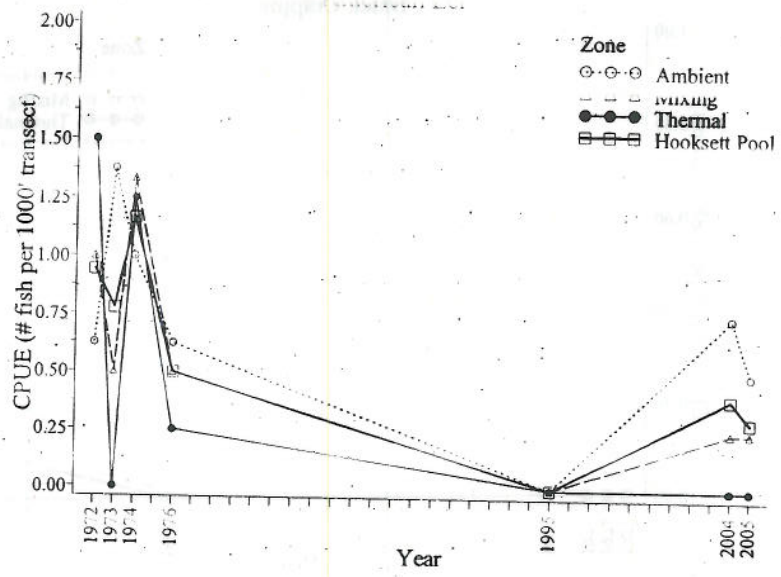


Figure 6-9 Electrofish CPUE for American eel during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

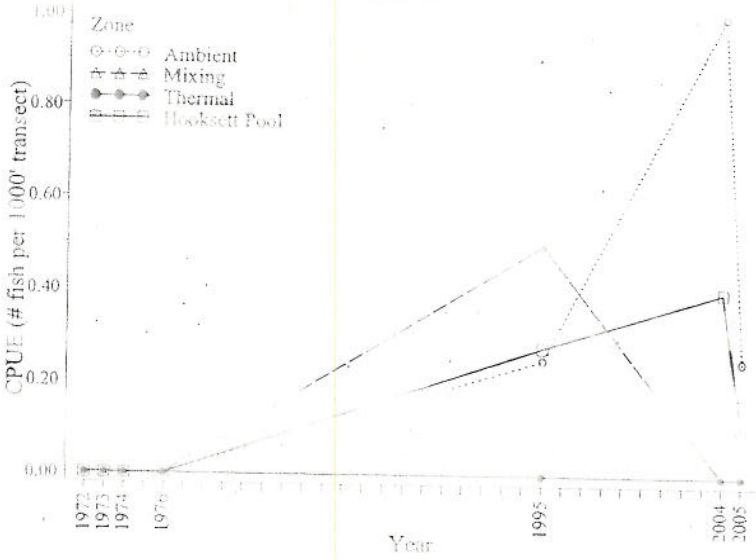


Figure 6-10 Electrofish CPUE for rock bass during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.

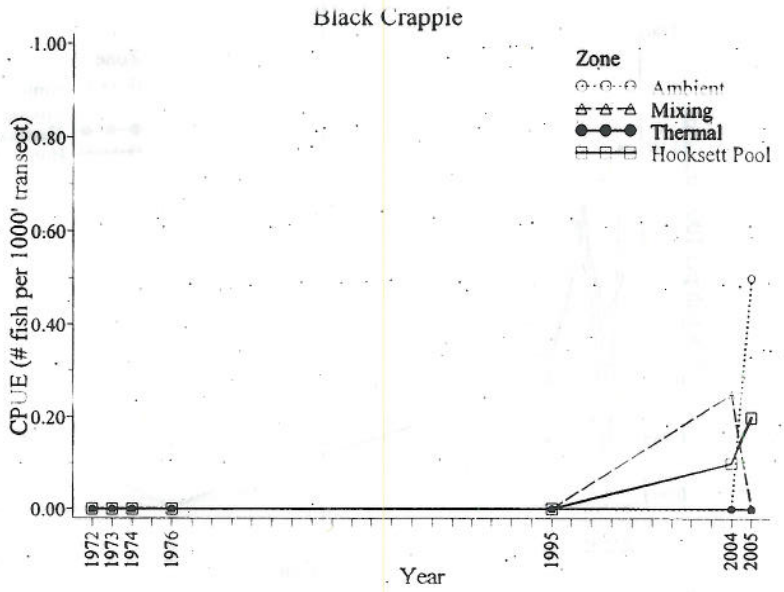
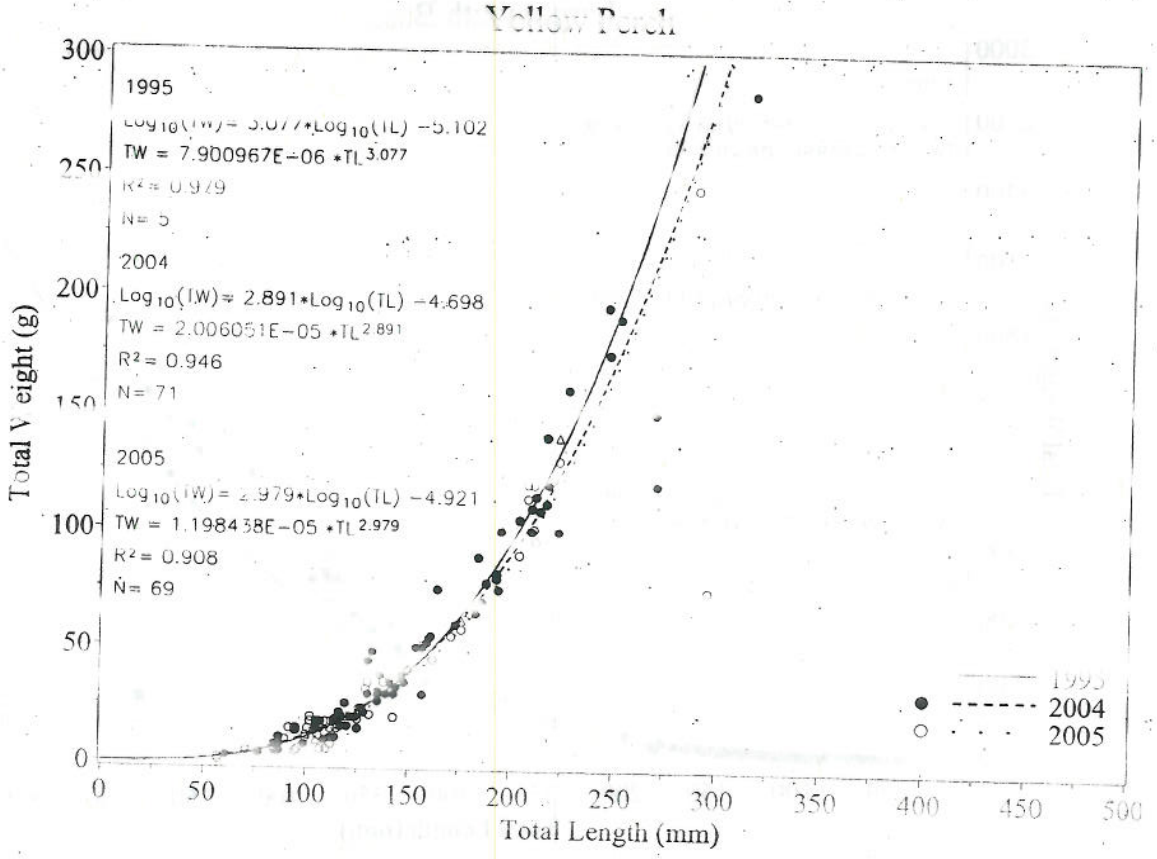


Figure 6-11. Electrofish CPUE for black crappie during August and September of all years with consistent sampling effort in the Hooksett Pool of the Merrimack River near Bow, NH.



May through September.

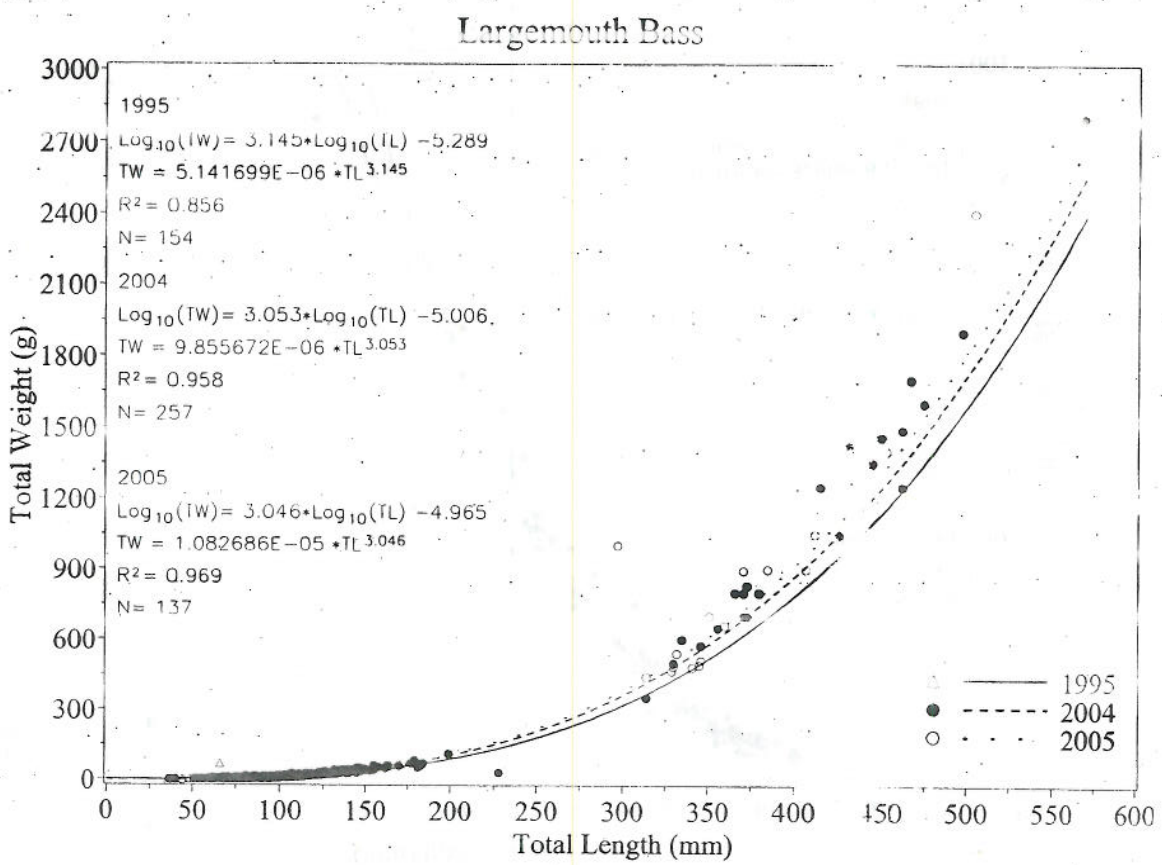


Figure 6-13. Length-weight relationship for largemouth bass captured by electrofishing during May through September of selected years

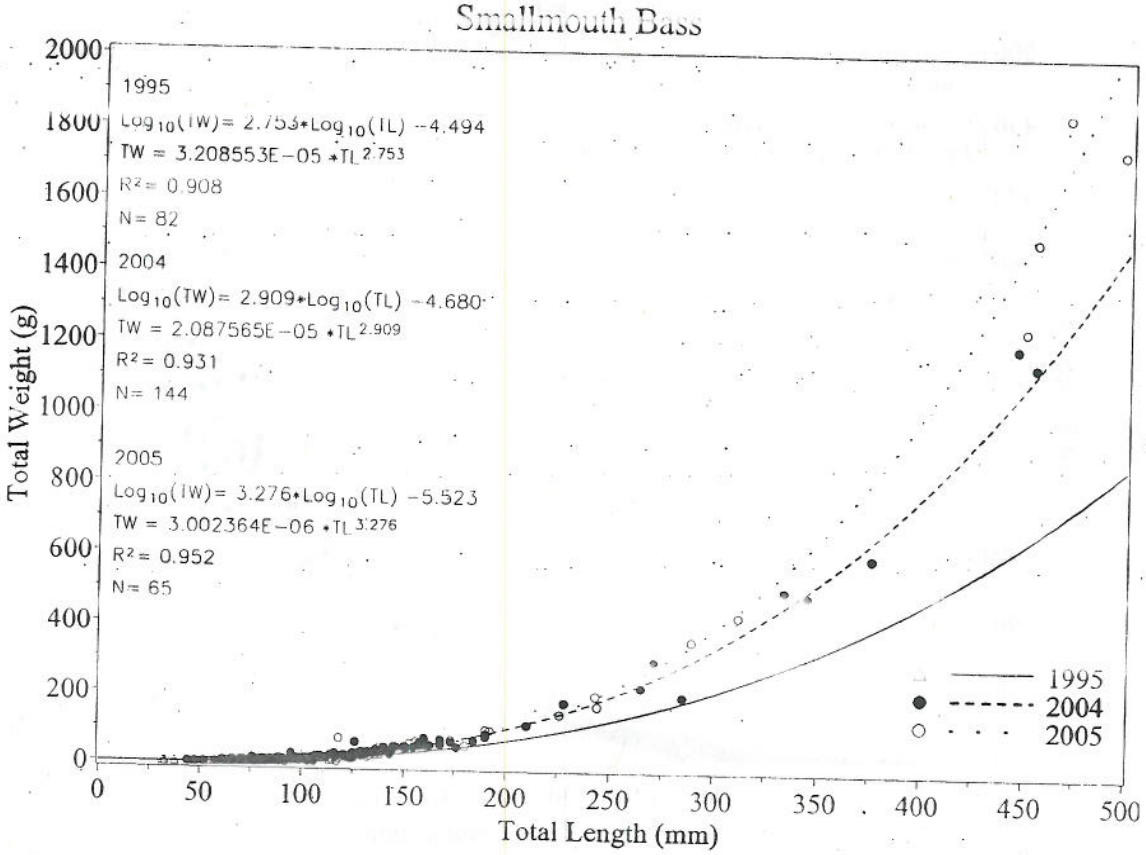


Figure 6-14. Length-weight relationship for smallmouth bass captured by electrofishing during May through September.

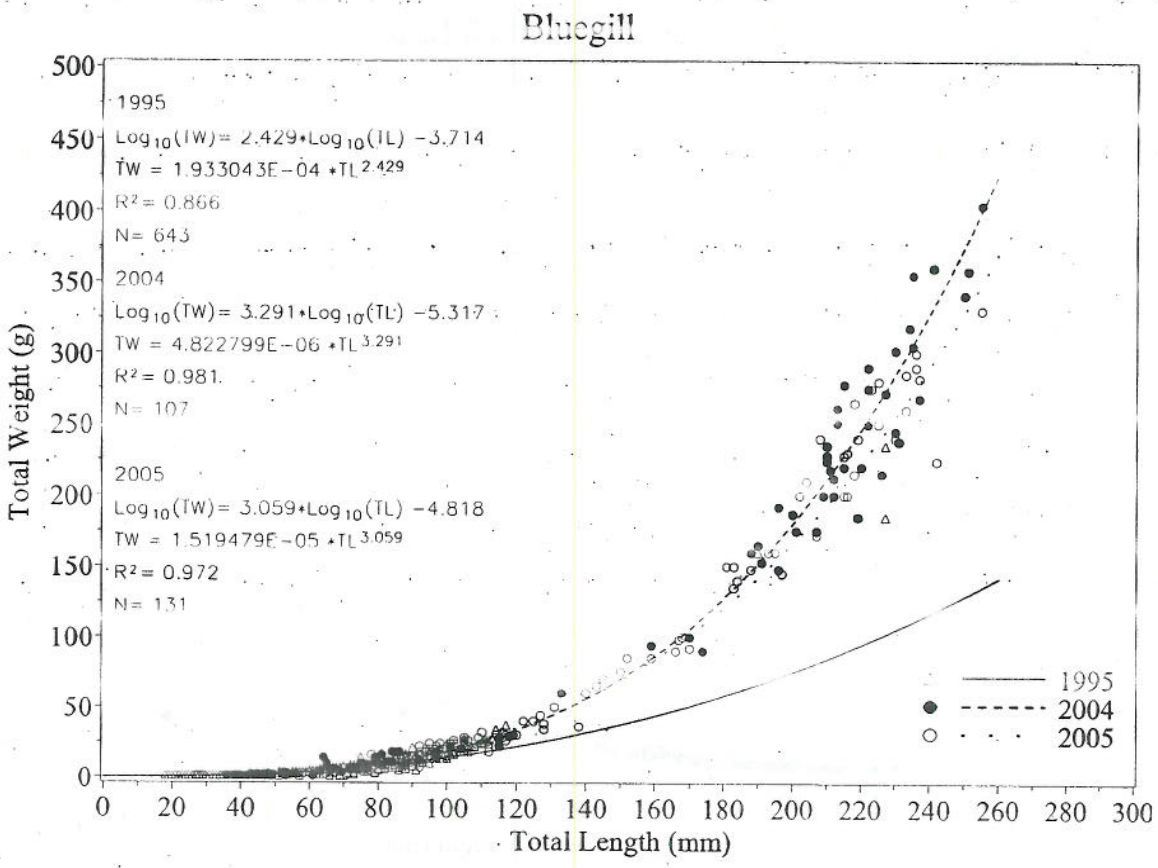


Figure 6-15. Length-weight relationship for bluegill captured by electrofishing during May through September.

TABLES

Table 3-1. Common and scientific names of fish species collected in the 2004 and 2005 Merrimack Station Fisheries Studies.

Common Name	Scientific Name	2004		2005	
		E-fish	Trapnet	E-fish	Trapnet
Alewife	*Alosa pseudoharengus*	X			
American eel	*Anguilla rostrata*	X	X	X	
Atlantic salmon	*Salmo salar*	X		X	
Black crappie	*Pomoxis nigromaculatus*	X	X	X	X
Bluegill	*Lepomis macrochirus*	X	X	X	X
Brown bullhead	*Ameiurus nebulosus*	X	X		
Brown trout	*Salmo trutta*	X		X	
Chain pickerel	*Esox niger*	X	X	X	
Common carp	*Cyprinus carpio*			X	
Common shiner	*Luxilus cornutus*	X			
Eastern silvery minnow	*Hybognathus regius*	X	X	X	X
Fallfish	*Semotilus corporalis*	X	X	X	
Golden shiner	*Notemigonus crysoleucas*	X	X	X	
Largemouth bass	*Micropterus salmoides*	X	X	X	
Margined madtom	*Noturus insignis*	X	X	X	X
Pumpkinseed	*Lepomis gibbosus*	X	X	X	X
Redbreast sunfish	*Lepomis auritus*	X	X	X	X
Rock bass	*Ambloplites rupestris*	X	X	X	X
Smallmouth bass	*Micropterus dolomieu*	X	X	X	X
Spottail shiner	*Notropis hudsonius*	X	X	X	X
Tessellated darter	*Etheostoma olmstedi*	X		X	X
White perch	*Morone americana*			X	X
White sucker	*Catostomus commersonii*	X	X	X	X
Yellow Bullhead	*Ameiurus natalis*		X		
Yellow perch	*Perca flavescens*	X	X	X	X
Total Species		22	18	21	13

Table 3-2. Total catch (N) and relative abundance (%) of fishes caught by trapnet in the ambient, mixing, and canal zones of Hooksett pool during 2004.

