

**VERMONT YANKEE/CONNECTICUT RIVER SYSTEM
ANALYTICAL BULLETIN 76**

**Abundance of Juvenile American Shad
In the Vernon Pool During 2000**

Prepared for

CLIENT

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ABSTRACT

A stratified random sampling plan was implemented to estimate the abundance of juvenile American shad and other fish taxa found in Vernon Pool of the Connecticut River (between Vernon and Brattleboro, VT) during July through October 2000. A 30.5 m (100 ft.) beach seine was used to sample the shore zone (water less than 3 m [10 ft.] deep) during the day, and a 1.8 m x 1.2 m (6 ft. x 4 ft.) midwater trawl was used to sample pelagic waters (greater than 3 m [10 ft.] deep) at night. Vernon Pool was partitioned into four regions, and in each region, the underwater bathymetry and habitat was surveyed to quantify the volume and surface area. We also identified and marked the GPS coordinates of 131 possible beach seine and 45 midwater trawl sampling locations. During each of eight surveys scheduled on alternating weeks, 20 randomly selected beaches were sampled with the seine and 12 randomly selected midwater trawl tows were taken. The catch of fish in each sample was identified to species, enumerated, and measured. The beach seine survey caught an annual total of 3,800 fish in Vernon Pool, and the catch was comprised of 23 fish taxa. American shad (866 fish) was the most abundant fish species caught by seines. The weekly mean catch per unit effort was highly variable for American shad caught by seines, ranging from a low of 0.00 fish/haul among all sampling regions of Vernon Pool during three weeks to a high of 39.00 fish/haul during the week of 7-11 August 2000. The mean length of American shad caught in the beach seine increased as the fish grew from 75 mm during the third week of the program to 114 mm during the last week of the program. No American shad were caught by the midwater trawl among the total of 49 fish representing six fish taxa observed in the pelagic waters of Vernon Pool. Centrarchids (smallmouth bass, largemouth bass, and bluegill) were the most common fish taxa in the midwater trawl. When the weekly mean catch/seine haul of American shad was weighted by the area of beach habitat in each region and summed across regions, the resulting combined standing crop index of juvenile American shad abundance in Vernon averaged 31,244 fish among all eight surveys conducted in 2000. This index was highly variable among weeks and regions, from a low of 0 fish to a high of 226,127 American shad.

INTRODUCTION

One of the stated objectives by the Shad Studies Subcommittee of the Connecticut River Atlantic Salmon Commission in "A Management Plan for American Shad in the Connecticut River Basin" (prepared February 1992) is that population monitoring is required to support the achievement of the management goal of sustaining 1.5 to 2 million shad in the Connecticut River system. Vermont Yankee has participated in the long-term population monitoring in previous years (e.g., Vermont Yankee Analytical Bulletin Nos. 40, 42, and 71), and in 1997 agreed to evaluate beach seining and electrofishing at locations that could be used to develop a juvenile shad relative abundance index (Normandeau 1998, Bulletin No. 71). Sampling via electrofishing and beach seine continued in 1998 and 1999 (Normandeau 1999, Bulletin No. 73; Normandeau 2000, Bulletin No. 75).

The goal of the 2000 program was to develop a juvenile American shad relative abundance index for use as a tool to measure year class strength in Vernon Pool. This abundance index can be defined in terms of the mean catch per unit of effort (CPUE) or standing crop of juvenile shad (Marcy 1976; Crecco et al. 1981) collected in bimonthly samples at the sampling stations during a defined time period (July through October). Marcy's (1976) estimation for juvenile shad year class strength in the lower Connecticut River (Essex rkm 11.3 to Northampton, MA rkm 138) was based on bag seine

CPUE and trawl CPUE at 12 sampling stations. He noted that the strength of each year class was dependent upon the following factors: numbers of adults potentially available to spawn, water temperature, and river discharge. A multiple linear regression model he used revealed a highly significant relationship ($p < 0.05$) between year class strength (CPUE) and the combination of available spawning adults, water temperature, and discharge. He stated that this model can explain 86% of the variability in year class strength and could therefore be used to predict the production of juvenile shad in a particular year with a high degree of success. However, CPUE and abundance of shad in the Vernon Pool has been low to date such that employment of a statistical model would not provide very meaningful results.

As part of the 2000 objective specific studies for Vermont Yankee Nuclear Power Station's NPDES Permit (NPDES No. VT0000264), Normandeau Associates Inc. (Normandeau) performed sampling in the Connecticut River to develop an annual index of abundance for young of the year (YOY) American shad (*Alosa sapidissima*) in Vernon Pool during July through October 2000. We sampled the YOY shad population occupying the shoreline habitat by beach seine, and the YOY shad population inhabiting the pelagic zone (water column) was sampled by midwater trawl.

The juvenile shad program conducted during 2000 was significantly modified and expanded from the 1999 and previous programs. Based on three consecutive years of effort with little success, electrofishing for YOY shad was judged ineffective and was not conducted above the Vernon Dam in 2000 (Normandeau 2000, Bulletin No. 75). Furthermore, beach seine sampling in the West River near Brattleboro, VT (Retreat Meadows) was not conducted in 2000 because efforts in 1998 and 1999 failed to capture any YOY shad (Normandeau 2000, Bulletin No. 75). Cost savings from these changes and from terminating monthly fish sampling with trap nets in the Connecticut River to provide protection for Bald Eagles nesting in our sampling area allowed for an expansion of fishing effort for YOY shad in the 2000 study. The sampling design conducted during July through October 2000 replaced approximately 7 beach seine samples and electrofishing samples collected twice per month with a standard design of 20 beach seine samples and 12 midwater trawl samples collected twice per month. This Bulletin No. 76 presents our development of the YOY shad sampling design, and the results of the 2000 studies.