Common Name	Zone							
	Ambient		Mixing		Canal		Hooksett Pool	
	N	%	N	%	N	%	N	%
American eel	5	1.9	3	1.3	0	0.0	8	1.2
Black crappie	3	1.1	7	3.1	8	5.4	18	2.8
Bluegill	4	1.5	34	15.0	31	20.8	69	10.7
Brown bullhead	2	0.8	2	0.9	1	0.7	5	0.8
Chain pickerel	1	0.4	0	0.0	0	0.0	1	0.2
Eastern silvery minnow	4	1.5	0	0.0	0	0.0	4	0.6
Fallfish	6	2.3	0	0.0	0	0.0	6	0.9
Golden shiner	2	0.8	0	0.0	0	0.0	2	0.3
Largemouth bass	0	0.0	2	0.9	6	4.0	8	1.2
Margined madtom	1	0.4	0	0.0	0	0.0	1	0.2
Pumpkinseed	1	0.4	3	1.3	4	2.7	8	1.2
Redbreast sunfish	8	3.0	13	5.7	14	9.4	35	5.5
Rock bass	31	11.7	24	10.6	17	11.4	72	11.2
Smallmouth bass	61	22.9	95	41.9	68	45.6	224	34.9
Spottail shiner	100	37.6	32	14.1	0	0.0	132	20.6
White sucker	24	9.0	7	3.1	0	0.0	31	4.8
Yellow bullhead	3	1.1	2	0.9	0	0.0	5	0.8
Yellow perch	10	3.8	3	1.3	0	0.0	13	2.0
Total	266	100.0	227	100.0	149	100.0	642	100.0

Table 3-3. Mean CPUE (fish per 48 h) and 95% confidence limits of fishes caught by trapnet in the ambient, mixing, and canal zones of Hooksett pool during 2004.

Common Name	Zone															
	Ambient				Mixing				Canal				Hooksett Pool			
	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N
American eel	-0.05	0.16	0.36	32	-0.05	0.09	0.23	32		0.00		28	0.00	0.09	0.17	92
Black crappie	-0.10	0.09	0.28	32	-0.02	0.22	0.46	32	0.01	0.29	0.56	28	0.06	0.20	0.33	92
Bluegill	0.00	0.13	0.25	32	0.43	1.06	1.70	32	0.37	1.11	1.85	28	0.43	0.75	1.07	92
Brown bullhead	-0.03	0.06	0.15	32	-0.03	0.06	0.15	32	-0.04	0.04	0.11	28	0.01	0.05	0.10	92
Chain pickerel	-0.03	0.03	0.09	32		0.00		32		0.00		28	-0.01	0.01	0.03	92
Eastern silvery minnow	-0.07	0.13	0.32	32		0.00		32		0.00		28	-0.02	0.04	0.11	92
Fallfish	-0.01	0.19	0.38	32		0.00		32		0.00		28	-0.00	0.07	0.13	92
Golden shiner	-0.06	0.06	0.19	32		0.00		32		0.00		28	-0.02	0.02	0.06	92
Largemouth bass		0.00		32	-0.03	0.06	0.15	32	-0.03	0.21	0.46	28	0.01	0.09	0.17	92
Margined madtom	-0.03	0.03	0.09	32		0.00		32		0.00		28	-0.01	0.01	0.03	92
Pumpkinseed	-0.03	0.03	0.09	32	-0.01	0.09	0.20	32	-0.06	0.14	0.35	28	0.01	0.09	0.16	92
Redbreast sunfish	0.07	0.25	0.43	32	0.05	0.41	0.76	32	0.19	0.50	0.81	28	0.22	0.38	0.54	92
Rock bass	0.37	0.97	1.57	32	0.40	0.75	1.10	32	-0.06	0.61	1.28	28	0.48	0.78	1.09	92
Smallmouth bass	0.91	1.91	2.91	32	1.39	2.97	4.55	32	1.26	2.43	3.60	28	1.72	2.43	3.15	92
Spottail shiner	-0.88	3.13	7.13	32	-0.73	1.00	2.73	32		0.00		28	-0.05	1.43	2.92	92
White sucker	-0.23	0.75	1.73	32	-0.02	0.22	0.46	32		0.00		28	-0.01	0.34	0.68	92
Yellow bullhead	-0.01	0.09	0.20	32	-0.03	0.06	0.15	32		0.00		28	0.01	0.05	0.10	92
Yellow perch	0.05	0.31	0.58	32	-0.01	0.09	0.20	32		0.00		28	0.04	0.14	0.24	92
Total	3.41	8.31	13.22	32	4.79	7.09	9.40	32	3.53	5.32	7.12	28	5.07	6.98	8.89	92

Table 3-4. Total catch (N) and relative abundance (%) of fishes caught by electrofishing in the ambient, mixing, thermally-influenced and canal zones of Hooksett pool during 2004.

Common Name	Zone									
	Ambient		Mixing		Canal		Thermal		Hooksett Pool	
	N	%	N	%	N	%	N	%	N	%
Alewife	75	3.0	0	0.0	0	0.0	6	3.0	81	2.2
American eel	10	0.4	9	1.4	3	1.0	1	0.5	23	0.6
Atlantic salmon	0	0.0	0	0.0	1	0.3	0	0.0	1	0.0
Black crappie	1	0.0	4	0.6	8	2.6	0	0.0	13	0.4
Bluegill	52	2.1	46	7.1	103	33.6	21	10.6	222	6.0
Brown bullhead	0	0.0	1	0.2	0	0.0	0	0.0	1	0.0
Brown trout	0	0.0	1	0.2	0	0.0	0	0.0	1	0.0
Chain pickerel	7	0.3	1	0.2	2	0.7	1	0.5	11	0.3
Common shiner	65	2.6	0	0.0	0	0.0	0	0.0	65	1.8
Eastern silvery minnow	14	0.6	0	0.0	0	0.0	0	0.0	14	0.4
Fallfish	59	2.3	18	2.8	0	0.0	3	1.5	80	2.2
Golden shiner	40	1.6	26	4.0	0	0.0	1	0.5	67	1.8
Largemouth bass	142	5.6	129	19.8	88	28.7	53	26.6	412	11.2
Margined madtom	1	0.0	2	0.3	0	0.0	0	0.0	3	0.1
Pumpkinseed	7	0.3	16	2.5	32	10.4	0	0.0	55	1.5
Redbreast sunfish	26	1.0	39	6.0	9	2.9	41	20.6	115	3.1
Rock bass	7	0.3	1	0.2	8	2.6	0	0.0	16	0.4
Smallmouth bass	87	3.5	57	8.8	35	11.4	7	3.5	186	5.1
Spottail shiner	1794	71.2	255	39.2	0	0.0	43	21.6	2092	56.9
Tessellated darter	7	0.3	4	0.6	0	0.0	3	1.5	14	0.4
White sucker	59	2.3	33	5.1	11	3.6	16	8.0	119	3.2
Yellow perch	67	2.7	9	1.4	7	2.3	3	1.5	86	2.3
Total	2520	100.0	651	100.0	307	100.0	199	100.0	3677	100.0

how about same chart for Aug & Sept.

Table 3-5. Mean CPUE (fish per 1,000 ft transect) and 95% confidence limits of fishes caught by electrofishing in the ambient, mixing, thermally-influenced and canal zones of Hooksett pool during 2004.

	Zone																			
	Ambient				Mixing				Canal				Thermal				Hooksett Pool			
Common Name	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N
Alewife	-1.92	2.34	6.61	32		0.00		30		0.00		22	-0.32	0.40	1.12	15	-0.53	0.82	2.17	99
American eel	-0.02	0.31	0.65	32	0.06	0.30	0.54	30	-0.07	0.14	0.34	22	-0.08	0.07	0.21	15	0.10	0.23	0.37	99
Atlantic salmon		0.00		32		0.00		30	-0.05	0.05	0.14	22		0.00		15	-0.01	0.01	0.03	99
Black crappie	-0.03	0.03	0.09	32	-0.03	0.13	0.30	30	0.01	0.36	0.71	22		0.00		15	0.04	0.13	0.22	99
Bluegill	0.58	1.63	2.67	32	0.25	1.53	2.82	30	1.80	4.68	7.56	22	-0.30	1.40	3.10	15	1.39	2.24	3.09	99
Brown bullhead		0.00		32	-0.03	0.03	0.10	30		0.00		22		0.00		15	-0.01	0.01	0.03	99
Brown trout		0.00		32	-0.03	0.03	0.10	30		0.00		22		0.00		15	-0.01	0.01	0.03	99
Chain pickerel	0.07	0.22	0.37	32	-0.03	0.03	0.10	30	-0.04	0.09	0.22	22	-0.08	0.07	0.21	15	0.05	0.11	0.17	99
Common shiner	-1.14	2.03	5.21	32		0.00		30		0.00		22		0.00		15	-0.35	0.66	1.66	99
Eastern silvery minnow	-0.45	0.44	1.33	32		0.00		30		0.00		22		0.00		15	-0.14	0.14	0.42	99
Fallfish	0.56	1.84	3.13	32	-0.01	0.60	1.21	30		0.00		22	-0.11	0.20	0.51	15	0.34	0.81	1.27	99
Golden shiner	0.31	1.25	2.19	32	-0.12	0.87	1.86	30		0.00		22	-0.08	0.07	0.21	15	0.25	0.68	1.10	99
Largemouth bass	0.85	4.44	8.02	32	2.44	4.30	6.16	30	1.30	4.00	6.70	22	0.52	3.53	6.55	15	2.74	4.16	5.58	99
Margined madtom	-0.03	0.03	0.09	32	-0.03	0.07	0.16	30		0.00		22		0.00		15	-0.00	0.03	0.06	99
Pumpkinseed	0.07	0.22	0.37	32	0.10	0.53	0.97	30	-0.00	1.45	2.91	22		0.00		15	0.21	0.56	0.90	99
Redbreast sunfish	0.38	0.81	1.25	32	0.45	1.30	2.15	30	0.06	0.41	0.76	22	0.12	2.73	5.35	15	0.68	1.16	1.64	99
Rock bass	0.04	0.22	0.40	32	-0.03	0.03	0.10	30	-0.01	0.36	0.74	22		0.00		15	0.06	0.16	0.26	99
Smallmouth bass	0.19	2.72	5.25	32	0.81	1.90	2.99	30	-0.12	1.59	3.30	22	-0.12	0.47	1.05	15	0.94	1.88	2.81	99
Spottail shiner	-4.23	56.06	116.4	32	0.42	8.50	16.58	30		0.00		22	-3.28	2.87	9.02	15	1.59	21.13	40.67	99
Tessellated darter	0.04	0.22	0.40	32	0.00	0.13	0.26	30		0.00		22	-0.23	0.20	0.63	15	0.05	0.14	0.23	99
White sucker	0.98	1.84	2.71	32	0.19	1.10	2.01	30	-0.14	0.50	1.14	22	0.07	1.07	2.06	15	0.77	1.20	1.64	99
Yellow perch	0.75	2.09	3.44	32	0.08	0.30	0.52	30	-0.03	0.32	0.66	22	-0.11	0.20	0.51	15	0.40	0.87	1.33	99
Total	17.97	78.75	139.5	32	13.64	21.76	29.76	30	6.91	13.95	21.00	22	3.65	13.27	22.88	15	17.13	37.14	57.16	99

Table 3-6. Total catch (N) and relative abundance (%) of fishes caught by trapnet in the ambient, mixing, and canal zones of Hooksett pool during 2005.

Common Name	Zone							
	Ambient		Mixing		Canal		Hooksett Pool	
	N	%	N	%	N	%	N	%
Black crappie	0	0.0	1	1.0	7	10.1	8	3.9
Bluegill	3	7.7	10	10.3	8	11.6	21	10.2
Eastern silvery minnow	2	5.1	0	0.0	0	0.0	2	1.0
Margined madtom	0	0.0	2	2.1	0	0.0	2	1.0
Pumpkinseed	0	0.0	0	0.0	2	2.9	2	1.0
Redbreast sunfish	3	7.7	20	20.6	1	1.4	24	11.7
Rock bass	6	15.4	5	5.2	1	1.4	12	5.9
Smallmouth bass	17	43.6	57	58.8	48	69.6	122	59.5
Spottail shiner	3	7.7	0	0.0	0	0.0	3	1.5
Sunfish family	0	0.0	0	0.0	1	1.4	1	0.5
Tessellated darter	1	2.6	0	0.0	0	0.0	1	0.5
White perch	0	0.0	0	0.0	1	1.4	1	0.5
White sucker	4	10.3	0	0.0	0	0.0	4	2.0
Yellow perch	0	0.0	2	2.1	0	0.0	2	1.0
Total	39	100.0	97	100.0	69	100.0	205	100.0

– Thermally-influenced?

Compare historical trapnet vs. this for perch.

Table 3-7. Mean CPUE (fish per 48 h) and 95% confidence limits of fishes caught by trapnet in the ambient, mixing, and canal zones of Hooksett pool during 2005.

	Zone															
	Ambient				Mixing				Canal				Hooksett Pool			
Common Name	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N
Black crappie		0.00		20	-0.05	0.05	0.15	21	-0.14	0.32	0.78	22	-0.03	0.13	0.29	63
Bluegill	-0.08	0.15	0.38	20	0.05	0.48	0.90	21	0.04	0.36	0.69	22	0.15	0.33	0.52	63
Eastern silvery minnow	-0.11	0.10	0.31	20		0.00		21		0.00		22	-0.03	0.03	0.10	63
Margined madtom		0.00		20	-0.10	0.10	0.29	21		0.00		22	-0.03	0.03	0.10	63
Pumpkinseed		0.00		20		0.00		21	-0.10	0.09	0.28	22	-0.03	0.03	0.10	63
Redbreast sunfish	-0.08	0.15	0.38	20	-0.44	0.95	2.34	21	-0.05	0.05	0.14	22	-0.07	0.38	0.84	63
Rock bass	-0.01	0.30	0.61	20	-0.01	0.24	0.48	21	-0.05	0.05	0.14	22	0.06	0.19	0.32	63
Smallmouth bass	0.18	0.85	1.52	20	0.54	2.71	4.89	21	0.14	2.18	4.23	22	0.94	1.94	2.94	63
Spottail shiner	-0.08	0.15	0.38	20		0.00		21		0.00		22	-0.02	0.05	0.12	63
Sunfish family		0.00		20		0.00		21	-0.05	0.05	0.14	22	-0.02	0.02	0.05	63
Tessellated darter	-0.05	0.05	0.15	20		0.00		21		0.00		22	-0.02	0.02	0.05	63
White perch		0.00		20		0.00		21	-0.05	0.05	0.14	22	-0.02	0.02	0.05	63
White sucker	-0.09	0.20	0.49	20		0.00		21		0.00		22	-0.03	0.06	0.15	63
Yellow perch		0.00		20	-0.10	0.10	0.29	21		0.00		22	-0.03	0.03	0.10	63
Total	0.65	1.95	3.25	20	1.30	4.62	7.94	21	1.11	3.14	5.16	22	1.93	3.25	4.58	63

Table 3-8. **Total catch (N) and relative abundance (%) of fishes caught by electrofishing in the ambient, mixing, thermally-influenced, and canal zones of Hooksett pool during 2005.**

Common Name	Zone									
	Ambient		Mixing		Canal		Thermal		Hooksett Pool	
	N	%	N	%	N	%	N	%	N	%
American eel	6	1.5	5	1.0	2	1.1	0	0.0	13	1.1
Atlantic salmon	0	0.0	0	0.0	1	0.5	0	0.0	1	0.1
Black crappie	2	0.5	2	0.4	9	4.8	0	0.0	13	1.1
Bluegill	43	10.9	66	12.9	43	23.1	23	18.1	175	14.4
Brown trout	0	0.0	1	0.2	0	0.0	0	0.0	1	0.1
Chain pickerel	1	0.3	0	0.0	4	2.2	2	1.6	7	0.6
Common carp	1	0.3	0	0.0	0	0.0	0	0.0	1	0.1
Eastern silvery minnow	1	0.3	3	0.6	0	0.0	0	0.0	4	0.3
Fallfish	37	9.4	117	22.9	0	0.0	0	0.0	154	12.6
Golden shiner	5	1.3	12	2.3	3	1.6	5	3.9	25	2.1
Largemouth bass	77	19.6	33	6.4	35	18.8	27	21.3	172	14.1
Margined madtom	0	0.0	2	0.4	0	0.0	0	0.0	2	0.2
Pumpkinseed	6	1.5	14	2.7	9	4.8	5	3.9	34	2.8
Redbreast sunfish	24	6.1	29	5.7	3	1.6	30	23.6	86	7.1
Rock bass	1	0.3	0	0.0	3	1.6	0	0.0	4	0.3
Smallmouth bass	19	4.8	38	7.4	15	8.1	11	8.7	83	6.8
Spottail shiner	58	14.8	119	23.2	4	2.2	1	0.8	182	14.9
Tessellated darter	8	2.0	5	1.0	1	0.5	3	2.4	17	1.4
White perch	0	0.0	1	0.2	1	0.5	0	0.0	2	0.2
White sucker	47	12.0	56	10.9	9	4.8	15	11.8	127	10.4
Yellow perch	57	14.5	9	1.8	44	23.7	5	3.9	115	9.4
Total	393	100.0	512	100.0	186	100.0	127	100.0	1218	100.0

in 103 sampling events

1218

Table 3-9. Mean CPUE (fish per 1,000 ft transect) and 95% confidence limits of fishes caught by electrofishing in the ambient, mixing, thermally-influenced, and canal zones of Hooksett pool during 2005.

Common Name	Zone																			
	Ambient				Mixing				Canal				Thermal				Hooksett Pool			
	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N	95% LCL	CPUE	95% UCL	N
American eel	0.04	0.19	0.33	32	-0.05	0.16	0.36	32	-0.04	0.08	0.20	24		0.00		15	0.05	0.13	0.21	103
Atlantic salmon		0.00		32		0.00		32	-0.04	0.04	0.13	24		0.00		15	-0.01	0.01	0.03	103
Black crappie	-0.06	0.06	0.19	32	-0.03	0.06	0.15	32	-0.32	0.38	1.07	24		0.00		15	-0.03	0.13	0.29	103
Bluegill	0.42	1.34	2.27	32	0.23	2.06	3.90	32	0.73	1.79	2.86	24	0.15	1.53	2.92	15	1.01	1.70	2.38	103
Brown trout		0.00		32	-0.03	0.03	0.09	32		0.00		24		0.00		15	-0.01	0.01	0.03	103
Chain pickerel	-0.03	0.03	0.09	32		0.00		32	-0.10	0.17	0.44	24	-0.06	0.13	0.33	15	-0.00	0.07	0.14	103
Common carp	-0.03	0.03	0.09	32		0.00		32		0.00		24		0.00		15	-0.01	0.01	0.03	103
Eastern silvery minnow	-0.03	0.03	0.09	32	-0.10	0.09	0.28	32		0.00		24		0.00		15	-0.02	0.04	0.10	103
Fallfish	0.22	1.16	2.09	32	-3.60	3.66	10.92	32		0.00		24		0.00		15	-0.71	1.50	3.70	103
Golden shiner	-0.03	0.16	0.34	32	-0.03	0.38	0.78	32	-0.06	0.13	0.31	24	-0.25	0.33	0.91	15	0.08	0.24	0.40	103
Largemouth bass	0.24	2.41	4.58	32	0.28	1.03	1.78	32	0.64	1.46	2.27	24	0.03	1.80	3.57	15	0.92	1.67	2.42	103
Margined madtom		0.00		32	-0.06	0.06	0.19	32		0.00		24		0.00		15	-0.02	0.02	0.06	103
Pumpkinseed	-0.01	0.19	0.38	32	0.12	0.44	0.75	32	-0.05	0.38	0.80	24	-0.07	0.33	0.73	15	0.17	0.33	0.49	103
Redbreast sunfish	0.07	0.75	1.43	32	0.35	0.91	1.46	32	-0.02	0.13	0.27	24	0.13	2.00	3.87	15	0.46	0.83	1.21	103
Rock bass	-0.03	0.03	0.09	32		0.00		32	-0.06	0.13	0.31	24		0.00		15	-0.01	0.04	0.09	103
Smallmouth bass	0.27	0.59	0.92	32	0.55	1.19	1.82	32	0.15	0.63	1.10	24	0.20	0.73	1.27	15	0.55	0.81	1.06	103
Spottail shiner	0.01	1.81	3.62	32	0.76	3.72	6.68	32	-0.04	0.17	0.37	24	-0.08	0.07	0.21	15	0.69	1.77	2.84	103
Tessellated darter	-0.15	0.25	0.65	32	-0.16	0.16	0.47	32	-0.04	0.04	0.13	24	-0.11	0.20	0.51	15	0.01	0.17	0.32	103
White perch		0.00		32	-0.03	0.03	0.09	32	-0.04	0.04	0.13	24		0.00		15	-0.01	0.02	0.05	103
White sucker	0.67	1.47	2.27	32	-0.23	1.75	3.73	32	-0.03	0.38	0.78	24	-0.31	1.00	2.31	15	0.56	1.23	1.91	103
Yellow perch	0.27	1.78	3.29	32	0.07	0.28	0.49	32	-1.19	1.83	4.85	24	-0.25	0.33	0.91	15	0.30	1.12	1.94	103
Total	6.52	12.28	18.04	32	7.23	16.00	24.77	32	3.29	7.75	12.21	24	3.22	8.47	13.71	15	8.41	11.83	15.24	103

Table 5-1. **Sampling design comparison of the Merrimack Station electrofishing surveys conducted in Hooksett Pool of the Merrimack River near Bow, NH during 1967 through 2005. Shading denotes data selected for analysis.**

		YEAR										
		1967	1968	1969	1972	1973	1974	1975	1976	1995	2004	2005
Source		NH F&G	NH F&G	NH F&G	NAI[1]	NAI	NAI	NAI	NAI	NAI	NAI	NAI
Month	Unknown											
	March	x	x	x						x		
	April										x	x
	May									x	x	x
	June				x	x	x			x	x	x
	July							x	x	x	x	x
	August				x	x	x	x	x	x	x	x
	September				x	x	x		x	x	x	x
	October							x		x	x	
	November											x
	December									x	x	x
Station	North	x	x	x								
	South	x	x	x								
	N9-N10 E				x	x	x	x	x	x	x	x
	N9-N10 W				x	x	x	x	x	x	x	x
	N6-N7 E				x	x	x	x	x	x	x	x
	N6-N7 W				x	x	x	x	x	x	x	x
	Zero-S1 E				x	x	x	x	x	x	x	x
	Zero-S1 W				x	x	x	x	x	x	x	x
	S4-S5 E				x	x	x	x	x	x	x	x
	S4-S5 W				x	x	x	x	x	x	x	x
	S17-S18 E				x	x	x	x	x	x	x	x
	S17-S18 W				x	x	x	x	x	x	x	x
Transect Length	1,000				x	x	x	x	x	x	x	x
	Unknown	x	x	x								

[1] Normandeau Associates, Inc.