MATERIALS AND METHODS

Study Area

The proposed study area referred to as "Vernon Pool" was defined as the mainstem Connecticut River extending from the Vernon Hydroelectric Dam in Vernon, VT upstream to the confluence of the West River in Brattleboro, VT (Figure 1). The study area included the "Cersosimo Lake" backwater area of the Connecticut River but not the Retreat Meadows area of the West River or other West River habitat. Vernon Pool was partitioned into the following four regions or strata based on a habitat survey of the shoreline and bathymetry conducted during June 2000: Vernon, Cersosimo, Brattleboro, and Cersosimo Lake (Figure 2). Surface area (beaches) or volume (water column) of each stratum was calculated for use to "weight" the abundance index of YOY shad (Table 1). By using these weighting factors, a "combined standing crop" index based on the proportion of the habitat sampled by each gear, the total amount of that habitat in the study area, and the catch of YOY shad in each habitat and week could be calculated for each week.

We also determined the total number of beach seine stations and midwater trawl tow transects within each stratum, and identified their location by "beach numbers" or "transect numbers" based on their GPS latitude and longitude coordinates. A total of 131 beaches were identified as sampling sites in Vernon Pool, with 46 beaches in the Vernon Region, 25 beaches in the Cersosimo Region, 55 beaches in the Brattleboro Region, and 5 beaches in the Cersosimo Lake backwater (Figure 2, Table 2). A total of 45 midwater trawl tows were identified as sampling sites in Vernon Pool, with 20 transects in the Vernon Region, 13 transects in the Cersosimo Region, and 12 transects in the Brattleboro Region (Figure 2, Table 3). No midwater trawl transects were identified in Cersosimo Lake.

Sampling Design

Beach seine sampling and midwater trawling in the Vernon Pool study area were conducted during July through October 2000 to determine the abundance and catch per unit of effort of YOY American shad and other fish species. We conducted one survey with each gear during the same week, and sampling continued every other week beginning Monday, 10 July 2000 through Friday, 20 October 2000, for a total of eight surveys. The actual number and allocation of 20 seine hauls and 12 midwater trawl tows for each survey was determined based on a proportional allocation scheme (in direct proportion to the amount of habitat in each stratum, Cochran, 1977). Each beach or trawl tow was randomly selected for sampling in each survey (without replacement) from among all available sampling locations in each stratum. For example, in the Brattleboro Region of the Connecticut River, we identified 55 beaches that were potentially available for beach seine sampling based on the shoreline, slope, substrate and absence of large obstructions, and then randomly selected three of these beaches for sampling in each survey. Two alternate sites were also randomly selected for sampling with each gear in each week and region in case it was not possible to sample the primary site due to obstructions or extensive weed beds. Complete inventories of the station names and GPS coordinates of all beaches and trawl tow transects that were identified during the habitat survey are presented in this bulletin as Table 2 (beaches) and Table 3 (trawls).

Beach Seine Survey

The beach seining conducted over the past three years as objective specific studies has been sufficient to establish that YOY shad can be captured effectively by this method. For each beach seine survey conducted during 2000, 20 beaches were randomly selected from all available beaches and sampled during the day (one hour after sunrise to one hour before sunset) with a 100 ft x 8 ft x 3/8 in. delta mesh beach seine (30.5 m long) using standardized deployment practices. Habitat weighting resulted in the random selection and sampling of 3 beaches in the Brattleboro Region, 3 beaches in the Cersosimo Region, 12 beaches in the Vernon Region, and 2 beaches in the Cersosimo Lake Region of Vernon Pool (Table 1). However, we did not have access to Cersosimo Lake during the first three surveys because the boat ramp had deteriorated during the spring high flows and required repair. Therefore, we sampled two extra randomly selected beaches in the Vernon Region during each of the first three surveys (10-14 July, 24-28 July, and 7-11 August 2000), and began sampling in Cersosimo Lake during the fourth survey after the ramp was repaired by Vermont Yankee (21-25 August 2000) through the eighth survey (16-20 October 2000).

The entire catch of fish in each beach seine sample was identified to species, enumerated, and measured to the nearest mm total length (TL). All American shad caught were identified, enumerated, measured to the nearest mm TL, and weighed to the nearest gram. Unusually large catches of American shad or other fish species were randomly subsampled so that at least 50

individuals of each species in the sample were measured for length and weight, and the remaining portion of the sample was counted.

Midwater Trawl Survey

Midwater trawling was considered an experimental gear during 2000, with the intention of sampling the YOY shad population inhabiting the pelagic waters in Vernon Pool that were not sampled by beach seining. Midwater trawling was accomplished by randomly selecting 10 surface coordinates and sampling at each location at night (one hour after sunset to one hour before sunrise) with a fixed-frame midwater trawl. Habitat weighting resulted in the random selection and sampling of 3 midwater trawl tows in the Brattleboro Region, 3 tows in the Cersosimo Region, and 6 tows in the Vernon Region (Table 1). Midwater trawl tows were not taken in the Cersosimo Lake Region of Vernon Pool because this region was too small and shallow to deploy this gear there. The midwater trawl specifications were as follows: 1.8 m x 1.2 m fixed frame net (6 ft wide by 4 ft high), 4.6 m long (15 ft), with 7.9 mm (5/16 in) bar mesh netting throughout and a 6.35 mm (1/4 in) bar mesh cod end liner. The gear was towed behind the boat from a bridle, with a flowmeter (General Oceanics Model 2030) fixed in the center of the frame to measure sample volume. When towed at the surface, a float was mounted at each upper corner of the frame (20 lb. buoyancy), each lower corner was rigged with a 5-kg cable depressor, and the net was towed 200 ft behind the boat. Each tow was for 10 minutes of duration, against the current, at a speed (through water) of 4.4 fps + 0.2 fps. Only surface tows were taken in Vernon Pool because we found that there was insufficient water at depths below 10 ft to fish the trawl at night while avoiding "hanging down" on the bottom along a tow path that was between one-quarter and one-half of a mile long.

The entire catch of fish in each midwater trawl sample was identified to species, enumerated, and measured to the nearest mm total length (TL). All American shad caught were identified, enumerated, measured to the nearest mm TL, and weighed to the nearest gram. Unusually large catches of American shad or other fish species were randomly sampled so that at least 50 individuals of each species in the sample were measured for length and weight, and the remaining fish were counted.

Analytical Methods

Catch-Per-Unit-Effort and Density Estimates

Estimates of population densities were made for American shad and other species caught in the beach seine and midwater trawl surveys. For these two surveys the number of fish (by species) in individual samples was first converted to density (number/m² for fish caught in the beach seine or number/1000 m³ of water sampled for the midwater trawl) using the equations shown below. Similarly, the mean density and the standard error of the mean were then calculated for each stratum, region, and sampling week using the equations shown below. To obtain a mean density and standard error for each region during each sampling week, the stratum densities were weighted by the proportion of the regional river area (seines) or volume (trawls) found in the stratum.

Catches from the beach seines were reported as number caught per seine haul (catch-per-unit-effort [CPUE]) by life stage and species. The average CPUE for seines in a region and its standard error were calculated using Equations 1 and 2:

$$C_{rw} = \frac{1}{n_{rw}} \sum_{i=1}^{n_{rw}} C_{i_{rw}} \quad (1)$$

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

$C_{i_{rw}}$ = CPUE for sample in region r during week w.

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

$$SE(C_{rw}) = \frac{\sum_{i=1}^{n_{rw}} (C_{i_{rw}} - C_{rw})^2}{n_{rw} (n_{rw} - 1)} \quad (2)$$

where

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

C_{rw} = Average regional CPUE calculated in Equation 1.

Catches from the midwater trawl tows were reported as number caught per 1000 m³ (density) by species (Equation 3).

$$D_{ikrw} = \frac{C_{ikrw}}{V_{ikrw}} * 1000 \quad (3)$$

where

D_{ikrw} = Density (for a life stage and species)/1000 m³ for sample i in stratum k in region r during week w.

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

V_{ikrw} = Volume sampled (m³) by sample i in stratum k in region r during week w.

The average density of fish in a region (Equation 4) and its standard error (Equation 5) were calculated as:

$$D_{krw} = \frac{1}{n_{krw}} \sum_{i=1}^{n_{krw}} D_{ikrw} \quad (4)$$

where

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

D_{krw} = Sample density calculated in Equation 3.

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

$$SE(D_{krw}) = \sqrt{\frac{\sum_{i=1}^{n_{krw}} (D_{ikrw} - D_{krw})^2}{(n_{krw})(n_{krw} - 1)}} \quad (5)$$

where

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

D_{ikrw} = Sample density calculated in Equation 3.

D_{krw} = Average stratum density calculated in Equation 4.

The stratum densities (Equation 6) and standard errors (Equation 7) were weighted by the proportion of the regional river area (seines) or volume (trawls) found in the stratum to determine an average regional density:

$$D_{rw} = \sum_{k=1}^{n_{rw}} (D_{krw})(P_k) \quad (6)$$

where

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

P_k^* = Proportion of the regional river area or volume found in stratum k (Table 1).

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

$$SE(D_{rw}) = \sqrt{\sum_{k=1}^{n_{rw}} [SE(D_{krw})^2 (P_k)^2]} \quad (7)$$

where

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

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

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

Standing Crop Estimates

An index of standing crop (the number of fish in an area at a particular time) was estimated for American shad for each week. Standing crop indices and the associated standard errors were calculated for each stratum in a region by taking the product of the average stratum density (or the standard error) and the volume of water contained in that stratum (Equations 6 and 7, Table 1). The regional standing crop index was then estimated as the sum of the stratum index values (Equations 8 and 9). Similarly, an estimate of the standing crop index for the entire Vernon Pool for each week was calculated by summing the standing crops for the four (4) seine river regions or three (3) trawl river regions (Equations 10 and 11). This value is considered an index rather than an absolute standing crop value because no adjustment was applied for collection efficiency.

$$SC_{krw} = (V_{kr})(D_{krw}) \quad (8)$$

where

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

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

D_{krw} = Average stratum density calculated in Equation 4.

$$SE(SC_{krw}) = (V_{kr})[SE(D_{krw})] \quad (9)$$

where

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

$SE(D_{krw})$ = Standard error of average stratum density calculated in Equation 5.

$$SC_{rw}^{**} = \sum_{k=1} SC_{krw} \quad (10)$$

where

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

SC_{krw} = Stratum standing crop index calculated in Equation 8.

$$SE(SC_{rw})^{**} = \sqrt{\sum_{k=1}^r [SE(SC_{krw})]^2} \quad (11)$$

where

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

$SE(SC_{krw})$ = Standard error of stratum standing crop index calculated in Equation 9.

$$SC_w = \sum_{r=1}^r SC_{rw} \quad (12)$$

where

$SC(SC_w)$ = Standing crop index for week w.

$SC(SC_{rw})$ = Regional standing crop index calculated in Equations 10 or 14.

$$SE(SC_w) = \sqrt{\sum_{r=1}^r [SE(SC_{rw})]^2} \quad (13)$$

where

$SE(SC_w)$ = Standard error of standing crop index for week w.

$SE(SC_{rw})$ = Standard error of regional standing crop index calculated in Equations 11 or 15.

An index of regional standing crop (and standard error) for the beach seines was obtained by multiplying CPUE and the surface area of the shore zone and dividing by the empirically derived estimate of the area sampled by the 100 ft (30.5-m) beach seine (Equations 14 and 15). The weekly index of standing crop for the shore zone was calculated as the sum of the 4 regional standing crops (Equations 12 and 13).

$$SC_{rw} = (C_{rw} A_r) / A \quad (14)$$

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

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

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

** Volume of unsampled pelagic zone of Cersosimo Lake strata was added to the volume of the adjacent Cersosimo Region.

A = Surface area (m²) sampled by the beach seine (450 m²) (TI 1981).

$$SE(SC_{rw}) = \frac{[SE(C_{rw})](A_r)}{A} \quad (15)$$

where

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

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

RESULTS

Sampling Effort

A total of 20 beach seine samples and 12 midwater trawl samples were collected in Vernon Pool of the Connecticut River during each of the eight biweekly surveys, resulting in the collection of 160 beach seine samples and 96 midwater trawl samples in the July through October 2000 period. The two beaches in Cersosimo Lake were not sampled during the first three surveys (10-14 July, 24-28 July and 7-11 August 2000) because the boat ramp needed repairs, so we collected these samples from two extra randomly selected beaches in the Vernon Region. We also considered one midwater trawl sample collected on 24 August in the Brattleboro Region at station T-36 to be void because the flowmeter was lost when the net became fouled on a submerged obstruction.