Table 5-2. Sampling design comparison of the Merrimack Station trapnet surveys conducted in Hooksett Pool of the Merrimack River near Bow, NH during 1967 through 2005. Shading denotes data selected for analysis.

		YEAR											
		1967	1968	1969	1972	1973	1974	1975	1976	1978	1995	2004	2005
Source		NH F&G	NH F&G	NH F&G	NAI[1]	NAI	NAI	NAI	NAI	NAI	NAI	NAI	NAI
Month	March										x		
	April											x	
	May						x	x	x	x	x	x	x
	June	x	x	x		x	x	x	x	x	x	x	x
	July	x	x	x		x	x	x	x	x	x	x	x
	August				x	x	x	x	x	x	x	x	x
	September				x	x	x	x	x	x	x	x	x
	October				x	x	x	x	x	x	x	x	x
	November												
	December										x	x	
Months/Year		2	2	2	3	5	6	6	6	6	8	8	5
Station	North	x	x	x									
	South	x	x	x									
	N10-W				x	x	x	x	x	x	x	x	x
	N10-E				x	x	x	x	x	x	x	x	x
	S2-W				x	x	x	x	x	x[2]	x	x	x
	S3-E				x	x	x	x	x	x	x	x	x
	S4-W									x[2]			
	DS-Canal										x	x	x
	US-Canal										x	x	x
Stations/Month					4	4	4	4	4	4	6	6	6
Mesh	3/4"	x	x	x	x	x	x	x	x	x		x	x
	2"										x		
Field Sample Duration	Unknown	x	x	x									
	48 Hour Set				x	x	x	x	x	x	x	x	x
	24 Hour Set												
Available Data Format	Annual Report	x	x	x	x	x	x	x	x	x	x	x	x
	Field Sheets				Partial[3]	Partial[3]	x	x	x	x	x	x	x
Field Sample Frequency	2/month				x	x	x	x	x	x	x	x	x
	Unknown	x	x	x									

[1] Normandeau Associates, Inc.
[2] Discrepancy between 1978 report and field data sheet as to what Stations were sampled.
[3] Incomplete record from field data sheets.

Table 5-3. **Differences between previously reported values and those from the field data sheets, sorted by species, station and month.**

Annual Report Year	Species	Station	Month	Reported Value	Field Sheet Value
1974	pumpkinseed	N-10E	October	13	0
1974	pumpkinseed	S-2W	October	58	10
1974	white perch	S-2W	September	66	65
1974	pumpkinseed	S-3E	August	8	17
1974	pumpkinseed	S-3E	October	29	18
1974	redbreast sunfish	S-3E	August	10	1
1974	redbreast sunfish	S-3E	September	2	4
1975	golden shiner	N-10E	October	2	1
1975	smallmouth bass	N-10E	June	2	3
1976	white sucker	N-10E	June	2	3
1976	yellow perch	N-10E	May	2	1
1976	brown bullhead	N-10W	May	2	13
1976	pumpkinseed	N-10W	September	6	5
1976	redbreast sunfish	N-10W	August	4	5
1976	redbreast sunfish	N-10W	September	6	5
1976	smallmouth bass	N-10W	July	3	2
1976	smallmouth bass	N-10W	September	3	1
1976	white perch	N-10W	August	3	2
1976	white perch	N-10W	September	7	5
1976	white sucker	N-10W	September	7	5
1976	yellow bullhead	N-10W	May	1	2
1976	yellow perch	N-10W	May	121	120
1976	brown bullhead	S-2W	July	40	145
1976	brown bullhead	S-2W	June	402	603
1976	brown bullhead	S-2W	May	1	2
1976	pumpkinseed	S-2W	July	105	134
1976	redbreast sunfish	S-2W	September	1	0
1976	yellow perch	S-2W	June	20	21
1976	brown bullhead	S-3E	June	12	11
1976	pumpkinseed	S-3E	August	1	0
1976	pumpkinseed	S-3E	September	13	1
1976	redbreast sunfish	S-3E	September	4	1
1976	white perch	S-3E	September	2	1
1976	white sucker	S-3E	September	6	4

Table 6-1. Species captured by electrofishing during August and September of select years in Hooksett Pool.

Species	1972				1973				1974				1976				1995				2004				2005			
	Ambient	Mixing	Thermal	Total	Ambient	Mixing	Thermal	Total	Ambient	Mixing	Thermal	Total	Ambient	Mixing	Thermal	Total	Ambient	Mixing	Thermal	Total	Ambient	Mixing	Thermal	Total	Ambient	Mixing	Thermal	Total
Alewife																					x		x	x		x		x
American Eel	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x					x	x		x	x			x
Black Crappie																						x		x	x			x
Bluegill																	x	x	x	x	x	x	x	x	x	x	x	x
Brown Bullhead	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x												
Chain Pickerel	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x			x	x	x		x	x	x		x	x
Common Shiner										x	x	x					x	x		x	x			x				
Eastern Silvery Minnow																					x			x				
Fallfish	x		x	x	x	x		x	x			x					x			x	x	x		x	x	x		x
Golden Shiner	x	x	x	x	x	x	x	x	x	x		x							x	x	x			x	x		x	x
Largemouth Bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Margined Madtom													x	x	x	x												
Pumpkinseed	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x		x	x	x	x	x
Redbreast Sunfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Rock Bass																	x	x		x	x			x	x			x
Smallmouth Bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Spottail Shiner											x	x					x			x	x			x	x			x
Tesellated Darter									x	x		x	x		x	x	x		x	x	x	x		x				
White Perch						x		x																				
White Sucker	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x			x	x		x	x	x		x	x
Yellow Bullhead	x			x		x	x	x	x		x	x	x	x		x												
Yellow Perch	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x		x	x	x	x	x	x
Total Observed	12	10	11	12	11	12	9	13	13	12	11	15	11	11	11	12	11	7	9	14	17	9	8	18	14	8	9	15

Table 6-2. Total catch (N) and relative abundance (%) of fishes caught by electrofishing in Hooksett pool, Merrimack River (ambient, mixing, and thermal zones combined) during August and September.

Common Name	Year													
	1972		1973		1974		1976		1995		2004		2005	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Alewife	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	80	8.4	0	0.0
American Eel	17	1.4	14	2.0	21	2.2	9	1.2	0	0.0	4	0.4	3	0.7
Black Crappie	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.1	2	0.4
Bluegill	0	0.0	0	0.0	0	0.0	0	0.0	979	39.3	64	6.7	112	25.1
Brown Bullhead	43	3.6	11	1.6	11	1.2	4	0.6	0	0.0	0	0.0	0	0.0
Chain Pickerel	13	1.1	6	0.9	8	0.8	4	0.6	2	0.1	3	0.3	3	0.7
Common Shiner	0	0.0	0	0.0	2	0.2	0	0.0	70	2.8	62	6.5	0	0.0
Eastern Silvery Minnow	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	14	1.5	0	0.0
Fallfish	34	2.8	10	1.4	1	0.1	0	0.0	9	0.4	29	3.0	26	5.8
Golden Shiner	6	0.5	5	0.7	9	1.0	0	0.0	4	0.2	27	2.8	8	1.8
Largemouth Bass	101	8.4	16	2.3	120	12.7	44	6.1	100	4.0	191	20.0	122	27.4
Margined Madtom	0	0.0	0	0.0	0	0.0	4	0.6	0	0.0	0	0.0	0	0.0
Pumpkinseed	705	58.6	383	55.3	427	45.1	341	47.2	10	0.4	14	1.5	18	4.0
Redbreast Sunfish	85	7.1	55	7.9	108	11.4	149	20.6	112	4.5	53	5.5	37	8.3
Rock Bass	0	0.0	0	0.0	0	0.0	0	0.0	5	0.2	4	0.4	1	0.2
Smallmouth Bass	13	1.1	79	11.4	57	6.0	94	13.0	26	1.0	107	11.2	38	8.5
Spottail Shiner	0	0.0	0	0.0	6	0.6	0	0.0	1161	46.7	271	28.3	16	3.6
Tessellated Darter	0	0.0	0	0.0	3	0.3	4	0.6	2	0.1	4	0.4	0	0.0
White Perch	0	0.0	1	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
White Sucker	28	2.3	4	0.6	93	9.8	39	5.4	4	0.2	15	1.6	8	1.8
Yellow Bullhead	2	0.2	2	0.3	4	0.4	9	1.2	0	0.0	0	0.0	0	0.0
Yellow Perch	157	13.0	106	15.3	76	8.0	21	2.9	4	0.2	13	1.4	52	11.7
Total	1204	100.0	692	100.0	946	100.0	722	100.0	2488	100.0	956	100.0	446	100.0

Table 6-3. Mean CPUE (fish per 1,000 ft transect) of selected species caught by electrofishing in Hooksett Pool (all zones combined) during August and September.

Common Name		Year						
		1972	1973	1974	1976	1995	2004	2005
Ambient Zone	American Eel	0.63	1.38	1.00	0.63	0.00	0.75	0.50
	Black Crappie	0.00	0.00	0.00	0.00	0.00	0.00	0.50
	Bluegill	0.00	0.00	0.00	0.00	16.13	5.50	8.75
	Largemouth Bass	8.13	0.88	6.38	4.25	3.13	19.50	17.25
	Pumpkinseed	36.63	16.88	12.88	16.63	0.00	0.75	1.00
	Redbreast Sunfish	1.38	1.63	2.38	5.13	0.88	2.50	3.75
	Rock Bass	0.00	0.00	0.00	0.00	0.25	1.00	0.25
	Smallmouth Bass	0.63	1.75	1.25	6.88	0.75	17.25	2.50
	White Sucker	2.75	0.50	11.13	4.63	0.50	3.50	1.75
	Yellow Perch	13.38	7.00	3.38	1.63	0.25	2.75	10.50
	Total	70.75	32.25	41.75	41.00	176.9	173.5	58.75
Mixing Zone	American Eel	1.00	0.50	1.33	0.50	0.00	0.25	0.25
	Black Crappie	0.00	0.00	0.00	0.00	0.00	0.25	0.00
	Bluegill	0.00	0.00	0.00	0.00	64.67	7.00	14.75
	Largemouth Bass	3.00	1.17	9.17	1.50	5.83	18.75	7.25
	Pumpkinseed	49.17	33.67	40.17	30.17	1.00	2.75	2.75
	Redbreast Sunfish	9.83	4.67	11.83	14.67	12.00	5.50	3.50
	Rock Bass	0.00	0.00	0.00	0.00	0.50	0.00	0.00
	Smallmouth Bass	1.00	7.83	7.67	5.67	2.50	9.25	5.00
	White Sucker	0.33	0.00	0.50	0.17	0.00	0.00	0.00
	Yellow Perch	3.00	5.00	4.83	0.33	0.00	0.00	1.50
	Total	70.83	54.33	76.83	54.33	86.67	44.75	35.75
Thermal Zone	American Eel	1.50	0.00	1.25	0.25	0.00	0.00	0.00
	Black Crappie	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Bluegill	0.00	0.00	0.00	0.00	115.5	7.00	9.00
	Largemouth Bass	4.50	0.50	3.50	0.25	10.00	19.00	12.00
	Pumpkinseed	29.25	11.50	20.75	6.75	1.00	0.00	1.50
	Redbreast Sunfish	3.75	3.50	4.50	5.00	8.25	10.50	4.00
	Rock Bass	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Smallmouth Bass	0.50	4.50	0.25	1.25	1.25	0.50	4.00
	White Sucker	1.00	0.00	0.25	0.25	0.00	0.50	0.50
	Yellow Perch	8.00	5.00	5.00	1.50	0.50	1.00	2.00
	Total	53.25	27.00	37.75	17.00	138.3	41.50	36.00
Hooksett Pool	American Eel	0.94	0.78	1.17	0.50	0.00	0.40	0.30
	Black Crappie	0.00	0.00	0.00	0.00	0.00	0.10	0.20
	Bluegill	0.00	0.00	0.00	0.00	54.39	6.40	11.20
	Largemouth Bass	5.61	0.89	6.67	2.44	5.56	19.10	12.20
	Pumpkinseed	39.17	21.28	23.72	18.94	0.56	1.40	1.80
	Redbreast Sunfish	4.72	3.06	6.00	8.28	6.22	5.30	3.70
	Rock Bass	0.00	0.00	0.00	0.00	0.28	0.40	0.10
	Smallmouth Bass	0.72	4.39	3.17	5.22	1.44	10.70	3.80
	White Sucker	1.56	0.22	5.17	2.17	0.22	1.50	0.80
	Yellow Perch	8.72	5.89	4.22	1.17	0.22	1.30	5.20
	Total	66.89	38.44	52.56	40.11	138.2	95.60	44.60

Table 6-4. Taxa richness (number) of fishes captured by electrofishing during August and September of all years in the three zones of Hooksett pool, Merrimack River near Bow, NH.

Year	Zone			
	Ambient	Mixing	Thermal	Hooksett Pool Total
1972	12	10	11	12
1973	11	12	9	13
1974	13	12	11	15
1976	11	11	11	12
1995	11	7	9	14
2004	17	9	8	18
2005	14	8	9	14

Table 6-5. Abundance ranking based on mean CPUE (fish per 1,000 ft transect) of fish species caught by electrofishing during August and September of all years in Hooksett pool.

Common Name	Year						
	1972	1973	1974	1976	1995	2004	2005
Alewife						4.0	
American Eel	8.0	5.0	9.0	8.0		17.0	13.0
Black Crappie						17.0	10.5
Bluegill					2.0	8.0	2.0
Brown Bullhead	6.0	7.0	12.0	10.5			
Chain Pickerel	11.0	11.0	10.5	10.5	13.0	17.0	13.0
Common Shiner			14.0		3.0	2.0	
Eastern Silvery Minnow						5.0	
Fallfish	4.0	8.0	14.0		6.0	10.0	7.0
Golden Shiner	9.0	10.0	8.0		7.0	7.0	8.5
Largemouth Bass	3.0	6.0	3.0	5.0	5.0	3.0	1.0
Margined Madtom				10.5			
Pumpkinseed	1.0	1.0	1.0	1.0	9.5	13.0	10.5
Redbreast Sunfish	5.0	4.0	4.0	2.0	4.0	9.0	5.0
Rock Bass					9.5	14.5	13.0
Smallmouth Bass	10.0	3.0	7.0	3.0	8.0	6.0	6.0
Spottail Shiner			5.0		1.0	1.0	4.0
Tessellated Darter			14.0	10.5	13.0	14.5	
White Perch		12.5					
White Sucker	7.0	9.0	2.0	4.0	11.0	11.0	8.5
Yellow Bullhead	12.0	12.5	10.5	6.0			
Yellow Perch	2.0	2.0	6.0	7.0	13.0	12.0	3.0

Table 6-6. Abundance ranking based on mean CPUE (fish per 1,000 ft transect) of fish species caught by electrofishing during August and September of all years in the ambient zone of Hooksett pool, Merrimack River.

Common Name	Year						
	1972	1973	1974	1976	1995	2004	2005
Alewife						4.0	
American Eel	6.5	5.0	9.0	8.0		16.0	13.0
Black Crappie							9.5
Bluegill					2.0	9.0	3.0
Brown Bullhead	6.5	7.5	11.0				
Chain Pickerel	10.0	10.5	8.0	10.0		16.0	13.0
Common Shiner					3.0	2.0	
Eastern Silvery Minnow						6.0	
Fallfish	4.0	7.5	12.5		4.0	8.0	4.0
Golden Shiner	11.5	10.5	3.0			7.0	9.5
Largemouth Bass	3.0	6.0	4.0	5.0	5.0	3.0	1.0
Margined Madtom				10.0			
Pumpkinseed	1.0	1.0	1.0	1.0		16.0	11.0
Redbreast Sunfish	9.0	3.0	6.0	4.0	7.0	12.0	6.0
Rock Bass					10.0	14.0	13.0
Smallmouth Bass	8.0	4.0	10.0	2.0	6.0	5.0	8.0
Spottail Shiner					1.0	1.0	5.0
Tessellated Darter			12.5	10.0	10.0	13.0	
White Sucker	5.0	9.0	2.0	3.0	8.0	10.0	7.0
Yellow Bullhead	11.5		7.0	6.0			
Yellow Perch	2.0	2.0	5.0	7.0	10.0	11.0	2.0

2nd most abundant?

Table 6-7. Abundance ranking based on mean CPUE (fish per 1,000 ft transect) of fish species caught by electrofishing during August and September of all years in the mixing zone of Hooksett pool, Merrimack River.

Common Name	Year						
	1972	1973	1974	1976	1995	2004	2005
American Eel	7.5	5.0	6.0	6.0		8.0	7.5
Black Crappie						8.0	
Bluegill					1.0	2.0	1.0
Brown Bullhead	3.0	10.0	8.0	9.0			
Chain Pickerel	9.5	7.0	10.5	9.0			
Common Shiner			10.5		7.0		
Fallfish		10.0				6.0	7.5
Golden Shiner	6.0	10.0	10.5				
Largemouth Bass	4.5	6.0	3.0	4.0	3.0	1.0	2.0
Margined Madtom				9.0			
Pumpkinseed	1.0	1.0	1.0	1.0	6.0	5.0	5.0
Redbreast Sunfish	2.0	4.0	2.0	2.0	2.0	4.0	4.0
Rock Bass					4.5		
Smallmouth Bass	7.5	2.0	4.0	3.0	4.5	3.0	3.0
Tessellated Darter			10.5			8.0	
White Perch		10.0					
White Sucker	9.5		7.0	9.0			
Yellow Bullhead		10.0		5.0			
Yellow Perch	4.5	3.0	5.0	9.0			6.0

Table 6-8. Abundance ranking based on mean CPUE (fish per 1,000 ft transect) of fish species caught by electrofishing during August and September of all years in the thermally-influenced zone of Hooksett pool, Merrimack River.