Catch and Species Composition

Beach Seine Survey

The beach seine survey caught an annual total of 3,800 fish in Vernon Pool, and the catch was comprised of 23 fish taxa (Table 4). At least one fish was caught in each region and week that the beach seine was fished in Vernon Pool. American shad (866 fish) was the most abundant fish species caught by seines. Bluegill (797 fish) was second in abundance, yellow perch (677 fish) ranked third in abundance, golden shiner (435 fish) was fourth, largemouth bass (311 fish) was fifth, black crappie (251 fish) was sixth, and spottail shiner (131 fish) was seventh in abundance in the 2000 beach seine survey (Table 4). These seven species collectively contributed 91% of the total catch by beach seine. Fewer than 100 individuals of each of the remaining 16 fish taxa were caught, and these 16 taxa collectively contributed only 9% of the total beach seine catch during 2000.

A total of 866 juvenile American shad were caught by beach seine during five of the eight surveys; shad were not caught during the weeks of 10-14 July, 24-28 July and 2-6 October 2000 (Table 4). American shad were most abundant in the Vernon Region of the Connecticut River, and the catch during the week of 7-11 August 2000 contributed an unusually high number of shad (780) to the total catch of 801 shad in that region (Table 4). The high catch in the Vernon Region during the week of 7-11 August 2000 was primarily from one seine haul taken at Beach Number 88 (Figure 2) in which 731 American shad were caught. The Brattleboro Region and Cersosimo Lake exhibited the next highest annual total catch of American shad (31 shad in each region), and the Cersosimo Region had the lowest annual total catch of shad (3 fish).

The weekly length-frequency distribution for juvenile American shad demonstrated growth throughout the season (Figure 3). The mean length of American shad caught during the week of 7-11 August was 75 mm based on 149 fish measured. The mean length of American shad increased to 80 mm during the week of 21-25 August (15 fish measured), 86 mm during the week of 4-8 September (51 fish measured), 106 mm during the week of 18-22 September (18 fish measured), and was 114 mm for two fish caught and measured during the last sampling week (16-20 October) of the program.

Except for the high catch of shad contributing to a total catch of 1,273 fish during the week of 7-11 August, the weekly total number of fish caught (all taxa combined) was relatively uniform and ranged from 252 fish to 532 fish per week (Table 4). The Vernon Region contributed the most fish to the total catch (3,014 fish or 79%), but this was not surprising since this region also had most of the seine sampling effort.

Midwater Trawl Survey

The midwater trawl survey caught an annual total of 49 fish representing six fish taxa in the pelagic waters of Vernon Pool during the 2000 survey (Table 5). The midwater trawl failed to catch any American shad. Smallmouth bass were the most abundant fish species caught, contributing 59% of the total midwater trawl catch. Smallmouth bass were most abundant in the midwater trawl catch during the first two weeks of the survey (10-14 July and 24-28 July 2000), and were relatively evenly distributed among the three regions sampled. The Brattleboro Region contributed nearly half of the annual total catch by the midwater trawl during the 2000 program (Table 5). In general, juvenile centrarchids contributed the most fish (44/49 or 89%) of the total fish taxa caught in the midwater trawl.

Catch Per Unit Effort (CPUE) and Density (No./1000 m³)

Beach Seine Survey

The weekly mean CPUE for all fish taxa combined in the beach seine survey ranged from a low of 12.60 fish/haul among all sampling regions of Vernon Pool during the week of 16-20 October 2000 to a high of 63.65 fish/haul during the week of 7-11 August 2000 (Table 6). The highest mean CPUE of 84.29 fish/haul was observed in the Vernon Region of Vernon Pool during the week of 7-11 August 2000, and American shad, with a mean CPUE of 55.71 fish/haul, was the single species contributing most this seasonal peak in CPUE (Table 6). The relatively high standard error (SE) of 36.50 fish/haul for the mean CPUE of American shad among all regions during the week of 7-11 August 2000 (Table 6) reflects high variability in the distribution of fish caught in the 14 randomly selected beach sites sampled in the Vernon Region. The second highest weekly mean CPUE for all fish taxa combined was 66.00 fish/haul observed in Cersosimo Lake during the week of 21-25 August 2000 (Table 6). Black crappie mean CPUE of 35.50 fish/haul contributed most to this second highest weekly mean CPUE.

The weekly mean CPUE for American shad in the beach seine survey ranged from a low of 0.00 fish/haul among all sampling regions of Vernon Pool during three weeks (10-14 July, 24-28 July, and 2-6 October) to a high of 39.00 fish/haul during the week of 7-11 August 2000 (Table 6). With the exception of the peak week, American shad CPUE was low in the beach seine samples and highly variable. The high variability is most likely a result of schooling behavior in juvenile American shad, which makes the probability of catching fish at any one beach low, but when they are present the CPUE will be high. For example, the high weekly mean CPUE during the week of 7-11 August 2000

was primarily from one seine haul taken in the Vernon Region in which 731 American shad were caught. The second highest weekly mean CPUE for American shad was 10.33 fish/haul observed in the Brattleboro Region during the week of 4-8 September 2000 (Table 6), and the catch of 31 fish from one seine haul was averaged with two zero catch hauls to produce this mean.

Midwater Trawl Density (No./1000 m³)

The weekly mean density for all fish taxa combined in midwater trawl survey ranged from a low of 0.00 fish/1,000 m³ among all sampling regions of Vernon Pool during the last week of the survey (16-20 October) to a high of 1.18 fish/1,000 m³ during the first week of the survey (7-11 August 2000, Table 7).