Common Name	Year						
	1972	1973	1974	1976	1995	2004	2005
Alewife						4.0	
American Eel	6.5		6.0	8.0			
Bluegill					1.0	3.0	2.0
Brown Bullhead	4.0	6.0	9.0	8.0			
Chain Pickerel	8.5	8.5		8.0	8.0	7.0	8.5
Common Shiner			9.0				
Fallfish	10.5						
Golden Shiner	6.5	6.0			4.0		4.5
Largemouth Bass	2.0	6.0	4.0	8.0	3.0	2.0	1.0
Margined Madtom				8.0			
Pumpkinseed	1.0	1.0	1.0	1.0	6.0		7.0
Redbreast Sunfish	5.0	4.0	5.0	2.0	2.0	1.0	4.5
Smallmouth Bass	10.5	2.0	9.0	4.0	5.0	7.0	4.5
Spottail Shiner			3.0				
Tessellated Darter				8.0	8.0		
White Sucker	8.5		9.0	8.0		7.0	8.5
Yellow Bullhead		8.5	9.0				
Yellow Perch	3.0	3.0	2.0	3.0	8.0	5.0	4.5

Table 6-9. Decadal (1970s, 1995, and 2000s) comparison of the Bray-Curtis Percent Similarity Index for the fish communities sampled by electrofishing during August and September of all years with consistent sampling effort within the three zones in Hooksett Pool of the Merrimack River near Bow, NH.

Fish Communities Compared	Bray-Curtis Percent Similarity			
	Ambient Zone	Mixing Zone	Thermal Zone	Hooksett Pool
1970s vs. 1995	6	23	11	14
1970s vs.2000s	28	34	31	33
1995 vs. 2000s	39	39	33	38

Table 6-10. Regression statistics for total weight (g) vs. length (mm tl) of selected species from the Hooksett Pool of Merrimack River during 1995, 2004, and 2005. Shading denotes data selected for analysis.

Species	Year	N	Log_{10} Slope	Log_{10} Intercept	R^2	ANCOVA test for differences in length vs. weight equations[1]					
						Slope			Intercept		
						1995	2004	2005	1995	2004	2005
Smallmouth bass	1995	82	2.753	-4.494	0.91						
	2004	144	2.909	-4.68	0.93	NS			NS		
	2005	65	3.276	-5.523	0.95	***	***		***	***	
Largemouth bass	1995	154	3.145	-5.289	0.86						
	2004	257	3.053	-5.006	0.96	NS			NS		
	2005	137	3.046	-4.965	0.97	NS	NS		NS	NS	
Bluegill	1995	643	2.429	-3.741	0.87						
	2004	107	3.291	-5.371	0.98	****			****		
	2005	131	3.059	-4.818	0.97	****	**		****	**	
Yellow perch	1995	5	3.077	-5.102	0.98						
	2004	71	2.891	-4.698	0.95	NS			NS		
	2005	69	2.979	-4.921	0.91	NS	NS		NS	NS	

[1]Test results symbols for probability (p) levels of significance:
* = $p < 0.05$
** = $p < 0.01$
*** = $p < 0.001$
**** = $p < 0.0001$
NS = not significant, $p > 0.05$

Table 6-11. Habitat, trophic guilds, and tolerance classifications[1,2,3] for Merrimack River fish species present in the August/September electrofishing samples from Hooksett Pool during selected years.

Fish Species	Habitat Guild	Trophic Guild	Trophic Exceptions	Tolerance	Tolerance Exceptions
Alewife	Lentic	Filterfeeder	Invertivore	Intermediate	
Fallfish	Lotic	Generalist		Intermediate	
Creek chub	Lentic and Lotic	Generalist	Insectivore	Intermediate	
Eastern silvery minnow	Lentic	Herbivore	Omnivore	Intermediate	Intolerant
Bluegill	Lentic	Insectivore	Generalist	Intermediate	Tolerant
Brown bullhead	Lentic	Insectivore	Generalist	Tolerant	Intermediate
Common shiner	Lentic and Lotic	Insectivore	Generalist	Intermediate	
Emerald shiner	Lentic	Insectivore		Intermediate	
Mangined madtom	Lentic	Insectivore		Intermediate	
Pumpkinseed	Lentic	Insectivore	Piscivore,Generalist	Intermediate	
Redbreast sunfish	Lotic	Insectivore	Generalist	Intermediate	
Spottail shiner	Lentic and Lotic	Insectivore	Generalist	Intermediate	Intolerant
Tessellated darter	Lentic	Insectivore		Intermediate	
Yellow bullhead	Lentic and Lotic	Insectivore	Omnivore,Generalist	Tolerant	Intermediate
Yellow perch	Lentic	Insectivore	Piscivore, Generalist	Intermediate	
Common carp	Lentic and Lotic	Omnivore	Generalist	Tolerant	
Golden shiner	Lentic	Omnivore	Insectivore,Generalist	Tolerant	
White sucker	Lentic and Lotic	Omnivore	Insectivore, Generalist	Tolerant	
American eel	Lentic	Piscivore	Generalist	Intermediate	Tolerant
Atlantic Salmon	Lentic	Piscivore		Intermediate	Intolerant
Brown trout	Lentic	Piscivore	Insectivore	Intermediate	Intolerant
Black crappie	Lentic	Piscivore	Insectivore,Invertivore	Intermediate	
Chain pickerel	Lentic	Piscivore		Intermediate	
Largemouth bass	Lentic	Piscivore	Insectivore	Intermediate	Tolerant
Rock bass	Lotic	Piscivore	Insectivore	Intermediate	Intolerant
Smallmouth bass	Lotic	Piscivore	Insectivore	Intermediate	Intolerant
White perch	Lentic	Piscivore	Insectivore	Intermediate	

[1] Source: Scarola, J.F. 1987. Freshwater Fishes of New Hampshire. NH Fish and Game Department. 132 p.
[2] Source: Appendix C *In* Barbour et al. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers. Second Edition. EPA 841-B-99-002.
[3] Hybrid classifications were made when there was disagreement in one or more of the seven references regarding the trophic guild or tolerance classification of a species; all alternatives are shown.

Table 7-1. **Total catch (N) and relative abundance (%) of fishes caught by trapnet in Hooksett pool, Merrimack River (ambient and mixing zones combined) between 1970s and 2000s.**

Common Name	Period											
	1970s						2000s					
	Ambient Zone		Mixing Zone		Hooksett Pool		Ambient Zone		Mixing Zone		Hooksett Pool	
	N	%	N	%	N	%	N	%	N	%	N	%
American Eel	5	0.2	8	0.2	13	0.2	4	1.5	3	1.2	7	1.3
Black Crappie							3	1.1	8	3.1	11	2.1
Bluegill							6	2.3	32	12.4	38	7.3
Brook Trout	1	0.0			1	0.0						
Brown Bullhead	913	37.6	1317	34.9	2230	36.0	2	0.8	2	0.8	4	0.8
Carp And Minnow Family			8	0.2	8	0.1						
Chain Pickerel	18	0.7	9	0.2	27	0.4	1	0.4			1	0.2
Common Shiner			1	0.0	1	0.0						
Eastern Silvery Minnow							6	2.3			6	1.2
Fallfish	11	0.5	4	0.1	15	0.2	4	1.5			4	0.8
Golden Shiner	9	0.4	48	1.3	57	0.9						
Largemouth Bass	17	0.7	3	0.1	20	0.3						
Margined Madtom	8	0.3			8	0.1	1	0.4	2	0.8	3	0.6
Pumpkinseed	234	9.6	974	25.8	1208	19.5			2	0.8	2	0.4
Redbreast Sunfish	110	4.5	121	3.2	231	3.7	10	3.8	31	12.0	41	7.9
Rock Bass							35	13.3	23	8.9	58	11.1
Smallmouth Bass	109	4.5	210	5.6	319	5.1	77	29.3	146	56.6	223	42.8
Spottail Shiner							96	36.5			96	18.4
Tadpole Madtom			1	0.0	1	0.0						
Tessellated Darter							1	0.4			1	0.2
Walleye	1	0.0			1	0.0						
White Perch	73	3.0	163	4.3	236	3.8						
White Sucker	508	20.9	620	16.4	1128	18.2	7	2.7	4	1.6	11	2.1
Yellow Bullhead	47	1.9	22	0.6	69	1.1	2	0.8	2	0.8	4	0.8
Yellow Perch	365	15.0	263	7.0	628	10.1	8	3.0	3	1.2	11	2.1
Total	2429	100.0	3772	100.0	6201	100.0	263	100.0	258	100.0	521	100.0

Table 7-2. **The mean and 95% confidence limits of CPUE for fishes caught by trapnet in Hooksett pool, Merrimack River (ambient and mixing zones, and zones combined) between 1970s and 2000s.** Does this include winter canal samples?

Common Name	1970s									2000s								
	Ambient Zone (N=53)			Hooksett Pool (N=104)			Mixing Zone (N=51)			Ambient Zone (N=40)			Hooksett Pool (N=81)			Mixing Zone (N=41)		
	95% LCL	CPUE	95% UCL	95% LCL	CPUE	95% UCL	95% LCL	CPUE	95% UCL	95% LCL	CPUE	95% UCL	95% LCL	CPUE	95% UCL	95% LCL	CPUE	95% UCL
American Eel	0.0	0.1	0.2	0.1	0.1	0.2	0.0	0.2	0.3	-0.1	0.1	0.3	-0.0	0.1	0.2	-0.0	0.1	0.2
Black Crappie		0.0			0.0			0.0		-0.1	0.1	0.2	0.0	0.1	0.3	0.0	0.2	0.4
Bluegill		0.0			0.0			0.0		0.0	0.1	0.3	0.3	0.5	0.7	0.4	0.8	1.2
Brook Trout	-0.0	0.0	0.1	-0.0	0.0	0.0		0.0			0.0			0.0			0.0	
Brown Bullhead	6.1	17.2	28.3	10.9	21.4	32.0	7.3	25.8	44.4	-0.0	0.0	0.1	0.0	0.0	0.1	-0.0	0.0	0.1
Carp And Minnow Family		0.0		-0.1	0.1	0.2	-0.2	0.2	0.5		0.0			0.0			0.0	
Chain Pickerel	0.1	0.3	0.5	0.1	0.3	0.4	0.0	0.2	0.3	-0.0	0.0	0.1	-0.0	0.0	0.0		0.0	
Common Shiner		0.0		-0.0	0.0	0.0	-0.0	0.0	0.1		0.0			0.0			0.0	
Eastern Silvery Minnow		0.0			0.0			0.0		-0.0	0.2	0.3	-0.0	0.1	0.2		0.0	
Fallfish	0.1	0.2	0.4	0.1	0.1	0.2	0.0	0.1	0.2	-0.0	0.1	0.2	-0.0	0.0	0.1		0.0	
Golden Shiner	-0.1	0.2	0.4	0.2	0.5	0.9	0.3	0.9	1.5		0.0			0.0			0.0	
Largemouth Bass	0.1	0.3	0.5	0.1	0.2	0.3	-0.0	0.1	0.1		0.0			0.0			0.0	
Margined Madtom	-0.0	0.2	0.3	-0.0	0.1	0.2		0.0		-0.0	0.0	0.1	-0.0	0.0	0.1	-0.1	0.1	0.2
Pumpkinseed	2.8	4.4	6.1	8.2	11.6	15.1	12.8	19.1	25.4		0.0		-0.0	0.0	0.1	-0.0	0.0	0.1
Redbreast Sunfish	0.9	2.1	3.3	1.4	2.2	3.0	1.2	2.4	3.5	0.1	0.2	0.4	0.1	0.5	0.9	0.0	0.8	1.5
Rock Bass		0.0			0.0			0.0		0.4	0.9	1.4	0.4	0.7	1.0	0.3	0.6	0.9
Smallmouth Bass	1.2	2.1	2.9	2.3	3.1	3.8	2.9	4.1	5.4	1.1	1.9	2.8	1.9	2.8	3.7	2.1	3.6	5.1
Spottail Shiner		0.0			0.0			0.0		-0.8	2.4	5.7	-0.4	1.2	2.8		0.0	
Tadpole Madtom		0.0		-0.0	0.0	0.0	-0.0	0.0	0.1		0.0			0.0			0.0	
Tessellated Darter		0.0			0.0			0.0		-0.0	0.0	0.1	-0.0	0.0	0.0		0.0	
Walleye	-0.0	0.0	0.1	-0.0	0.0	0.0		0.0			0.0			0.0			0.0	
White Perch	0.8	1.4	1.9	1.2	2.3	3.4	1.0	3.2	5.4		0.0			0.0			0.0	
White Sucker	5.5	9.6	13.6	6.9	10.8	14.8	5.2	12.2	19.2	0.0	0.2	0.3	0.0	0.1	0.2	-0.1	0.1	0.3
Yellow Bullhead	0.4	0.9	1.4	0.4	0.7	1.0	0.1	0.4	0.8	-0.0	0.1	0.1	0.0	0.1	0.1	-0.0	0.1	0.1
Yellow Perch	3.3	6.9	10.5	4.0	6.0	8.1	3.2	5.2	7.1	-0.0	0.2	0.4	0.0	0.1	0.3	-0.0	0.1	0.2
Total	21.2	45.8	70.5	35.6	59.6	83.7	33.8	74.0	114	0.5	6.6	12.8	2.3	6.5	10.7	2.5	6.4	10.2

C

45.8 / 74 = x / 100

x = 62 (61.8%?)

1 species w/ a CPUE > 1 fish

Table 7-3. Taxa richness (number) of fish species of fishes caught by trapnet in Hooksett pool, Merrimack River, during the 1970s and 2000s.

Zone	Period	
	1970s	2000s
Ambient Zone	16	16
Mixing Zone	16	12
Hooksett Pool	19	17

Table 7-4. Abundance ranking based on mean CPUE (fish per 48 h) of fishes caught by trapnet during May through September of 1970s (1974 to 1976) and 2000s (2004 and 2005) in Hooksett pool, Merrimack River.

Common Name	Ambient		Mixing		Hooksett Pool	
	1970s	2000s	1970s	2000s	1970s	2000s
American Eel	14.0	9.0	11.5	8.0	13.0	9.0
Black Crappie		11.0		5.0		7.0
Bluegill		8.0		2.0		5.0
Brook Trout	15.5				17.5	
Brown Bullhead	1.0	13.0	1.0	12.0	1.0	13.0
Carp And Minnow Family			11.5		14.5	
Chain Pickerel	9.0	14.0	10.0		10.0	16.0
Common Shiner			15.5		17.5	
Eastern Silvery Minnow		7.0				10.0
Fallfish	11.0	10.0	13.0		12.0	12.0
Golden Shiner	12.0		8.0		9.0	
Largemouth Bass	10.0		14.0		11.0	
Margined Madtom	13.0	15.0		9.0	14.5	14.0
Pumpkinseed	4.0		2.0	11.0	2.0	15.0
Redbreast Sunfish	5.0	4.0	7.0	3.0	7.0	4.0
Rock Bass		3.0		4.0		3.0
Smallmouth Bass	6.0	2.0	5.0	1.0	5.0	1.0
Spottail Shiner		1.0				2.0
Tadpole Madtom			15.5		17.5	
Tessellated Darter		16.0				17.0
Walleye	15.5				17.5	
White Perch	7.0		6.0		6.0	
White Sucker	2.0	6.0	3.0	6.0	3.0	8.0
Yellow Bullhead	8.0	12.0	9.0	10.0	8.0	11.0
Yellow Perch	3.0	5.0	4.0	7.0	4.0	6.0

Table 7-5. **Decadal (1970s and 2000s) comparison of the Bray-Curtis Percent Similarity Index for the fish communities sampled by trapnets during May through September of all years with consistent sampling effort within the three zones in Hooksett Pool of the Merrimack River near Bow, NH.**

Fish Communities Compared	Bray-Curtis Similarity		
	Ambient Zone	Mixing Zone	Hooksett Pool
1970s vs.2000s	11.1	12.6	12.1

APPENDIX

Appendix Table 1. Total 2004 catch for 3/4-inch mesh trapnets sorted by month, station, site and date.

Month	Station	Site	Set Date	Common Name	Count	Effort (h)	CPUE (fish per 48 h)
April	1	E	04/19/04	American Eel	1	46.87	1.02
April	1	E	04/19/04	Fallfish	2	46.87	2.05
April	1	E	04/19/04	Rock Bass	1	46.87	1.02
April	1	E	04/19/04	Spottail Shiner	5	46.87	5.12
April	1	E	04/19/04	White Sucker	14	46.87	14.34
April	1	E	04/19/04	Yellow Perch	1	46.87	1.02
April	1	E	04/21/04	Bluegill	1	46.95	1.02
April	1	E	04/21/04	Golden Shiner	2	46.95	2.04
April	1	E	04/21/04	Rock Bass	1	46.95	1.02
April	1	E	04/21/04	White Sucker	7	46.95	7.16
April	1	E	04/21/04	Yellow Perch	1	46.95	1.02
April	1	W	04/19/04	Pumpkinseed	1	46.28	1.04
April	1	W	04/19/04	Spottail Shiner	1	46.28	1.04
April	1	W	04/21/04	Spottail Shiner	1	46.57	1.03
April	2	E	04/19/04	Yellow Perch	1	45.17	1.06
April	2	E	04/21/04	Bluegill	1	47.05	1.02
April	2	E	04/21/04	Rock Bass	2	47.05	2.04
April	3	W	04/19/04	Rock Bass	1	45.15	1.06
April	3	W	04/21/04	Rock Bass	1	46.52	1.03
April	4		04/19/04	Bluegill	1	48.32	0.99
April	4		04/19/04	Redbreast Sunfish	1	48.32	0.99
April	4		04/21/04	No Fish Caught	0	46.90	0.00
April	5		04/19/04	Bluegill	1	48.12	1.00
April	5		04/19/04	Rock Bass	2	48.12	2.00
April	5		04/19/04	Smallmouth Bass	4	48.12	3.99
April	5		04/21/04	Bluegill	4	46.98	4.09
April	5		04/21/04	Rock Bass	1	46.98	1.02
May	1	E	05/17/04	Rock Bass	2	46.62	2.06
May	1	E	05/17/04	White Sucker	1	46.62	1.03
May	1	E	05/17/04	Yellow Perch	2	46.62	2.06
May	1	E	05/19/04	American Eel	3	47.58	3.03
May	1	E	05/19/04	Redbreast Sunfish	2	47.58	2.02
May	1	E	05/19/04	Rock Bass	5	47.58	5.04
May	1	E	05/19/04	Smallmouth Bass	5	47.58	5.04
May	1	E	05/19/04	Yellow Bullhead	1	47.58	1.01
May	1	E	05/19/04	Yellow Perch	3	47.58	3.03
May	1	W	05/17/04	Brown Bullhead	1	46.60	1.03
May	1	W	05/17/04	Redbreast Sunfish	1	46.60	1.03
May	1	W	05/17/04	Rock Bass	6	46.60	6.18
May	1	W	05/17/04	Smallmouth Bass	4	46.60	4.12
May	1	W	05/17/04	Yellow Perch	2	46.60	2.06
May	1	W	05/19/04	American Eel	1	47.78	1.00
May	1	W	05/19/04	Redbreast Sunfish	1	47.78	1.00
May	1	W	05/19/04	Smallmouth Bass	1	47.78	1.00
May	2	E	05/17/04	American Eel	2	45.95	2.09
May	2	E	05/17/04	Black Crappie	2	45.95	2.09
May	2	E	05/17/04	Bluegill	2	45.95	2.09

(continued)

Appendix Table 1. (Continued)

Month	Station	Site	Set Date	Common Name	Count	Effort (h)	CPUE (fish per 48 h)
May	2	E	05/17/04	Brown Bullhead	1	45.95	1.04
May	2	E	05/17/04	Rock Bass	3	45.95	3.13
May	2	E	05/17/04	Smallmouth Bass	4	45.95	4.18
May	2	E	05/17/04	White Sucker	3	45.95	3.13
May	2	E	05/17/04	Yellow Bullhead	1	45.95	1.04
May	2	E	05/19/04	Bluegill	1	48.32	0.99
May	2	E	05/19/04	Redbreast Sunfish	1	48.32	0.99
May	2	E	05/19/04	Rock Bass	3	48.32	2.98
May	2	E	05/19/04	Smallmouth Bass	1	48.32	0.99
May	3	W	05/17/04	Redbreast Sunfish	1	46.67	1.03
May	3	W	05/17/04	Rock Bass	2	46.67	2.06
May	3	W	05/17/04	Smallmouth Bass	3	46.67	3.09
May	3	W	05/19/04	Bluegill	1	47.65	1.01
May	3	W	05/19/04	Redbreast Sunfish	5	47.65	5.04
May	3	W	05/19/04	Smallmouth Bass	3	47.65	3.02
May	4		05/17/04	Bluegill	2	45.92	2.09
May	4		05/19/04	Black Crappie	2	48.13	1.99
May	4		05/19/04	Bluegill	1	48.13	1.00
May	4		05/19/04	Brown Bullhead	1	48.13	1.00
May	5		05/17/04	Redbreast Sunfish	1	46.42	1.03
May	5		05/19/04	Bluegill	3	47.97	3.00
May	5		05/19/04	Redbreast Sunfish	3	47.97	3.00
May	5		05/19/04	Smallmouth Bass	1	47.97	1.00
June	1	E	06/21/04	Rock Bass	3	46.92	3.07
June	1	E	06/21/04	Smallmouth Bass	3	46.92	3.07
June	1	E	06/23/04	Bluegill	1	49.65	0.97
June	1	E	06/23/04	Fallfish	1	49.65	0.97
June	1	E	06/23/04	Rock Bass	5	49.65	4.83
June	1	E	06/23/04	Smallmouth Bass	1	49.65	0.97
June	1	W	06/21/04	Rock Bass	1	46.90	1.02
June	1	W	06/21/04	Smallmouth Bass	3	46.90	3.07
June	1	W	06/23/04	Brown Bullhead	1	49.80	0.96
June	1	W	06/23/04	Redbreast Sunfish	1	49.80	0.96
June	1	W	06/23/04	Rock Bass	2	49.80	1.93
June	1	W	06/23/04	Smallmouth Bass	2	49.80	1.93
June	2	E	06/21/04	Black Crappie	3	46.78	3.08
June	2	E	06/21/04	Smallmouth Bass	3	46.78	3.08
June	2	E	06/23/04	Smallmouth Bass	23	50.25	21.97
June	2	E	06/23/04	White Sucker	1	50.25	0.96
June	3	W	06/21/04	Bluegill	5	46.55	5.16
June	3	W	06/21/04	Redbreast Sunfish	1	46.55	1.03
June	3	W	06/21/04	Rock Bass	3	46.55	3.09
June	3	W	06/21/04	Smallmouth Bass	5	46.55	5.16
June	3	W	06/21/04	Yellow Bullhead	1	46.55	1.03
June	3	W	06/23/04	Bluegill	4	50.33	3.81
June	3	W	06/23/04	Rock Bass	1	50.33	0.95
June	3	W	06/23/04	Smallmouth Bass	1	50.33	0.95
June	4		06/21/04	Bluegill	1	47.02	1.02

(continued)

Appendix Table 1. (Continued)

Month	Station	Site	Set Date	Common Name	Count	Effort (h)	CPUE (fish per 48 h)
June	4		06/21/04	Smallmouth Bass	4	47.02	4.08
June	4		06/23/04	No Fish Caught	0	50.17	0.00
June	5		06/21/04	Black Crappie	1	47.05	1.02
June	5		06/21/04	Largemouth Bass	1	47.05	1.02
June	5		06/21/04	Smallmouth Bass	2	47.05	2.04
June	5		06/23/04	Smallmouth Bass	5	50.20	4.78
July	1	E	07/19/04	No Fish Caught	0	46.45	0.00
July	1	E	07/21/04	White Sucker	1	48.32	0.99
July	1	W	07/19/04	Redbreast Sunfish	1	46.38	1.03
July	1	W	07/19/04	Smallmouth Bass	1	46.38	1.03
July	1	W	07/19/04	Spottail Shiner	1	46.38	1.03
July	1	W	07/21/04	Bluegill	1	48.08	1.00
July	1	W	07/21/04	Margined Madtom	1	48.08	1.00
July	1	W	07/21/04	Redbreast Sunfish	1	48.08	1.00
July	1	W	07/21/04	Smallmouth Bass	5	48.08	4.99
July	2	E	07/19/04	Rock Bass	1	46.25	1.04
July	2	E	07/19/04	Smallmouth Bass	8	46.25	8.30
July	2	E	07/21/04	Bluegill	1	48.15	1.00
July	2	E	07/21/04	Smallmouth Bass	7	48.15	6.98
July	3	W	07/19/04	Bluegill	1	46.17	1.04
July	3	W	07/19/04	Smallmouth Bass	2	46.17	2.08
July	3	W	07/19/04	Yellow Perch	1	46.17	1.04
July	3	W	07/21/04	Black Crappie	1	48.10	1.00
July	3	W	07/21/04	Bluegill	1	48.10	1.00
July	3	W	07/21/04	Rock Bass	1	48.10	1.00
July	3	W	07/21/04	Smallmouth Bass	6	48.10	5.99
July	4		07/19/04	Largemouth Bass	3	46.35	3.11
July	4		07/19/04	Pumpkinseed	2	46.35	2.07
July	4		07/19/04	Smallmouth Bass	1	46.35	1.04
July	4		07/21/04	Bluegill	2	48.88	1.96
July	5		07/19/04	Redbreast Sunfish	2	46.22	2.08
July	5		07/19/04	Smallmouth Bass	2	46.22	2.08
July	5		07/21/04	Redbreast Sunfish	2	48.90	1.96
July	5		07/21/04	Smallmouth Bass	11	48.90	10.80
August	1	E	08/23/04	Black Crappie	3	46.40	3.10
August	1	E	08/23/04	Rock Bass	2	46.40	2.07
August	1	E	08/23/04	Smallmouth Bass	13	46.40	13.45
August	1	E	08/25/04	Bluegill	1	48.50	0.99
August	1	E	08/25/04	Rock Bass	2	48.50	1.98
August	1	E	08/25/04	Smallmouth Bass	6	48.50	5.94
August	1	W	08/23/04	Rock Bass	1	46.80	1.03
August	1	W	08/23/04	Smallmouth Bass	2	46.80	2.05
August	1	W	08/25/04	Smallmouth Bass	2	48.17	1.99
August	2	E	08/23/04	Smallmouth Bass	6	46.77	6.16
August	2	E	08/25/04	American Eel	1	50.47	0.95
August	2	E	08/25/04	Black Crappie	1	50.47	0.95
August	2	E	08/25/04	Bluegill	1	50.47	0.95
August	2	E	08/25/04	Brown Bullhead	1	50.47	0.95

(continued)

Appendix Table 1. (Continued)

Month	Station	Site	Set Date	Common Name	Count	Effort (h)	CPUE (fish per 48 h)
August	2	E	08/25/04	Rock Bass	1	50.47	0.95
August	2	E	08/25/04	Smallmouth Bass	3	50.47	2.85
August	3	W	08/23/04	Rock Bass	2	46.82	2.05
August	3	W	08/23/04	Smallmouth Bass	3	46.82	3.08
August	3	W	08/25/04	Bluegill	2	50.33	1.91
August	3	W	08/25/04	Smallmouth Bass	3	50.33	2.86
August	4		08/23/04	No Fish Caught	0	46.58	0.00
August	4		08/25/04	Smallmouth Bass	1	48.22	1.00
August	5		08/23/04	Bluegill	2	46.45	2.07
August	5		08/23/04	Largemouth Bass	1	46.45	1.03
August	5		08/23/04	Rock Bass	1	46.45	1.03
August	5		08/23/04	Smallmouth Bass	6	46.45	6.20
August	5		08/25/04	Bluegill	1	48.18	1.00
August	5		08/25/04	Redbreast Sunfish	1	48.18	1.00
August	5		08/25/04	Smallmouth Bass	10	48.18	9.96
September	1	E	09/20/04	Eastern Silvery Minnow	3	47.88	3.01
September	1	E	09/20/04	Smallmouth Bass	3	47.88	3.01
September	1	E	09/20/04	Spottail Shiner	36	47.88	36.09
September	1	E	09/20/04	Yellow Bullhead	1	47.88	1.00
September	1	E	09/22/04	Fallfish	1	47.33	1.01
September	1	E	09/22/04	Smallmouth Bass	1	47.33	1.01
September	1	E	09/22/04	Spottail Shiner	3	47.33	3.04
September	1	E	09/22/04	White Sucker	1	47.33	1.01
September	1	W	09/20/04	Smallmouth Bass	2	48.28	1.99
September	1	W	09/22/04	Chain Pickerel	1	47.17	1.02
September	1	W	09/22/04	Eastern Silvery Minnow	1	47.17	1.02
September	1	W	09/22/04	Fallfish	2	47.17	2.04
September	1	W	09/22/04	Smallmouth Bass	6	47.17	6.11
September	1	W	09/22/04	Spottail Shiner	53	47.17	53.94
September	1	W	09/22/04	Yellow Perch	1	47.17	1.02
September	2	E	09/20/04	Bluegill	1	48.10	1.00
September	2	E	09/20/04	Pumpkinseed	1	48.10	1.00
September	2	E	09/22/04	Rock Bass	1	47.15	1.02
September	2	E	09/22/04	Smallmouth Bass	6	47.15	6.11
September	3	W	09/20/04	Bluegill	1	48.33	0.99
September	3	W	09/20/04	Redbreast Sunfish	1	48.33	0.99
September	3	W	09/22/04	Bluegill	1	47.07	1.02
September	3	W	09/22/04	Pumpkinseed	1	47.07	1.02
September	3	W	09/22/04	Redbreast Sunfish	2	47.07	2.04
September	3	W	09/22/04	Smallmouth Bass	2	47.07	2.04
September	5		09/20/04	Black Crappie	1	47.90	1.00
September	5		09/20/04	Redbreast Sunfish	1	47.90	1.00
September	5		09/20/04	Smallmouth Bass	4	47.90	4.01
September	5		09/22/04	Smallmouth Bass	2	47.45	2.02
October	1	E	10/11/04	No Fish Caught	0	47.08	0.00
October	1	E	10/13/04	No Fish Caught	0	48.53	0.00
October	1	W	10/11/04	Yellow Bullhead	1	48.08	1.00
October	1	W	10/13/04	Smallmouth Bass	1	48.38	0.99

(continued)

Appendix Table 1. (Continued)

Month	Station	Site	Set Date	Common Name	Count	Effort (h)	CPUE (fish per 48 h)
October	2	E	10/11/04	Bluegill	8	48.00	8.00
October	2	E	10/11/04	Largemouth Bass	1	48.00	1.00
October	2	E	10/13/04	Bluegill	3	48.17	2.99
October	2	E	10/13/04	Largemouth Bass	1	48.17	1.00
October	2	E	10/13/04	Rock Bass	1	48.17	1.00
October	2	E	10/13/04	White Sucker	2	48.17	1.99
October	3	W	10/11/04	Redbreast Sunfish	1	48.00	1.00
October	3	W	10/11/04	Smallmouth Bass	4	48.00	4.00
October	3	W	10/13/04	Redbreast Sunfish	1	48.25	0.99
October	3	W	10/13/04	Smallmouth Bass	2	48.25	1.99
October	5		10/11/04	Smallmouth Bass	2	46.92	2.05
October	5		10/13/04	Rock Bass	1	48.75	0.98
October	5		10/13/04	Smallmouth Bass	6	48.75	5.91
December	1	E	12/06/04	Redbreast Sunfish	1	48.00	1.00
December	1	E	12/08/04	No Fish Caught	0	48.67	0.00
December	1	W	12/06/04	No Fish Caught	0	47.50	0.00
December	1	W	12/08/04	No Fish Caught	0	48.92	0.00
December	2	E	12/06/04	Spottail Shiner	2	46.83	2.05
December	2	E	12/08/04	Spottail Shiner	27	48.92	26.49
December	2	E	12/08/04	White Sucker	1	48.92	0.98
December	2	E	12/08/04	Yellow Perch	1	48.92	0.98
December	3	W	12/06/04	No Fish Caught	0	47.00	0.00
December	3	W	12/08/04	Pumpkinseed	1	48.83	0.98
December	3	W	12/08/04	Rock Bass	1	48.83	0.98
December	3	W	12/08/04	Spottail Shiner	3	48.83	2.95
December	4		12/06/04	Bluegill	1	47.42	1.01
December	4		12/06/04	Largemouth Bass	1	47.42	1.01
December	4		12/06/04	Redbreast Sunfish	1	47.42	1.01
December	4		12/06/04	Rock Bass	1	47.42	1.01
December	4		12/06/04	Smallmouth Bass	1	47.42	1.01
December	4		12/08/04	Black Crappie	1	48.50	0.99
December	4		12/08/04	Bluegill	9	48.50	8.91
December	4		12/08/04	Redbreast Sunfish	1	48.50	0.99
December	4		12/08/04	Rock Bass	1	48.50	0.99
December	5		12/06/04	Black Crappie	3	47.17	3.05
December	5		12/06/04	Bluegill	3	47.17	3.05
December	5		12/06/04	Rock Bass	9	47.17	9.16
December	5		12/06/04	Smallmouth Bass	5	47.17	5.09
December	5		12/08/04	Pumpkinseed	2	48.75	1.97
December	5		12/08/04	Redbreast Sunfish	1	48.75	0.98
December	5		12/08/04	Rock Bass	1	48.75	0.98
December	5		12/08/04	Smallmouth Bass	1	48.75	0.98

Appendix Table 2. **Total 2004 catch for electrofishing sorted by month, station, site and date.**

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
April	11	E	04/30/04	Rock Bass	1	21.25	1,000	1
April	11	E	04/30/04	Spottail Shiner	58	21.25	1,000	58
April	11	E	04/30/04	White Sucker	7	21.25	1,000	7
April	11	E	04/30/04	Yellow Perch	1	21.25	1,000	1
April	11	W	04/30/04	Golden Shiner	4	21.22	1,000	4
April	11	W	04/30/04	Smallmouth Bass	1	21.22	1,000	1
April	11	W	04/30/04	Spottail Shiner	161	21.22	1,000	161
April	11	W	04/30/04	Tessellated Darter	2	21.22	1,000	2
April	11	W	04/30/04	White Sucker	1	21.22	1,000	1
April	12	E	04/30/04	Spottail Shiner	1	16.03	1,000	1
April	12	E	04/30/04	White Sucker	2	16.03	1,000	2
April	12	W	04/30/04	Fallfish	1	17.78	1,000	1
April	12	W	04/30/04	Spottail Shiner	2	17.78	1,000	2
April	12	W	04/30/04	Tessellated Darter	1	17.78	1,000	1
April	12	W	04/30/04	White Sucker	4	17.78	1,000	4
April	12	W	04/30/04	Yellow Perch	2	17.78	1,000	2
April	16		04/30/04	Largemouth Bass	1	9.78	500	2
April	16		04/30/04	Smallmouth Bass	4	9.78	500	8
April	17		04/30/04	Largemouth Bass	1	10.13	500	2
April	18		04/30/04	Black Crappie	2	9.58	500	4
April	18		04/30/04	Bluegill	10	9.58	500	20
April	18		04/30/04	Chain Pickerel	1	9.58	500	2
April	18		04/30/04	Largemouth Bass	12	9.58	500	24
April	18		04/30/04	Pumpkinseed	2	9.58	500	4
April	18		04/30/04	Redbreast Sunfish	1	9.58	500	2
April	18		04/30/04	Rock Bass	3	9.58	500	6
April	18		04/30/04	White Sucker	6	9.58	500	12
April	18		04/30/04	Yellow Perch	3	9.58	500	6
May	11	E	05/27/04	Black Crappie	1	17.60	1,000	1
May	11	E	05/27/04	Fallfish	2	17.60	1,000	2
May	11	E	05/27/04	Golden Shiner	1	17.60	1,000	1
May	11	E	05/27/04	Smallmouth Bass	1	17.60	1,000	1
May	11	E	05/27/04	Spottail Shiner	7	17.60	1,000	7
May	11	E	05/27/04	Unidentified	3	17.60	1,000	3
May	11	E	05/27/04	White Sucker	1	17.60	1,000	1
May	11	E	05/27/04	Yellow Perch	5	17.60	1,000	5
May	11	W	05/27/04	Fallfish	1	13.10	1,000	1
May	11	W	05/27/04	Spottail Shiner	1	13.10	1,000	1
May	12	E	05/27/04	Bluegill	1	17.17	1,000	1
May	12	E	05/27/04	Fallfish	1	17.17	1,000	1
May	12	E	05/27/04	Redbreast Sunfish	1	17.17	1,000	1
May	12	E	05/27/04	Smallmouth Bass	1	17.17	1,000	1
May	12	W	05/27/04	Smallmouth Bass	2	18.23	1,000	2
May	12	W	05/27/04	White Sucker	3	18.23	1,000	3
May	13	E	05/01/04	Bluegill	1	17.80	1,000	1
May	13	E	05/01/04	Brown Bullhead	1	17.80	1,000	1

(continued)

Appendix Table 2. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
May	13	E	05/01/04	Rock Bass	1	17.80	1,000	1
May	13	E	05/01/04	Smallmouth Bass	1	17.80	1,000	1
May	13	E	05/01/04	Spottail Shiner	2	17.80	1,000	2
May	13	E	05/01/04	Tessellated Darter	1	17.80	1,000	1
May	13	E	05/01/04	Yellow Perch	1	17.80	1,000	1
May	13	E	05/27/04	American Eel	1	16.17	1,000	1
May	13	E	05/27/04	Brown Trout	1	16.17	1,000	1
May	13	E	05/27/04	Fallfish	3	16.17	1,000	3
May	13	E	05/27/04	Golden Shiner	1	16.17	1,000	1
May	13	E	05/27/04	Smallmouth Bass	1	16.17	1,000	1
May	13	E	05/27/04	Spottail Shiner	13	16.17	1,000	13
May	13	E	05/27/04	White Sucker	11	16.17	1,000	11
May	13	E	05/27/04	Yellow Perch	1	16.17	1,000	1
May	13	W	05/01/04	Spottail Shiner	66	16.78	1,000	66
May	13	W	05/28/04	Fallfish	8	17.23	1,000	8
May	13	W	05/28/04	White Sucker	7	17.23	1,000	7
May	14	E	05/01/04	Golden Shiner	12	14.77	1,000	12
May	14	E	05/01/04	Redbreast Sunfish	1	14.77	1,000	1
May	14	E	05/01/04	Spottail Shiner	44	14.77	1,000	44
May	14	E	05/01/04	White Sucker	4	14.77	1,000	4
May	14	E	05/27/04	Fallfish	3	13.03	1,000	3
May	14	E	05/27/04	Golden Shiner	8	13.03	1,000	8
May	14	E	05/27/04	Smallmouth Bass	1	13.03	1,000	1
May	14	E	05/27/04	Spottail Shiner	27	13.03	1,000	27
May	14	E	05/27/04	Yellow Perch	1	13.03	1,000	1
May	14	W	05/01/04	American Eel	1	17.15	1,000	1
May	14	W	05/01/04	Golden Shiner	1	17.15	1,000	1
May	14	W	05/01/04	Spottail Shiner	3	17.15	1,000	3
May	14	W	05/01/04	White Sucker	3	17.15	1,000	3
May	14	W	05/28/04	White Sucker	2	14.15	1,000	2
May	15	E	05/01/04	Smallmouth Bass	1	15.48	1,000	1
May	15	E	05/01/04	White Sucker	5	15.48	1,000	5
May	15	E	05/28/04	Fallfish	2	14.98	1,000	2
May	15	E	05/28/04	White Sucker	5	14.98	1,000	5
May	15	W	05/01/04	Tessellated Darter	3	16.00	1,000	3
May	15	W	05/28/04	White Sucker	3	12.75	1,000	3
May	16		05/27/04	Bluegill	5	6.65	500	10
May	16		05/27/04	Redbreast Sunfish	3	6.65	500	6
May	16		05/27/04	Smallmouth Bass	1	6.65	500	2
May	17		05/27/04	Bluegill	3	5.77	500	6
May	17		05/27/04	Smallmouth Bass	1	5.77	500	2
May	17		05/27/04	White Sucker	3	5.77	500	6
May	18		05/27/04	Black Crappie	1	6.80	500	2
May	18		05/27/04	Bluegill	4	6.80	500	8
May	18		05/27/04	Largemouth Bass	1	6.80	500	2
May	18		05/27/04	Pumpkinseed	1	6.80	500	2
May	18		05/27/04	Redbreast Sunfish	1	6.80	500	2