No American shad were caught during the midwater trawl survey. Smallmouth bass exhibited the highest density in the midwater trawl, with a density of 1.79 fish/1,000 m³ for samples taken in the Brattleboro Region of Vernon Pool during the week of 10-14 July 2000 (Table 7). Smallmouth bass densities of 1.45 fish/1,000 m³ and 1.28 fish/1,000 m³ were observed during the weeks of 4-8 September and 24-28 July 2000.

Juvenile American Shad Standing Crop Index

The weekly combined standing crop index for juvenile American shad ranged from a low of 0 fish among all sampling regions of Vernon Pool during three weeks (10-14 July, 24-28 July, and 2-6 October) to a high of 226,127 fish during the week of 7-11 August 2000 (Table 7). When averaged among all eight weeks, the index was 31,244 juvenile American shad with a standard error of +28,691 fish. The beach seine survey contributed all of the fish to the index in 2000, because no American shad were caught in the midwater trawl survey. The Vernon Region contributed all of the American shad to the peak week of 7-11 August, and also contributed a substantial number of fish to the index during the weeks of 21-25 August and 18-22 September (Table 8). The Brattleboro Region contributed a significant number of fish to the combined standing crop index during the week of 4-8 September 2000.

DISCUSSION

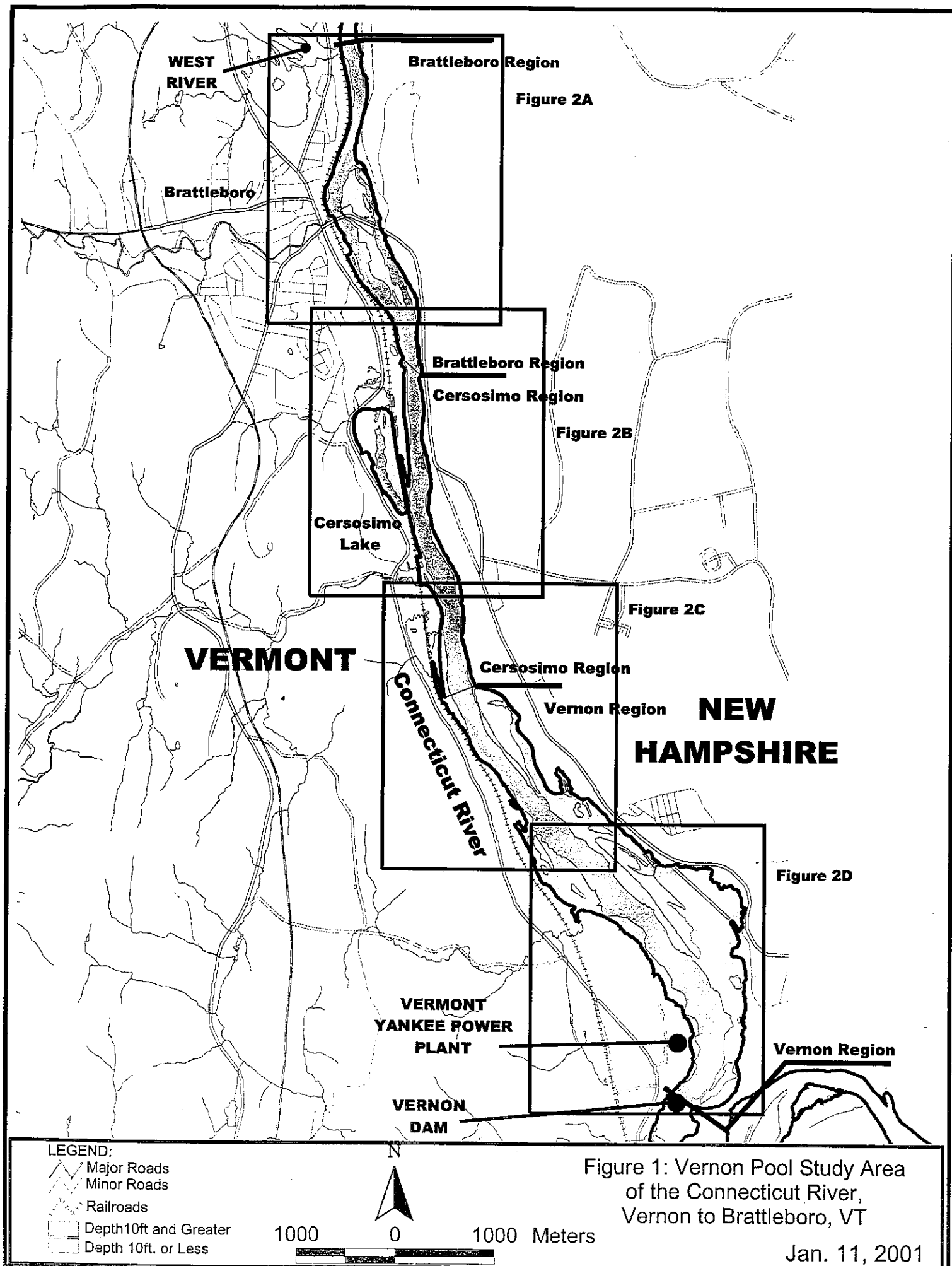
The beach seine survey continues to be a highly effective program for sampling juvenile American shad and other fish taxa in Vernon Pool. Random allocation of the sampling effort among four geographic regions made the beach seine survey conducted during 2000 more robust and representative of the entire Vernon Pool compared with previous surveys. The random design was not subjected to variability associated with changes in fish distribution compared with a fixed location design such as sampling only in Cersosimo Lake. The 2000 survey demonstrated that significant numbers of juvenile American shad are found in the Brattleboro and Vernon Regions of the Connecticut River in addition to Cersosimo Lake. The Vernon Region also has a substantial amount of beach habitat that may represent a nursery area for juvenile American shad. Juvenile American shad are a schooling fish species and highly variable in distribution, as demonstrated by the observed range in CPUE from 0 to 731 fish/haul. Zero catches in all regions during the first two surveys may reflect sampling that occurred prior to recruitment of juvenile American shad to the sampling gear. The largest catch 731 fish in one haul undoubtedly represents capture of part or all of a school of American shad in the Vernon Region. The use of geometric means or moving averages may help statistically control this high variability.