(continued)

Appendix Table 2. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
May	18		05/27/04	Smallmouth Bass	3	6.80	500	6
May	18		05/27/04	White Sucker	2	6.80	500	4
June	11	E	06/28/04	Chain Pickerel	1	16.83	1,000	1
June	11	E	06/28/04	Fallfish	6	16.83	1,000	6
June	11	E	06/28/04	Golden Shiner	1	16.83	1,000	1
June	11	E	06/28/04	Redbreast Sunfish	1	16.83	1,000	1
June	11	E	06/28/04	Smallmouth Bass	1	16.83	1,000	1
June	11	E	06/28/04	Spottail Shiner	920	16.83	1,000	920
June	11	E	06/28/04	Yellow Perch	5	16.83	1,000	5
June	11	W	06/28/04	Bluegill	1	19.82	1,000	1
June	11	W	06/28/04	Fallfish	8	19.82	1,000	8
June	11	W	06/28/04	Redbreast Sunfish	4	19.82	1,000	4
June	11	W	06/28/04	Smallmouth Bass	2	19.82	1,000	2
June	11	W	06/28/04	Spottail Shiner	6	19.82	1,000	6
June	11	W	06/28/04	White Sucker	9	19.82	1,000	9
June	12	E	06/28/04	Bluegill	1	12.72	1,000	1
June	12	E	06/28/04	Chain Pickerel	1	12.72	1,000	1
June	12	E	06/28/04	Fallfish	3	12.72	1,000	3
June	12	E	06/28/04	Redbreast Sunfish	4	12.72	1,000	4
June	12	E	06/28/04	Rock Bass	1	12.72	1,000	1
June	12	E	06/28/04	Smallmouth Bass	2	12.72	1,000	2
June	12	E	06/28/04	White Sucker	4	12.72	1,000	4
June	12	E	06/28/04	Yellow Perch	5	12.72	1,000	5
June	12	W	06/28/04	Bluegill	4	13.05	1,000	4
June	12	W	06/28/04	Chain Pickerel	1	13.05	1,000	1
June	12	W	06/28/04	Fallfish	1	13.05	1,000	1
June	12	W	06/28/04	Pumpkinseed	1	13.05	1,000	1
June	12	W	06/28/04	Redbreast Sunfish	3	13.05	1,000	3
June	12	W	06/28/04	Smallmouth Bass	2	13.05	1,000	2
June	12	W	06/28/04	Spottail Shiner	151	13.05	1,000	151
June	12	W	06/28/04	Yellow Perch	15	13.05	1,000	15
June	13	E	06/29/04	American Eel	3	15.10	1,000	3
June	13	E	06/29/04	Bluegill	1	15.10	1,000	1
June	13	E	06/29/04	Largemouth Bass	15	15.10	1,000	15
June	13	E	06/29/04	Pumpkinseed	1	15.10	1,000	1
June	13	E	06/29/04	Redbreast Sunfish	2	15.10	1,000	2
June	13	E	06/29/04	Smallmouth Bass	5	15.10	1,000	5
June	13	E	06/29/04	White Sucker	1	15.10	1,000	1
June	13	E	06/29/04	Yellow Perch	2	15.10	1,000	2
June	13	W	06/29/04	Bluegill	3	13.58	1,000	3
June	13	W	06/29/04	Fallfish	1	13.58	1,000	1
June	13	W	06/29/04	Pumpkinseed	1	13.58	1,000	1
June	13	W	06/29/04	Redbreast Sunfish	3	13.58	1,000	3
June	13	W	06/29/04	Smallmouth Bass	1	13.58	1,000	1
June	13	W	06/29/04	Yellow Perch	1	13.58	1,000	1
June	14	E	06/29/04	American Eel	1	14.92	1,000	1
June	14	E	06/29/04	Black Crappie	1	14.92	1,000	1

(continued)

Appendix Table 2. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
June	14	E	06/29/04	Bluegill	2	14.92	1,000	2
June	14	E	06/29/04	Largemouth Bass	2	14.92	1,000	2
June	14	E	06/29/04	Redbreast Sunfish	6	14.92	1,000	6
June	14	W	06/27/04	Black Crappie	2	11.58	1,000	2
June	14	W	06/27/04	Bluegill	1	11.58	1,000	1
June	14	W	06/27/04	Largemouth Bass	2	11.58	1,000	2
June	14	W	06/27/04	White Sucker	2	11.58	1,000	2
June	14	W	06/27/04	Yellow Perch	1	11.58	1,000	1
June	15	E	06/29/04	American Eel	1	13.58	1,000	1
June	15	E	06/29/04	Bluegill	2	13.58	1,000	2
June	15	E	06/29/04	Fallfish	1	13.58	1,000	1
June	15	E	06/29/04	Redbreast Sunfish	2	13.58	1,000	2
June	15	E	06/29/04	Smallmouth Bass	4	13.58	1,000	4
June	15	E	06/29/04	White Sucker	1	13.58	1,000	1
June	15	W	06/29/04	Bluegill	2	11.55	1,000	2
June	15	W	06/29/04	Largemouth Bass	4	11.55	1,000	4
June	15	W	06/29/04	Redbreast Sunfish	10	11.55	1,000	10
June	15	W	06/29/04	Smallmouth Bass	1	11.55	1,000	1
June	15	W	06/29/04	Spottail Shiner	43	11.55	1,000	43
June	16		06/28/04	Largemouth Bass	1	4.42	500	2
June	17		06/28/04	Bluegill	1	3.88	500	2
June	17		06/28/04	Redbreast Sunfish	2	3.88	500	4
June	18		06/28/04	Black Crappie	3	6.30	500	6
June	18		06/28/04	Bluegill	26	6.30	500	52
June	18		06/28/04	Largemouth Bass	8	6.30	500	16
June	18		06/28/04	Pumpkinseed	4	6.30	500	8
June	18		06/28/04	Rock Bass	2	6.30	500	4
June	18		06/28/04	Yellow Perch	2	6.30	500	4
July	11	E	07/26/04	American Eel	1	14.95	1,000	1
July	11	E	07/26/04	Bluegill	4	14.95	1,000	4
July	11	E	07/26/04	Chain Pickerel	1	14.95	1,000	1
July	11	E	07/26/04	Fallfish	1	14.95	1,000	1
July	11	E	07/26/04	Largemouth Bass	2	14.95	1,000	2
July	11	E	07/26/04	Smallmouth Bass	1	14.95	1,000	1
July	11	E	07/26/04	Spottail Shiner	182	14.95	1,000	182
July	11	E	07/26/04	White Sucker	1	14.95	1,000	1
July	11	E	07/26/04	Yellow Perch	11	14.95	1,000	11
July	11	W	07/26/04	American Eel	5	15.53	1,000	5
July	11	W	07/26/04	Fallfish	2	15.53	1,000	2
July	11	W	07/26/04	Pumpkinseed	1	15.53	1,000	1
July	11	W	07/26/04	Redbreast Sunfish	1	15.53	1,000	1
July	11	W	07/26/04	Smallmouth Bass	1	15.53	1,000	1
July	11	W	07/26/04	White Sucker	2	15.53	1,000	2
July	12	E	07/26/04	American Eel	1	14.67	1,000	1
July	12	E	07/26/04	Bluegill	3	14.67	1,000	3
July	12	E	07/26/04	Fallfish	1	14.67	1,000	1
July	12	E	07/26/04	Largemouth Bass	3	14.67	1,000	3

(continued)

Appendix Table 2. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
July	12	E	07/26/04	Pumpkinseed	1	14.67	1,000	1
July	12	E	07/26/04	Redbreast Sunfish	1	14.67	1,000	1
July	12	E	07/26/04	Spottail Shiner	2	14.67	1,000	2
July	12	E	07/26/04	White Sucker	4	14.67	1,000	4
July	12	E	07/26/04	Yellow Perch	1	14.67	1,000	1
July	12	W	07/26/04	Bluegill	8	13.32	1,000	8
July	12	W	07/26/04	Fallfish	6	13.32	1,000	6
July	12	W	07/26/04	Golden Shiner	2	13.32	1,000	2
July	12	W	07/26/04	Largemouth Bass	18	13.32	1,000	18
July	12	W	07/26/04	Redbreast Sunfish	1	13.32	1,000	1
July	12	W	07/26/04	Smallmouth Bass	2	13.32	1,000	2
July	12	W	07/26/04	Spottail Shiner	24	13.32	1,000	24
July	12	W	07/26/04	Yellow Perch	8	13.32	1,000	8
July	13	E	07/27/04	Bluegill	1	11.30	1,000	1
July	13	E	07/27/04	Largemouth Bass	1	11.30	1,000	1
July	13	E	07/27/04	Smallmouth Bass	4	11.30	1,000	4
July	13	W	07/27/04	Bluegill	1	15.82	1,000	1
July	13	W	07/27/04	Largemouth Bass	11	15.82	1,000	11
July	13	W	07/27/04	Pumpkinseed	3	15.82	1,000	3
July	13	W	07/27/04	Redbreast Sunfish	2	15.82	1,000	2
July	13	W	07/27/04	Tessellated Darter	1	15.82	1,000	1
July	14	E	07/27/04	American Eel	1	14.05	1,000	1
July	14	E	07/27/04	Bluegill	3	14.05	1,000	3
July	14	E	07/27/04	Largemouth Bass	4	14.05	1,000	4
July	14	W	07/27/04	Bluegill	1	14.08	1,000	1
July	14	W	07/27/04	Chain Pickerel	1	14.08	1,000	1
July	14	W	07/27/04	Largemouth Bass	7	14.08	1,000	7
July	14	W	07/27/04	Redbreast Sunfish	3	14.08	1,000	3
July	14	W	07/27/04	Smallmouth Bass	3	14.08	1,000	3
July	14	W	07/27/04	White Sucker	2	14.08	1,000	2
July	14	W	07/27/04	Yellow Perch	2	14.08	1,000	2
July	15	E	07/27/04	Bluegill	1	13.35	1,000	1
July	15	E	07/27/04	Largemouth Bass	8	13.35	1,000	8
July	15	E	07/27/04	Redbreast Sunfish	6	13.35	1,000	6
July	15	E	07/27/04	White Sucker	1	13.35	1,000	1
July	15	E	07/27/04	Yellow Perch	1	13.35	1,000	1
July	15	W	07/27/04	Bluegill	2	14.63	1,000	2
July	15	W	07/27/04	Largemouth Bass	3	14.63	1,000	3
July	15	W	07/27/04	Redbreast Sunfish	2	14.63	1,000	2
July	16		07/26/04	No Fish Caught	0	4.67	500	0
July	17		07/26/04	No Fish Caught	0	5.12	500	0
July	18		07/26/04	Bluegill	15	4.47	500	30
July	18		07/26/04	Largemouth Bass	4	4.47	500	8
July	18		07/26/04	Pumpkinseed	9	4.47	500	18
August	11	E	08/30/04	Alewife	2	14.33	1,000	2
August	11	E	08/30/04	Bluegill	1	14.33	1,000	1
August	11	E	08/30/04	Common Shiner	49	14.33	1,000	49

(continued)

Appendix Table 2. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
August	11	E	08/30/04	Eastern Silvery Minnow	14	14.33	1,000	14
August	11	E	08/30/04	Fallfish	1	14.33	1,000	1
August	11	E	08/30/04	Largemouth Bass	12	14.33	1,000	12
August	11	E	08/30/04	Pumpkinseed	1	14.33	1,000	1
August	11	E	08/30/04	Redbreast Sunfish	3	14.33	1,000	3
August	11	E	08/30/04	Rock Bass	1	14.33	1,000	1
August	11	E	08/30/04	Yellow Perch	4	14.33	1,000	4
August	11	W	08/30/04	Common Shiner	2	13.33	1,000	2
August	11	W	08/30/04	Fallfish	3	13.33	1,000	3
August	11	W	08/30/04	Largemouth Bass	6	13.33	1,000	6
August	11	W	08/30/04	Redbreast Sunfish	1	13.33	1,000	1
August	11	W	08/30/04	Smallmouth Bass	2	13.33	1,000	2
August	12	E	08/30/04	American Eel	1	12.67	1,000	1
August	12	E	08/30/04	Bluegill	1	12.67	1,000	1
August	12	E	08/30/04	Largemouth Bass	3	12.67	1,000	3
August	12	E	08/30/04	Redbreast Sunfish	1	12.67	1,000	1
August	12	E	08/30/04	Tessellated Darter	1	12.67	1,000	1
August	12	E	08/30/04	White Sucker	3	12.67	1,000	3
August	12	W	08/30/04	Alewife	67	14.15	1,000	67
August	12	W	08/30/04	Bluegill	4	14.15	1,000	4
August	12	W	08/30/04	Chain Pickerel	1	14.15	1,000	1
August	12	W	08/30/04	Common Shiner	11	14.15	1,000	11
August	12	W	08/30/04	Fallfish	18	14.15	1,000	18
August	12	W	08/30/04	Golden Shiner	8	14.15	1,000	8
August	12	W	08/30/04	Largemouth Bass	37	14.15	1,000	37
August	12	W	08/30/04	Pumpkinseed	1	14.15	1,000	1
August	12	W	08/30/04	Redbreast Sunfish	1	14.15	1,000	1
August	12	W	08/30/04	Rock Bass	1	14.15	1,000	1
August	12	W	08/30/04	Smallmouth Bass	1	14.15	1,000	1
August	12	W	08/30/04	Spottail Shiner	3	14.15	1,000	3
August	12	W	08/30/04	White Sucker	1	14.15	1,000	1
August	12	W	08/30/04	Yellow Perch	5	14.15	1,000	5
August	13	E	08/30/04	Largemouth Bass	7	11.93	1,000	7
August	13	E	08/30/04	Redbreast Sunfish	2	11.93	1,000	2
August	13	E	08/30/04	Smallmouth Bass	7	11.93	1,000	7
August	13	W	08/30/04	Bluegill	1	14.50	1,000	1
August	13	W	08/30/04	Fallfish	2	14.50	1,000	2
August	13	W	08/30/04	Largemouth Bass	13	14.50	1,000	13
August	13	W	08/30/04	Pumpkinseed	5	14.50	1,000	5
August	13	W	08/30/04	Redbreast Sunfish	9	14.50	1,000	9
August	13	W	08/30/04	Smallmouth Bass	1	14.50	1,000	1
August	14	E	08/30/04	Largemouth Bass	2	15.68	1,000	2
August	14	E	08/30/04	Pumpkinseed	3	15.68	1,000	3
August	14	E	08/30/04	Redbreast Sunfish	6	15.68	1,000	6
August	14	E	08/30/04	Smallmouth Bass	9	15.68	1,000	9
August	14	W	08/30/04	Black Crappie	1	14.02	1,000	1
August	14	W	08/30/04	Largemouth Bass	7	14.02	1,000	7

(continued)

Appendix Table 2. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
August	14	W	08/30/04	Pumpkinseed	1	14.02	1,000	1
August	14	W	08/30/04	Redbreast Sunfish	4	14.02	1,000	4
August	14	W	08/30/04	Smallmouth Bass	3	14.02	1,000	3
August	15	E	08/31/04	Alewife	5	13.20	1,000	5
August	15	E	08/31/04	Largemouth Bass	9	13.20	1,000	9
August	15	E	08/31/04	Redbreast Sunfish	5	13.20	1,000	5
August	15	W	08/31/04	Bluegill	12	15.27	1,000	12
August	15	W	08/31/04	Chain Pickerel	1	15.27	1,000	1
August	15	W	08/31/04	Largemouth Bass	12	15.27	1,000	12
August	15	W	08/31/04	Redbreast Sunfish	16	15.27	1,000	16
August	15	W	08/31/04	Smallmouth Bass	1	15.27	1,000	1
August	15	W	08/31/04	Yellow Perch	2	15.27	1,000	2
August	16		08/31/04	No Fish Caught	0	5.08	500	0
August	17		08/31/04	No Fish Caught	0	5.08	500	0
August	18		08/31/04	Bluegill	1	7.15	500	2
August	18		08/31/04	Largemouth Bass	2	7.15	500	4
August	18		08/31/04	Pumpkinseed	13	7.15	500	26
August	18		08/31/04	Redbreast Sunfish	1	7.15	500	2
September	11	E	09/27/04	Alewife	1	14.23	1,000	1
September	11	E	09/27/04	Chain Pickerel	1	14.23	1,000	1
September	11	E	09/27/04	Golden Shiner	2	14.23	1,000	2
September	11	E	09/27/04	Largemouth Bass	2	14.23	1,000	2
September	11	E	09/27/04	Smallmouth Bass	4	14.23	1,000	4
September	11	E	09/27/04	Spottail Shiner	150	14.23	1,000	150
September	11	E	09/27/04	White Sucker	1	14.23	1,000	1
September	11	E	09/27/04	Yellow Perch	1	14.23	1,000	1
September	11	W	09/27/04	American Eel	1	14.23	1,000	1
September	11	W	09/27/04	Bluegill	1	14.23	1,000	1
September	11	W	09/27/04	Fallfish	3	14.23	1,000	3
September	11	W	09/27/04	Golden Shiner	8	14.23	1,000	8
September	11	W	09/27/04	Redbreast Sunfish	2	14.23	1,000	2
September	11	W	09/27/04	Rock Bass	2	14.23	1,000	2
September	11	W	09/27/04	Smallmouth Bass	4	14.23	1,000	4
September	11	W	09/27/04	Spottail Shiner	115	14.23	1,000	115
September	11	W	09/27/04	White Sucker	4	14.23	1,000	4
September	12	E	09/27/04	American Eel	1	16.08	1,000	1
September	12	E	09/27/04	Bluegill	2	16.08	1,000	2
September	12	E	09/27/04	Largemouth Bass	5	16.08	1,000	5
September	12	E	09/27/04	Redbreast Sunfish	2	16.08	1,000	2
September	12	E	09/27/04	Smallmouth Bass	26	16.08	1,000	26
September	12	E	09/27/04	Tessellated Darter	1	16.08	1,000	1
September	12	E	09/27/04	Yellow Perch	1	16.08	1,000	1
September	12	W	09/27/04	Alewife	5	12.52	1,000	5
September	12	W	09/27/04	Bluegill	12	12.52	1,000	12
September	12	W	09/27/04	Fallfish	1	12.52	1,000	1
September	12	W	09/27/04	Golden Shiner	2	12.52	1,000	2
September	12	W	09/27/04	Largemouth Bass	1	12.52	1,000	1

(continued)

Appendix Table 2. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
September	12	W	09/27/04	Pumpkinseed	1	12.52	1,000	1
September	12	W	09/27/04	Smallmouth Bass	32	12.52	1,000	32
September	12	W	09/27/04	Spottail Shiner	5	12.52	1,000	5
September	12	W	09/27/04	Tessellated Darter	1	12.52	1,000	1
September	12	W	09/27/04	White Sucker	5	12.52	1,000	5
September	13	E	09/27/04	Largemouth Bass	9	10.60	1,000	9
September	13	E	09/27/04	Smallmouth Bass	12	10.60	1,000	12
September	13	E	09/27/04	Tessellated Darter	1	10.60	1,000	1
September	13	W	09/29/04	Bluegill	3	11.47	1,000	3
September	13	W	09/29/04	Fallfish	1	11.47	1,000	1
September	13	W	09/29/04	Largemouth Bass	12	11.47	1,000	12
September	14	E	09/29/04	Bluegill	18	11.08	1,000	18
September	14	E	09/29/04	Largemouth Bass	15	11.08	1,000	15
September	14	E	09/29/04	Pumpkinseed	1	11.08	1,000	1
September	14	E	09/29/04	Smallmouth Bass	2	11.08	1,000	2
September	14	W	09/29/04	American Eel	1	11.70	1,000	1
September	14	W	09/29/04	Bluegill	6	11.70	1,000	6
September	14	W	09/29/04	Largemouth Bass	10	11.70	1,000	10
September	14	W	09/29/04	Pumpkinseed	1	11.70	1,000	1
September	14	W	09/29/04	Redbreast Sunfish	1	11.70	1,000	1
September	14	W	09/29/04	Smallmouth Bass	3	11.70	1,000	3
September	15	E	09/29/04	No Fish Caught	0	10.55	1,000	0
September	15	W	09/29/04	Bluegill	2	12.82	1,000	2
September	15	W	09/29/04	Largemouth Bass	17	12.82	1,000	17
September	15	W	09/29/04	White Sucker	1	12.82	1,000	1
September	17		09/27/04	No Fish Caught	0	4.33	500	0
September	18		09/27/04	American Eel	1	5.88	500	2
September	18		09/27/04	Black Crappie	1	5.88	500	2
September	18		09/27/04	Bluegill	9	5.88	500	18
September	18		09/27/04	Largemouth Bass	19	5.88	500	38
September	18		09/27/04	Pumpkinseed	1	5.88	500	2
September	18		09/27/04	Rock Bass	1	5.88	500	2
September	18		09/27/04	Smallmouth Bass	12	5.88	500	24
October	11	E	10/18/04	Largemouth Bass	1	13.00	1,000	1
October	11	E	10/18/04	Tessellated Darter	1	13.00	1,000	1
October	12	W	10/18/04	White Sucker	1	12.62	1,000	1
October	12	E	10/18/04	Pumpkinseed	1	14.20	1,000	1
October	12	E	10/18/04	Smallmouth Bass	1	14.20	1,000	1
October	12	W	10/18/04	Bluegill	8	13.05	1,000	8
October	12	W	10/18/04	Chain Pickerel	1	13.05	1,000	1
October	12	W	10/18/04	Common Shiner	3	13.05	1,000	3
October	12	W	10/18/04	Golden Shiner	5	13.05	1,000	5
October	12	W	10/18/04	Largemouth Bass	40	13.05	1,000	40
October	12	W	10/18/04	Rock Bass	1	13.05	1,000	1
October	12	W	10/18/04	Spottail Shiner	4	13.05	1,000	4
October	12	W	10/18/04	White Sucker	6	13.05	1,000	6
October	13	E	10/18/04	American Eel	1	11.25	1,000	1

(continued)

Aug – Sept

17 yellow perch

2 transects = 10.52 CPUE

Appendix Table 2. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
October	13	E	10/22/04	Largemouth Bass	1	11.25	1,000	1
October	13	W	10/22/04	Smallmouth Bass	1	9.33	1,000	1
October	14	E	10/22/04	Largemouth Bass	4	11.07	1,000	4
October	14	E	10/22/04	White Sucker	1	11.07	1,000	1
October	14	W	10/22/04	Largemouth Bass	2	11.12	1,000	2
October	14	W	10/22/04	Smallmouth Bass	1	11.12	1,000	1
October	15	E	10/22/04	Alewife	1	9.72	1,000	1
October	15	W	10/22/04	No Fish Caught	0	9.30	1,000	0
October	17		10/18/04	No Fish Caught	0	4.97	500	0
October	18		10/18/04	Black Crappie	1	6.37	500	2
October	18		10/18/04	Bluegill	12	6.37	500	24
October	18		10/18/04	Largemouth Bass	17	6.37	500	34
October	18		10/18/04	Pumpkinseed	1	6.37	500	2
October	18		10/18/04	Redbreast Sunfish	1	6.37	500	2
December	11	E	12/16/04	Spottail Shiner	1	11.18	1,000	1
December	11	W	12/16/04	Spottail Shiner	1	10.52	1,000	1
December	12	E	12/16/04	Smallmouth Bass	1	12.50	1,000	1
December	12	W	12/16/04	Margined Madtom	1	12.75	1,000	1
December	12	W	12/16/04	Spottail Shiner	2	12.75	1,000	2
December	13	E	12/17/04	Largemouth Bass	3	12.58	1,000	3
December	13	E	12/17/04	Smallmouth Bass	2	12.58	1,000	2
December	13	E	12/17/04	Spottail Shiner	92	12.58	1,000	92
December	13	E	12/17/04	Tessellated Darter	1	12.58	1,000	1
December	14	E	12/17/04	Bluegill	4	11.97	1,000	4
December	14	E	12/17/04	Golden Shiner	4	11.97	1,000	4
December	14	E	12/17/04	Largemouth Bass	2	11.97	1,000	2
December	14	E	12/17/04	Margined Madtom	1	11.97	1,000	1
December	14	E	12/17/04	Spottail Shiner	8	11.97	1,000	8
December	15	E	12/17/04	Golden Shiner	1	11.23	1,000	1
December	16		12/16/04	Bluegill	2	7.25	500	4
December	16		12/16/04	Chain Pickerel	1	7.25	500	2
December	16		12/16/04	Largemouth Bass	13	7.25	500	26
December	16		12/16/04	Smallmouth Bass	1	7.25	500	2
December	17		12/16/04	Bluegill	5	6.28	500	10
December	17		12/16/04	Yellow Perch	1	6.28	500	2
December	18		12/16/04	American Eel	2	6.47	500	4
December	18		12/16/04	Bluegill	6	6.47	500	12
December	18		12/16/04	Largemouth Bass	9	6.47	500	18
December	18		12/16/04	Pumpkinseed	1	6.47	500	2
December	18		12/16/04	Yellow Perch	1	6.47	500	2

Appendix Table 3. Total 2005 catch for 3/4-inch mesh trapnet sorted by month, station, site and date.

Month	Station	Site	Set Date	Common Name	Count	Effort (h)	CPUE (fish per 48 h)
April	4		04/25/05	Black Crappie	3	49.83	2.89
April	5		04/25/05	Rock Bass	1	49.75	0.96
April	5		04/25/05	Smallmouth Bass	1	49.75	0.96
May	1	E	05/23/05	No Fish Caught	0	48.32	0.00
May	1	E	05/25/05	No Fish Caught	0	47.05	0.00
May	1	W	05/23/05	Eastern Silvery Minnow	2	47.93	2.00
May	1	W	05/23/05	Spottail Shiner	2	47.93	2.00
May	1	W	05/23/05	White Sucker	2	47.93	2.00
May	1	W	05/25/05	No Fish Caught	0	46.95	0.00
May	2	E	05/23/05	Smallmouth Bass	1	47.73	1.01
May	2	E	05/25/05	No Fish Caught	0	45.83	0.00
May	3	W	05/23/05	Smallmouth Bass	1	48.62	0.99
May	3	W	05/25/05	No Fish Caught	0	45.95	0.00
May	4		05/23/05	Bluegill	2	45.82	2.09
May	4		05/23/05	Smallmouth Bass	2	45.85	2.09
May	4		05/25/05	Black Crappie	4	48.13	3.99
May	4		05/25/05	Bluegill	2	48.13	1.99
May	4		05/25/05	Smallmouth Bass	1	48.13	1.00
May	5		05/23/05	Smallmouth Bass	1	45.97	1.04
May	5		05/25/05	Bluegill	1	48.65	0.99
May	5		05/25/05	Smallmouth Bass	2	48.65	1.97
June	1	E	06/20/05	Smallmouth Bass	3	46.40	3.10
June	1	E	06/22/05	Redbreast Sunfish	2	50.78	1.89
June	1	E	06/22/05	Rock Bass	2	50.78	1.89
June	1	E	06/22/05	Smallmouth Bass	1	50.78	0.95
June	1	E	06/22/05	Spottail Shiner	1	50.78	0.95
June	1	E	06/22/05	Tessellated Darter	1	50.78	0.95
June	1	E	06/22/05	White Sucker	2	50.78	1.89
June	1	W	06/20/05	No Fish Caught	0	46.62	0.00
June	1	W	06/22/05	No Fish Caught	0	50.00	0.00
June	2	E	06/20/05	No Fish Caught	0	50.25	0.00
June	2	E	06/22/05	Redbreast Sunfish	1	45.72	1.05
June	3	W	06/20/05	No Fish Caught	0	51.18	0.00
June	3	W	06/22/05	Margined Madtom	2	45.55	2.11
June	3	W	06/22/05	Redbreast Sunfish	1	45.55	1.06
June	3	W	06/22/05	Smallmouth Bass	7	45.55	7.36
June	3	W	06/22/05	Yellow Perch	2	45.55	2.11
June	4		06/20/05	Bluegill	1	46.22	1.04
June	4		06/20/05	Smallmouth Bass	1	46.22	1.04
June	4		06/22/05	Smallmouth Bass	2	48.15	1.99
June	5		06/20/05	Smallmouth Bass	2	46.20	2.08
June	5		06/22/05	Bluegill	2	48.25	1.99
June	5		06/22/05	Smallmouth Bass	1	48.25	0.99
July	1	E	07/18/05	Bluegill	2	48.00	2.00
July	1	E	07/18/05	Rock Bass	1	48.00	1.00
July	1	E	07/20/05	No Fish Caught	0	46.48	0.00
July	1	W	07/18/05	Smallmouth Bass	2	47.92	2.00

(continued)

Appendix Table 3. (Continued)

Month	Station	Site	Set Date	Common Name	Count	Effort (h)	CPUE (fish per 48 h)
July	1	W	07/20/05	Redbreast Sunfish	1	46.98	1.02
July	1	W	07/20/05	Rock Bass	2	46.98	2.04
July	1	W	07/20/05	Smallmouth Bass	2	46.98	2.04
July	2	E	07/18/05	Rock Bass	2	48.17	1.99
July	2	E	07/18/05	Smallmouth Bass	12	48.17	11.96
July	2	E	07/26/05	Bluegill	1	48.23	1.00
July	2	E	07/26/05	Redbreast Sunfish	2	48.23	1.99
July	2	E	07/26/05	Rock Bass	1	48.23	1.00
July	2	E	07/26/05	Smallmouth Bass	4	48.23	3.98
July	3	W	07/18/05	No Fish Caught	0	47.42	0.00
July	3	W	07/20/05	No Fish Caught	0	47.88	0.00
July	3	W	07/25/05	Bluegill	1	45.67	1.05
July	4		07/18/05	No Fish Caught	0	48.08	0.00
July	4		07/20/05	No Fish Caught	0	46.62	0.00
July	5		07/18/05	Smallmouth Bass	1	48.08	1.00
July	5		07/20/05	No Fish Caught	0	46.55	0.00
August	1	E	08/15/05	No Fish Caught	0	45.83	0.00
August	1	E	08/17/05	No Fish Caught	0	49.58	0.00
August	1	W	08/15/05	Bluegill	1	46.58	1.03
August	1	W	08/15/05	Rock Bass	1	46.58	1.03
August	1	W	08/15/05	Smallmouth Bass	5	46.58	5.15
August	2	E	08/15/05	Bluegill	1	49.75	0.96
August	2	E	08/15/05	Redbreast Sunfish	2	49.75	1.93
August	2	E	08/15/05	Rock Bass	1	49.75	0.96
August	2	E	08/15/05	Smallmouth Bass	8	49.75	7.72
August	2	E	08/17/05	Bluegill	1	44.98	1.07
August	2	E	08/17/05	Rock Bass	1	44.98	1.07
August	2	E	08/17/05	Smallmouth Bass	10	44.98	10.67
August	3	W	08/15/05	Bluegill	1	50.50	0.95
August	3	W	08/15/05	Redbreast Sunfish	1	50.50	0.95
August	3	W	08/15/05	Smallmouth Bass	1	50.50	0.95
August	3	W	08/17/05	Smallmouth Bass	1	44.97	1.07
August	4		08/15/05	No Fish Caught	0	48.25	0.00
August	4		08/17/05	No Fish Caught	0	47.60	0.00
September	1	E	09/12/05	No Fish Caught	0	48.42	0.00
September	1	E	09/14/05	No Fish Caught	0	43.03	0.00
September	1	W	09/12/05	Smallmouth Bass	1	48.07	0.98
September	1	W	09/14/05	No Fish Caught	0	43.13	0.00
September	2	E	09/12/05	Black Crappie	1	48.37	0.99
September	2	E	09/12/05	Bluegill	4	48.37	3.97
September	2	E	09/12/05	Smallmouth Bass	3	48.37	2.98
September	2	E	09/14/05	Bluegill	1	43.03	1.12

(continued)

Appendix Table 3. (Continued)

Month	Station	Site	Set Date	Common Name	Count	Effort (h)	CPUE (fish per 48 h)
September	3	W	09/14/05	No Fish Caught	0	42.38	0.00
September	4		09/12/05	No Fish Caught	0	46.53	0.00
September	4		09/14/05	Pumpkinseed	2	44.48	2.16
September	4		09/14/05	Redbreast Sunfish	1	44.48	1.08
September	5		09/12/05	Smallmouth Bass	21	46.30	21.77
September	5		09/14/05	Sunfish Family	1	44.65	1.08

Appendix Table 4. Total 2005 catch for electrofishing sorted by month, station, site and date.

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
April	11	E	04/19/05	Smallmouth Bass	1	10.68	1,000	1
April	11	W	04/19/05	No Fish Caught	0	9.67	1,000	0
April	12	E	04/19/05	Tessellated Darter	2	11.77	1,000	2
April	12	W	04/19/05	Spottail Shiner	1	10.73	1,000	1
April	12	W	04/19/05	White Sucker	1	10.73	1,000	1
April	12	W	04/19/05	Yellow Perch	1	10.73	1,000	1
April	13	E	04/19/05	Golden Shiner	1	8.43	1,000	1
April	13	E	04/19/05	Smallmouth Bass	1	8.43	1,000	1
April	13	E	04/19/05	Spottail Shiner	2	8.43	1,000	2
April	13	W	04/20/05	Margined Madtom	2	12.83	1,000	2
April	13	W	04/20/05	Spottail Shiner	1	12.83	1,000	1
April	13	W	04/20/05	Tessellated Darter	5	12.83	1,000	5
April	14	E	04/20/05	Spottail Shiner	18	10.07	1,000	18
April	15	E	04/20/05	Smallmouth Bass	1	10.48	1,000	1
April	15	E	04/20/05	Spottail Shiner	1	10.48	1,000	1
April	15	E	04/20/05	White Sucker	3	10.48	1,000	3
April	15	W	04/20/05	Tessellated Darter	1	10.27	1,000	1
April	16		04/19/05	Bluegill	2	4.87	500	4
April	16		04/19/05	Largemouth Bass	2	4.87	500	4
April	16		04/19/05	Smallmouth Bass	1	4.87	500	2
April	16		04/19/05	White Sucker	2	4.87	500	4
April	17		04/19/05	Largemouth Bass	1	4.53	500	2
April	18		04/19/05	American Eel	1	7.75	500	2
April	18		04/19/05	Black Crappie	8	7.75	500	16
April	18		04/19/05	Bluegill	2	7.75	500	4
April	18		04/19/05	Largemouth Bass	3	7.75	500	6
April	18		04/19/05	Pumpkinseed	1	7.75	500	2
April	18		04/19/05	Rock Bass	2	7.75	500	4
April	18		04/19/05	Tessellated Darter	1	7.75	500	2
April	18		04/19/05	White Sucker	2	7.75	500	4
April	18		04/19/05	Yellow Perch	5	7.75	500	10
May	11	E	05/18/05	Fallfish	1	13.83	1,000	1
May	11	E	05/18/05	White Sucker	7	13.83	1,000	7
May	11	E	05/18/05	Yellow Perch	1	13.83	1,000	1
May	11	W	05/18/05	Fallfish	1	13.70	1,000	1
May	11	W	05/18/05	Tessellated Darter	6	13.70	1,000	6
May	11	W	05/18/05	White Sucker	1	13.70	1,000	1
May	11	W	05/18/05	Yellow Perch	1	13.70	1,000	1
May	12	E	05/18/05	American Eel	1	13.12	1,000	1
May	12	E	05/18/05	White Sucker	2	13.12	1,000	2
May	12	W	05/18/05	Bluegill	1	13.12	1,000	1
May	12	W	05/18/05	Spottail Shiner	4	13.12	1,000	4

(continued)

Appendix Table 4. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
May	12	W	05/18/05	White Sucker	7	13.45	1,000	7
May	12	W	05/18/05	Yellow Perch	1	13.45	1,000	1
May	13	E	05/19/05	Redbreast Sunfish	1	11.20	1,000	1
May	13	E	05/19/05	Smallmouth Bass	2	11.20	1,000	2
May	13	W	05/19/05	American Eel	1	10.78	1,000	1
May	13	W	05/19/05	Largemouth Bass	1	10.78	1,000	1
May	13	W	05/19/05	Spottail Shiner	18	10.78	1,000	18
May	13	W	05/19/05	White Sucker	1	10.78	1,000	1
May	14	E	05/19/05	Brown Trout	1	11.50	1,000	1
May	14	E	05/19/05	Spottail Shiner	30	11.50	1,000	30
May	14	E	05/19/05	White Sucker	5	11.50	1,000	5
May	14	W	05/19/05	White Sucker	3	13.38	1,000	3
May	15	E	05/19/05	White Sucker	1	11.67	1,000	1
May	15	W	05/19/05	Tessellated Darter	2	11.08	1,000	2
May	16		05/18/05	Bluegill	3	5.13	500	6
May	16		05/18/05	Redbreast Sunfish	1	5.13	500	2
May	16		05/18/05	Spottail Shiner	2	5.13	500	4
May	17		05/18/05	Bluegill	1	4.77	500	2
May	17		05/18/05	Largemouth Bass	2	4.77	500	4
May	18		05/19/05	American Eel	1	7.85	500	2
May	18		05/19/05	Bluegill	3	7.85	500	6
May	18		05/19/05	Largemouth Bass	8	7.85	500	16
May	18		05/19/05	Yellow Perch	1	7.85	500	2
June	11	E	06/29/05	American Eel	1	11.68	1,000	1
June	11	E	06/29/05	Fallfish	3	11.68	1,000	3
June	11	E	06/29/05	Redbreast Sunfish	1	11.68	1,000	1
June	11	E	06/29/05	Smallmouth Bass	1	11.68	1,000	1
June	11	E	06/29/05	Spottail Shiner	4	11.68	1,000	4
June	11	E	06/29/05	White Sucker	3	11.68	1,000	3
June	11	E	06/29/05	Yellow Perch	1	11.68	1,000	1
June	11	W	06/29/05	American Eel	1	12.32	1,000	1
June	11	W	06/29/05	Fallfish	4	12.32	1,000	4
June	11	W	06/29/05	Largemouth Bass	1	12.32	1,000	1
June	11	W	06/29/05	Redbreast Sunfish	1	12.32	1,000	1
June	11	W	06/29/05	Smallmouth Bass	2	12.32	1,000	2
June	11	W	06/29/05	Spottail Shiner	3	12.32	1,000	3
June	11	W	06/29/05	White Sucker	2	12.32	1,000	2
June	12	E	06/29/05	American Eel	1	11.42	1,000	1
June	12	E	06/29/05	Largemouth Bass	1	11.42	1,000	1
June	12	E	06/29/05	Redbreast Sunfish	3	11.42	1,000	3
June	12	E	06/29/05	Smallmouth Bass	1	11.42	1,000	1
June	12	E	06/29/05	White Sucker	2	11.42	1,000	2
June	12	E	06/29/05	Yellow Perch	2	11.42	1,000	2
June	12	W	06/30/05	Bluegill	1	12.68	1,000	1
June	12	W	06/30/05	Eastern Silvery Minnow	1	12.68	1,000	1
June	12	W	06/30/05	White Sucker	4	12.68	1,000	4
June	13	E	06/30/05	Black Crappie	1	12.63	1,000	1

(continued)