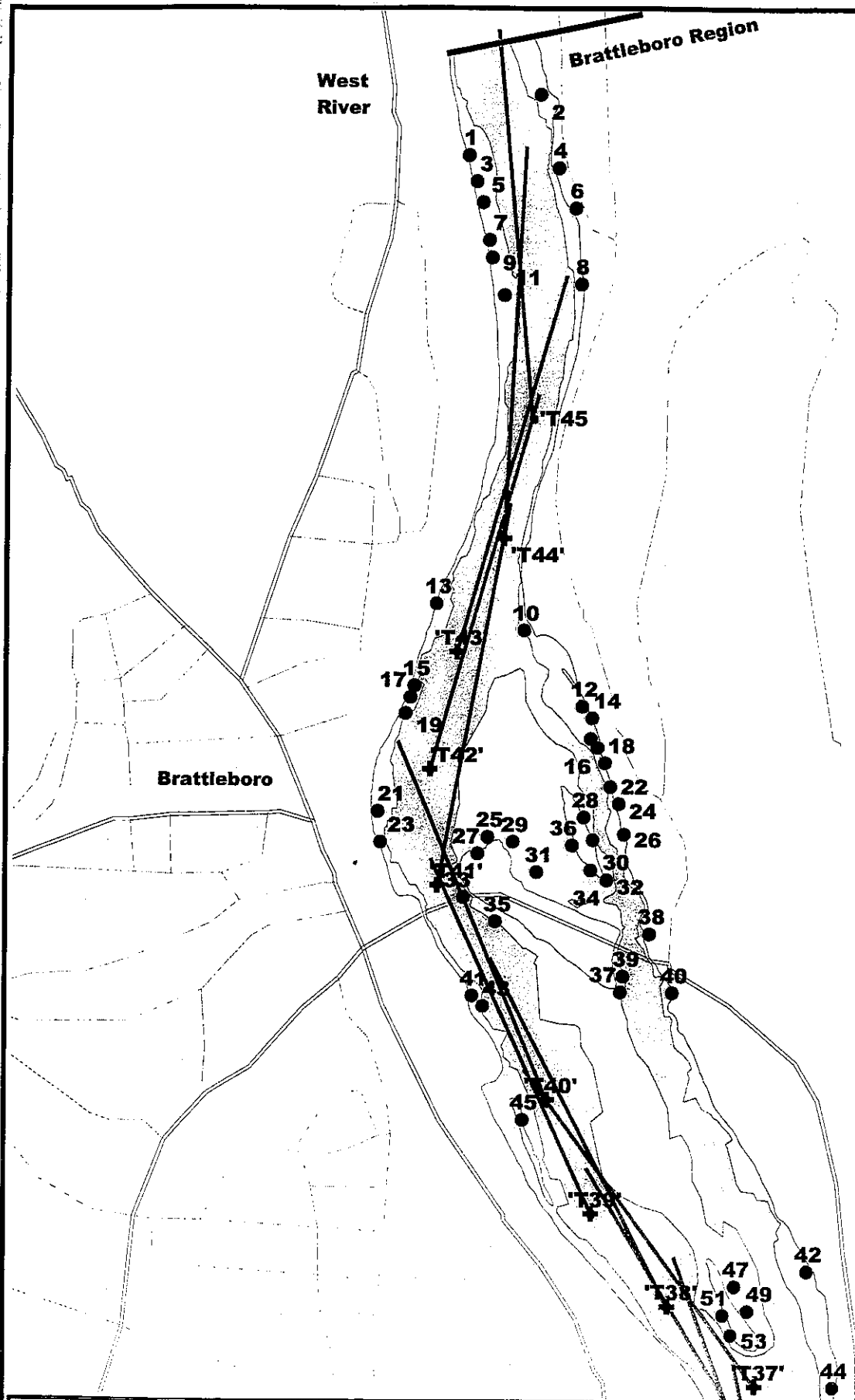
The midwater trawl survey failed to capture American shad in Vernon Pool during the 2000 program. This gear was fished at night to minimize gear avoidance by juvenile fish, and the standard deployment has been used effectively to sample juvenile fish in the pelagic zone of other river systems. The pelagic zone of Vernon Pool represents 63% of the available fish habitat (volume), and in the Brattleboro and Cersosimo Regions, the pelagic zone is between two and five times the size of the beach zone. Each fish caught in the pelagic zone contributes two to five times to the standing crop index compared to a fish caught in the beach zone. Therefore, it was useful to sample with the midwater trawl in the pelagic zone so that the combined standing index for Vernon Pool is represented by random sampling effort allocated among all of the available fish habitat.

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Figures and Tables for the 2000 Juvenile American Shad Bulletin No. 76





LEGEND:

- Beaches
- Major Roads
- Minor Roads
- Towlines
- Railroads
- Depth 10ft and Greater
- Depth 10ft. or Less

300

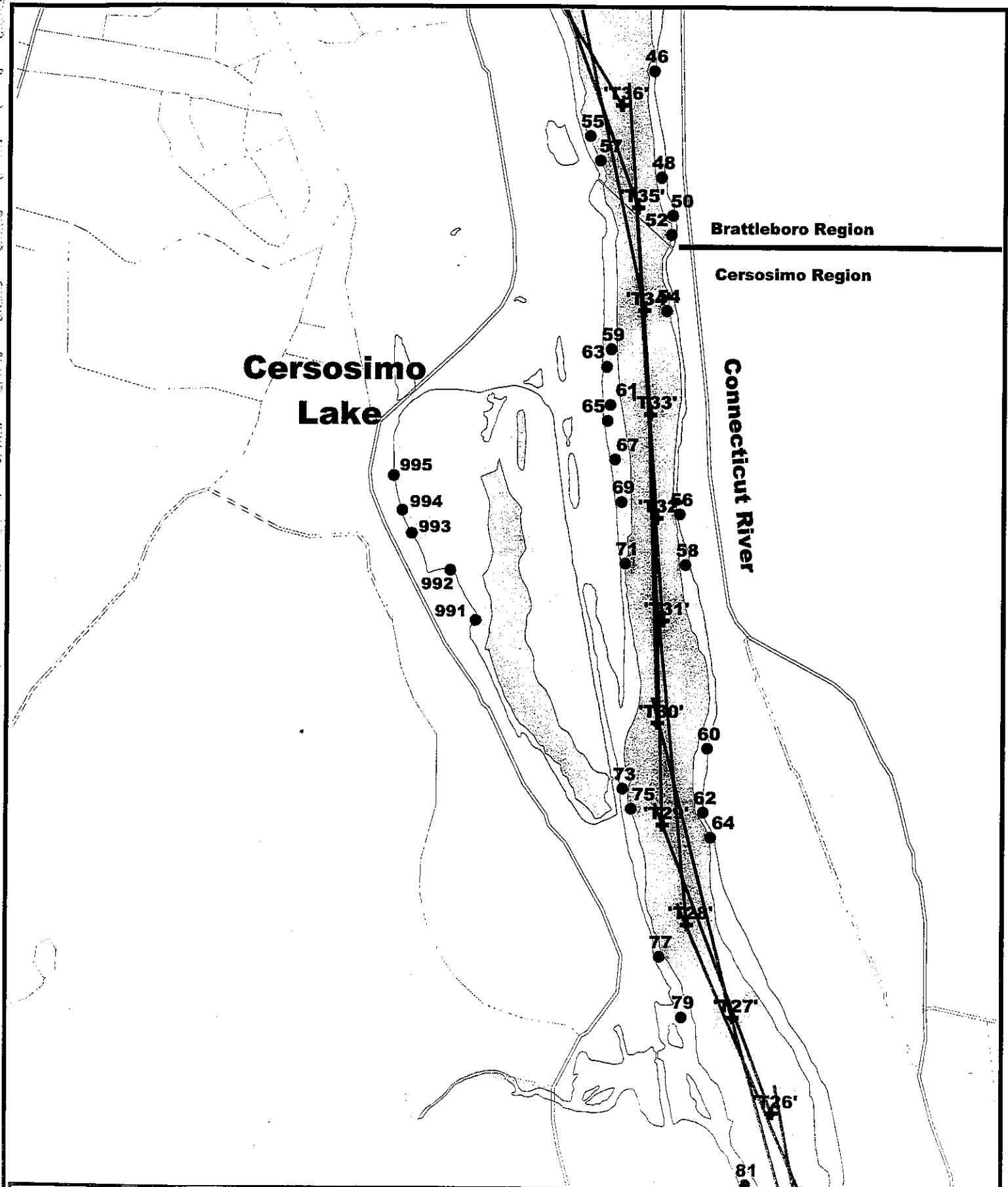


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300 Meters

Figure 2A: Juvenile American Shad Study, Connecticut River
Vernon to Brattleboro, VT

JAN. 11, 2001



LEGEND:

- Beaches
- Major Roads
- Minor Roads
- Towlines
- Railroads
- Depth 10ft and Greater
- Depth 10ft. or Less

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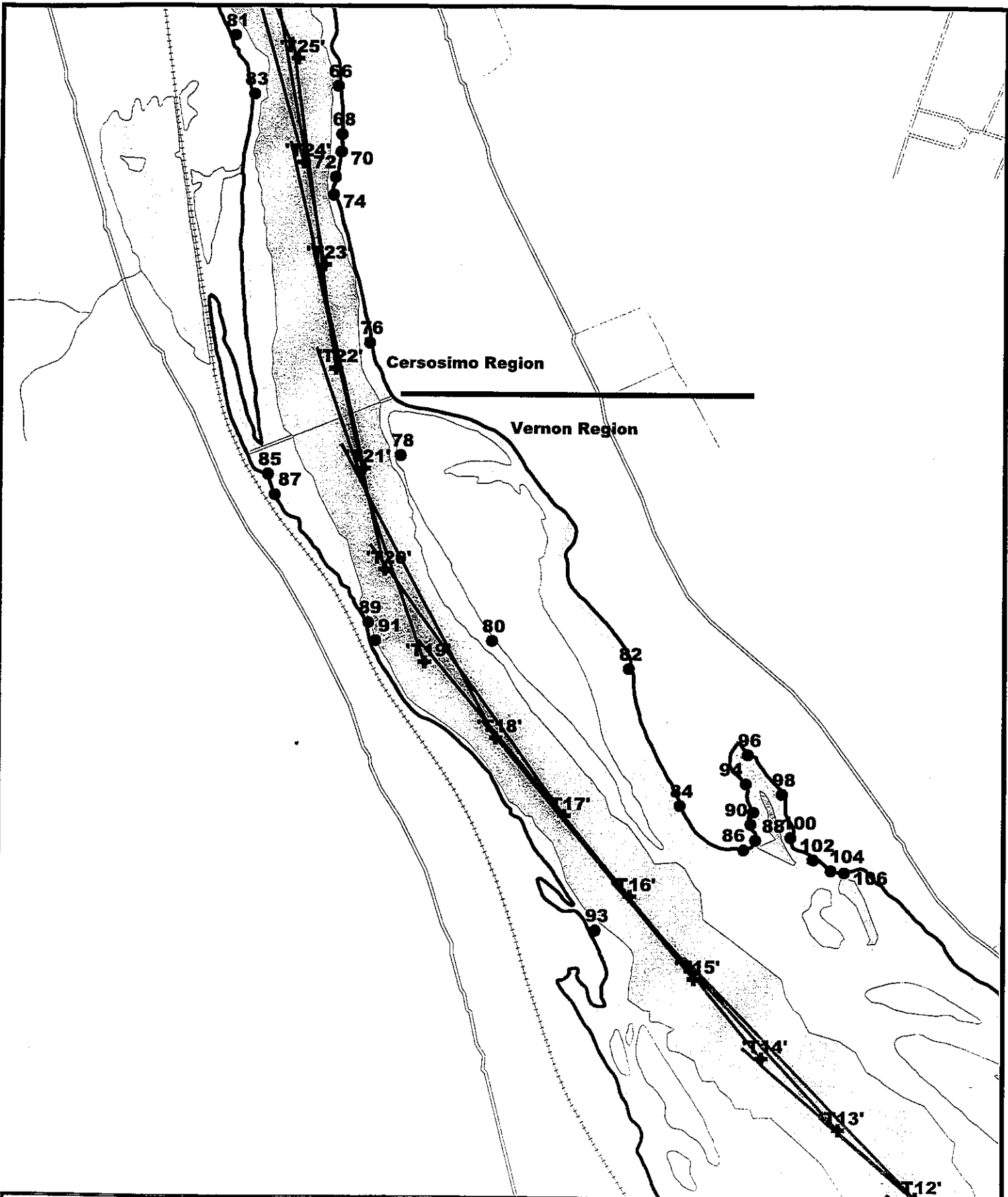