Appendix Table 4. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
June	13	E	06/30/05	Bluegill	1	12.63	1,000	1
June	13	E	06/30/05	Largemouth Bass	1	12.63	1,000	1
June	13	E	06/30/05	Redbreast Sunfish	1	12.63	1,000	1
June	13	E	06/30/05	Spottail Shiner	3	12.63	1,000	3
June	13	E	06/30/05	White Sucker	30	12.63	1,000	30
June	13	W	06/30/05	Bluegill	3	9.12	1,000	3
June	13	W	06/30/05	Eastern Silvery Minnow	3	9.12	1,000	3
June	13	W	06/30/05	Redbreast Sunfish	2	9.12	1,000	2
June	13	W	06/30/05	Smallmouth Bass	4	9.12	1,000	4
June	13	W	06/30/05	White Sucker	6	9.12	1,000	6
June	13	W	06/30/05	Yellow Perch	1	9.12	1,000	1
June	14	E	06/30/05	Golden Shiner	3	10.22	1,000	3
June	14	E	06/30/05	Pumpkinseed	1	10.22	1,000	1
June	14	E	06/30/05	Redbreast Sunfish	2	10.22	1,000	2
June	14	E	06/30/05	Spottail Shiner	2	10.22	1,000	2
June	14	E	06/30/05	White Sucker	7	10.22	1,000	7
June	14	W	06/30/05	Golden Shiner	3	9.25	1,000	3
June	14	W	06/30/05	White Sucker	4	9.25	1,000	4
June	15	E	06/30/05	White Sucker	1	9.72	1,000	1
June	15	W	06/30/05	Golden Shiner	1	9.02	1,000	1
June	15	W	06/30/05	Redbreast Sunfish	4	9.02	1,000	4
June	15	W	06/30/05	Smallmouth Bass	1	9.02	1,000	1
June	15	W	06/30/05	White Sucker	9	9.02	1,000	9
June	16		06/30/05	No Fish Caught	0	5.28	500	0
June	17		06/30/05	No Fish Caught	0	6.65	500	0
June	18		06/30/05	Bluegill	4	6.35	500	8
June	18		06/30/05	Largemouth Bass	3	6.35	500	6
June	18		06/30/05	Smallmouth Bass	3	6.35	500	6
June	18		06/30/05	Spottail Shiner	1	6.35	500	2
July	11	E	07/25/05	Bluegill	1	10.37	1,000	1
July	11	E	07/25/05	Common Carp	1	10.37	1,000	1
July	11	E	07/25/05	Largemouth Bass	2	10.37	1,000	2
July	11	E	07/25/05	Redbreast Sunfish	1	10.37	1,000	1
July	11	E	07/25/05	Smallmouth Bass	1	10.37	1,000	1
July	11	E	07/25/05	White Sucker	1	10.37	1,000	1
July	11	E	07/25/05	Yellow Perch	2	10.37	1,000	2
July	11	W	07/25/05	Largemouth Bass	1	10.78	1,000	1
July	11	W	07/25/05	White Sucker	1	10.78	1,000	1
July	12	E	07/25/05	Fallfish	1	12.83	1,000	1
July	12	E	07/25/05	Spottail Shiner	2	12.83	1,000	2
July	12	E	07/25/05	White Sucker	8	12.83	1,000	8
July	12	W	07/26/05	Bluegill	5	12.52	1,000	5
July	12	W	07/26/05	Fallfish	2	12.52	1,000	2
July	12	W	07/26/05	Largemouth Bass	3	12.52	1,000	3
July	12	W	07/26/05	Pumpkinseed	2	12.52	1,000	2
July	12	W	07/26/05	Redbreast Sunfish	3	12.52	1,000	3
July	12	W	07/26/05	Smallmouth Bass	3	12.52	1,000	3

(continued)

Appendix Table 4. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
July	12	W	07/26/05	Spottail Shiner	2	12.52	1,000	2
July	12	W	07/26/05	White Sucker	1	12.52	1,000	1
July	12	W	07/26/05	Yellow Perch	6	12.52	1,000	6
July	13	E	07/25/05	American Eel	3	10.12	1,000	3
July	13	E	07/25/05	Smallmouth Bass	4	10.12	1,000	4
July	13	W	07/25/05	Smallmouth Bass	1	9.83	1,000	1
July	14	E	07/25/05	Bluegill	2	12.67	1,000	2
July	14	E	07/25/05	Pumpkinseed	1	12.67	1,000	1
July	14	E	07/25/05	Redbreast Sunfish	7	12.67	1,000	7
July	14	E	07/25/05	Smallmouth Bass	6	12.67	1,000	6
July	14	E	07/25/05	Yellow Perch	1	12.67	1,000	1
July	14	W	07/25/05	Black Crappie	1	8.13	1,000	1
July	14	W	07/25/05	Bluegill	1	8.13	1,000	1
July	14	W	07/25/05	Largemouth Bass	2	8.13	1,000	2
July	14	W	07/25/05	Pumpkinseed	1	8.13	1,000	1
July	14	W	07/25/05	Redbreast Sunfish	2	8.13	1,000	2
July	15	E	07/26/05	Bluegill	3	12.03	1,000	3
July	15	E	07/26/05	Largemouth Bass	1	12.03	1,000	1
July	15	E	07/26/05	Redbreast Sunfish	6	12.03	1,000	6
July	15	E	07/26/05	Smallmouth Bass	1	12.03	1,000	1
July	15	W	07/25/05	Bluegill	2	10.62	1,000	2
July	15	W	07/25/05	Largemouth Bass	2	10.62	1,000	2
July	15	W	07/25/05	Pumpkinseed	2	10.62	1,000	2
July	15	W	07/25/05	Redbreast Sunfish	12	10.62	1,000	12
July	15	W	07/25/05	Yellow Perch	1	10.62	1,000	1
July	16		07/26/05	No Fish Caught	0	4.52	500	0
July	17		07/26/05	No Fish Caught	0	5.00	500	0
July	18		07/26/05	Bluegill	6	6.53	500	12
July	18		07/26/05	Pumpkinseed	4	6.53	500	8
July	18		07/26/05	Redbreast Sunfish	1	6.53	500	2
August	11	E	08/22/05	American Eel	1	10.28	1,000	1
August	11	E	08/22/05	Bluegill	8	10.28	1,000	8
August	11	E	08/22/05	Chain Pickerel	1	10.28	1,000	1
August	11	E	08/22/05	Fallfish	3	10.28	1,000	3
August	11	E	08/22/05	Golden Shiner	2	10.28	1,000	2
August	11	E	08/22/05	Largemouth Bass	3	10.28	1,000	3
August	11	E	08/22/05	Pumpkinseed	2	10.28	1,000	2
August	11	E	08/22/05	Redbreast Sunfish	1	10.28	1,000	1
August	11	E	08/22/05	Smallmouth Bass	2	10.28	1,000	2
August	11	E	08/22/05	Spottail Shiner	1	10.28	1,000	1
August	11	E	08/22/05	White Sucker	1	10.28	1,000	1
August	11	E	08/22/05	Yellow Perch	4	10.28	1,000	4
August	11	W	08/22/05	Fallfish	2	9.62	1,000	2
August	11	W	08/22/05	White Sucker	1	9.62	1,000	1
August	12	E	08/22/05	Bluegill	2	10.83	1,000	2
August	12	E	08/22/05	Fallfish	1	10.83	1,000	1
August	12	E	08/22/05	Redbreast Sunfish	2	10.83	1,000	2

(continued)

Appendix Table 4. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
August	12	E	08/22/05	Smallmouth Bass	1	10.83	1,000	1
August	12	E	08/22/05	White Sucker	4	10.83	1,000	4
August	12	W	08/22/05	Bluegill	5	10.12	1,000	5
August	12	W	08/22/05	Fallfish	1	10.12	1,000	1
August	12	W	08/22/05	Largemouth Bass	8	10.12	1,000	8
August	12	W	08/22/05	Redbreast Sunfish	1	10.12	1,000	1
August	12	W	08/22/05	Smallmouth Bass	2	10.12	1,000	2
August	12	W	08/22/05	White Sucker	1	10.12	1,000	1
August	12	W	08/22/05	Yellow Perch	10	10.12	1,000	10
August	13	E	08/22/05	Bluegill	5	10.23	1,000	5
August	13	E	08/22/05	Largemouth Bass	3	10.23	1,000	3
August	13	E	08/22/05	Pumpkinseed	2	10.23	1,000	2
August	13	E	08/22/05	Redbreast Sunfish	2	10.23	1,000	2
August	13	E	08/22/05	Smallmouth Bass	2	10.23	1,000	2
August	13	W	08/22/05	Bluegill	6	8.90	1,000	6
August	13	W	08/22/05	Fallfish	1	8.90	1,000	1
August	13	W	08/22/05	Largemouth Bass	2	8.90	1,000	2
August	13	W	08/22/05	Pumpkinseed	4	8.90	1,000	4
August	13	W	08/22/05	Redbreast Sunfish	4	8.90	1,000	4
August	13	W	08/22/05	Smallmouth Bass	1	8.90	1,000	1
August	14	E	08/22/05	Bluegill	3	9.22	1,000	3
August	14	E	08/22/05	Largemouth Bass	2	9.22	1,000	2
August	14	E	08/22/05	Redbreast Sunfish	3	9.22	1,000	3
August	14	E	08/22/05	Smallmouth Bass	2	9.22	1,000	2
August	14	W	08/22/05	Bluegill	9	10.98	1,000	9
August	14	W	08/22/05	Fallfish	1	10.98	1,000	1
August	14	W	08/22/05	Largemouth Bass	6	10.98	1,000	6
August	14	W	08/22/05	Pumpkinseed	1	10.98	1,000	1
August	14	W	08/22/05	Redbreast Sunfish	1	10.98	1,000	1
August	14	W	08/22/05	Smallmouth Bass	4	10.98	1,000	4
August	14	W	08/22/05	Yellow Perch	2	10.98	1,000	2
August	15	E	08/22/05	Bluegill	3	10.82	1,000	3
August	15	E	08/22/05	Largemouth Bass	1	10.82	1,000	1
August	15	E	08/22/05	Smallmouth Bass	3	10.82	1,000	3
August	15	E	08/22/05	White Sucker	1	10.82	1,000	1
August	15	W	08/22/05	Bluegill	8	11.68	1,000	8
August	15	W	08/22/05	Chain Pickerel	1	11.68	1,000	1
August	15	W	08/22/05	Largemouth Bass	10	11.68	1,000	10
August	15	W	08/22/05	Pumpkinseed	2	11.68	1,000	2
August	15	W	08/22/05	Redbreast Sunfish	4	11.68	1,000	4
August	15	W	08/22/05	Smallmouth Bass	1	11.68	1,000	1
August	15	W	08/22/05	Yellow Perch	4	11.68	1,000	4
August	16		08/22/05	No Fish Caught	0	3.83	500	0
August	17		08/22/05	Redbreast Sunfish	1	4.33	500	2
August	18		08/22/05	Bluegill	5	5.33	500	10
August	18		08/22/05	Largemouth Bass	1	5.33	500	2
August	18		08/22/05	Smallmouth Bass	2	5.33	500	4

(continued)

Appendix Table 4. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
September	11	E	09/26/05	Black Crappie	2	10.42	1,000	2
September	11	E	09/26/05	Bluegill	10	10.42	1,000	10
September	11	E	09/26/05	Fallfish	2	10.42	1,000	2
September	11	E	09/26/05	Largemouth Bass	28	10.42	1,000	28
September	11	E	09/26/05	Pumpkinseed	1	10.42	1,000	1
September	11	E	09/26/05	Yellow Perch	21	10.42	1,000	21
September	11	W	09/26/05	Bluegill	5	11.67	1,000	5
September	11	W	09/26/05	Golden Shiner	2	11.67	1,000	2
September	11	W	09/26/05	Largemouth Bass	3	11.67	1,000	3
September	11	W	09/26/05	Smallmouth Bass	1	11.67	1,000	1
September	11	W	09/26/05	Spottail Shiner	7	11.67	1,000	7
September	12	E	09/26/05	American Eel	1	12.58	1,000	1
September	12	E	09/26/05	Bluegill	1	12.58	1,000	1
September	12	E	09/26/05	Largemouth Bass	8	12.58	1,000	8
September	12	E	09/26/05	Pumpkinseed	1	12.58	1,000	1
September	12	E	09/26/05	Redbreast Sunfish	10	12.58	1,000	10
September	12	E	09/26/05	Rock Bass	1	12.58	1,000	1
September	12	E	09/26/05	Smallmouth Bass	3	12.58	1,000	3
September	12	E	09/26/05	Yellow Perch	1	12.58	1,000	1
September	12	W	09/26/05	Bluegill	4	10.27	1,000	4
September	12	W	09/26/05	Fallfish	14	10.27	1,000	14
September	12	W	09/26/05	Largemouth Bass	19	10.27	1,000	19
September	12	W	09/26/05	Redbreast Sunfish	1	10.27	1,000	1
September	12	W	09/26/05	Smallmouth Bass	1	10.27	1,000	1
September	12	W	09/26/05	Spottail Shiner	8	10.27	1,000	8
September	12	W	09/26/05	Yellow Perch	6	10.27	1,000	6
September	13	E	09/27/05	Largemouth Bass	1	10.37	1,000	1
September	13	E	09/27/05	Redbreast Sunfish	1	10.37	1,000	1
September	13	E	09/27/05	Smallmouth Bass	5	10.37	1,000	5
September	13	W	09/27/05	Bluegill	3	11.37	1,000	3
September	13	W	09/27/05	Largemouth Bass	1	11.37	1,000	1
September	13	W	09/27/05	Pumpkinseed	2	11.37	1,000	2
September	13	W	09/27/05	Redbreast Sunfish	1	11.37	1,000	1
September	13	W	09/27/05	Yellow Perch	2	11.37	1,000	2
September	14	E	09/27/05	American Eel	1	9.62	1,000	1
September	14	E	09/27/05	Bluegill	27	9.62	1,000	27
September	14	E	09/27/05	Largemouth Bass	9	9.62	1,000	9
September	14	E	09/27/05	Pumpkinseed	1	9.62	1,000	1
September	14	E	09/27/05	Redbreast Sunfish	2	9.62	1,000	2
September	14	E	09/27/05	Smallmouth Bass	3	9.62	1,000	3
September	14	E	09/27/05	Yellow Perch	1	9.62	1,000	1
September	14	W	09/27/05	Bluegill	6	12.15	1,000	6
September	14	W	09/27/05	Fallfish	1	12.15	1,000	1
September	14	W	09/27/05	Largemouth Bass	5	12.15	1,000	5
September	14	W	09/27/05	Pumpkinseed	1	12.15	1,000	1
September	14	W	09/27/05	Smallmouth Bass	3	12.15	1,000	3
September	14	W	09/27/05	Yellow Perch	1	12.15	1,000	1

(continued)

Appendix Table 4. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
September	15	E	09/27/05	Bluegill	1	10.98	1,000	1
September	15	E	09/27/05	Largemouth Bass	7	10.98	1,000	7
September	15	E	09/27/05	Redbreast Sunfish	2	10.98	1,000	2
September	15	E	09/27/05	Smallmouth Bass	2	10.98	1,000	2
September	15	W	09/27/05	Bluegill	6	11.17	1,000	6
September	15	W	09/27/05	Chain Pickerel	1	11.17	1,000	1
September	15	W	09/27/05	Golden Shiner	4	11.17	1,000	4
September	15	W	09/27/05	Largemouth Bass	6	11.17	1,000	6
September	15	W	09/27/05	Pumpkinseed	1	11.17	1,000	1
September	15	W	09/27/05	Redbreast Sunfish	2	11.17	1,000	2
September	15	W	09/27/05	Smallmouth Bass	2	11.17	1,000	2
September	16		09/27/05	Largemouth Bass	1	4.13	500	2
September	17		09/27/05	Smallmouth Bass	1	4.22	500	2
September	18		09/26/05	Bluegill	6	5.62	500	12
September	18		09/26/05	Largemouth Bass	5	5.62	500	10
September	18		09/26/05	Pumpkinseed	3	5.62	500	6
September	18		09/26/05	Rock Bass	1	5.62	500	2
September	18		09/26/05	Smallmouth Bass	2	5.62	500	4
November	11	E	11/21/05	No Fish Caught	0	7.18	1,000	0
November	11	W	11/21/05	No Fish Caught	0	9.35	1,000	0
November	12	E	11/21/05	No Fish Caught	0	10.78	1,000	0
November	12	W	11/21/05	No Fish Caught	0	9.75	1,000	0
November	13	E	11/21/05	No Fish Caught	0	8.90	1,000	0
November	13	W	11/21/05	No Fish Caught	0	8.92	1,000	0
November	14	E	11/21/05	Fallfish	114	8.43	1,000	114
November	14	E	11/21/05	Spottail Shiner	17	8.43	1,000	17
November	14	E	11/21/05	White Perch	1	8.43	1,000	1
November	14	W	11/21/05	No Fish Caught	0	9.02	1,000	0
November	15	E	11/21/05	No Fish Caught	0	9.22	1,000	0
November	15	W	11/21/05	No Fish Caught	0	9.43	1,000	0
November	16		11/29/05	Largemouth Bass	2	5.33	500	4
November	16		11/29/05	Smallmouth Bass	1	5.33	500	2
November	17		11/29/05	Largemouth Bass	1	5.38	500	2
November	17		11/29/05	Smallmouth Bass	2	5.38	500	4
November	18		11/29/05	Black Crappie	1	7.02	500	2
November	18		11/29/05	Bluegill	9	7.02	500	18
November	18		11/29/05	Chain Pickerel	3	7.02	500	6
November	18		11/29/05	Golden Shiner	2	7.02	500	4
November	18		11/29/05	Largemouth Bass	3	7.02	500	6
November	18		11/29/05	Pumpkinseed	1	7.02	500	2
November	18		11/29/05	White Sucker	1	7.02	500	2
November	18		11/29/05	Yellow Perch	2	7.02	500	4
December	11	E	12/12/05	Spottail Shiner	1	10.67	1,000	1
December	11	W	12/12/05	No Fish Caught	0	11.92	1,000	0
December	12	E	12/12/05	No Fish Caught	0	13.68	1,000	0
December	12	W	12/12/05	No Fish Caught	0	13.00	1,000	0
December	13	E	12/13/05	No Fish Caught	0	9.67	1,000	0

(continued)

Appendix Table 4. (Continued)

Month	Station	Site	Date	Common Name	Count	Duration (min)	Transect (ft)	CPUE (fish per 1,000 transect)
December	13	W	12/13/05	No Fish Caught	0	10.17	1,000	0
December	14	E	12/13/05	Golden Shiner	5	9.38	1,000	5
December	14	E	12/13/05	Spottail Shiner	26	9.38	1,000	26
December	14	E	12/13/05	Yellow Perch	1	9.38	1,000	1
December	14	W	12/13/05	Spottail Shiner	1	10.22	1,000	1
December	15	E	12/13/05	No Fish Caught	0	10.28	1,000	0
December	16		12/12/05	Bluegill	1	4.90	500	2
December	16		12/12/05	Chain Pickerel	1	4.90	500	2
December	16		12/12/05	Largemouth Bass	2	4.90	500	4
December	16		12/12/05	Yellow Perch	1	4.90	500	2
December	17		12/12/05	Atlantic Salmon	1	5.72	500	2
December	18		12/12/05	Bluegill	1	6.80	500	2
December	18		12/12/05	Golden Shiner	1	6.80	500	2
December	18		12/12/05	Largemouth Bass	1	6.80	500	2
December	18		12/12/05	Spottail Shiner	1	6.80	500	2
December	18		12/12/05	White Perch	1	6.80	500	2
December	18		12/12/05	White Sucker	4	6.80	500	8
December	18		12/12/05	Yellow Perch	35	6.80	500	70

M30 M31 M32 T15 C22 C23 C21

8285 8285 canal 157 119

Affected thermal discharge.

Good to see water T data for each.

52 yellow perch August & Sept 2005

25 transects = CPUE 2.08

Excluding canal (16 ~~stations~~ transects) 52/19 = 2.73

9 transects w/ yellow perch

52/9 = 5.78