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**Figure 2B: Juvenile American Shad Study, Connecticut River
Vernon to Brattleboro, VT**

JAN. 11, 2001



LEGEND:

• Beaches

Major Roads

Minor Roads

Towlines

Railroads

Depth 10ft and Greater

Depth 10ft. or Less

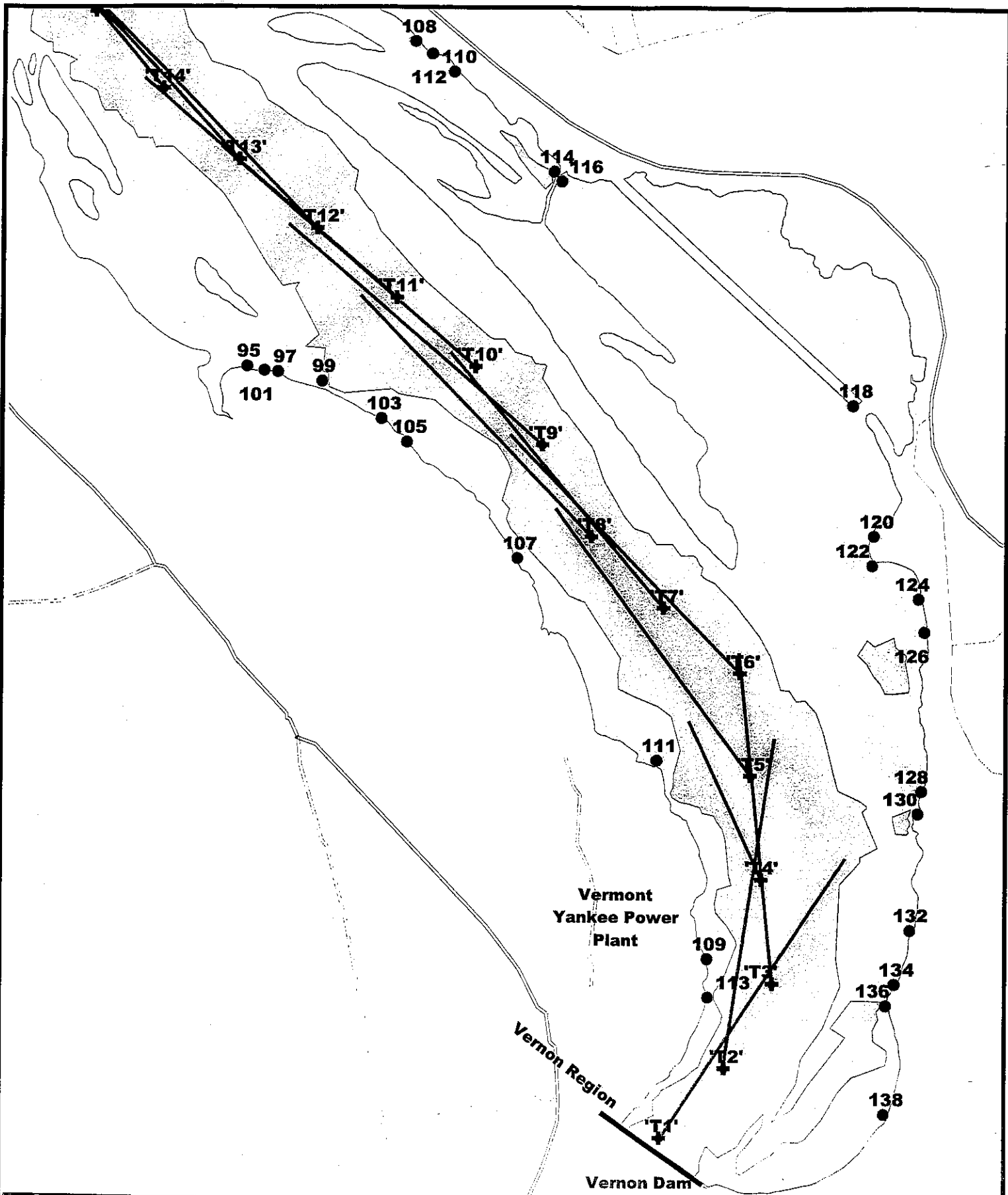
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300 Meters

**Figure 2C: Juvenile American Shad Study, Connecticut River
Vernon to Brattleboro, VT**

JAN. 11, 2001



LEGEND:

- Beaches
- Major Roads
- Minor Roads
- Towlines
- Railroads
- Depth 10ft and Greater
- Depth 10ft. or Less

300



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300 Meters

Figure 2D: Juvenile American Shad Study, Connecticut River
Vernon to Brattleboro, VT

JAN. 11, 2001

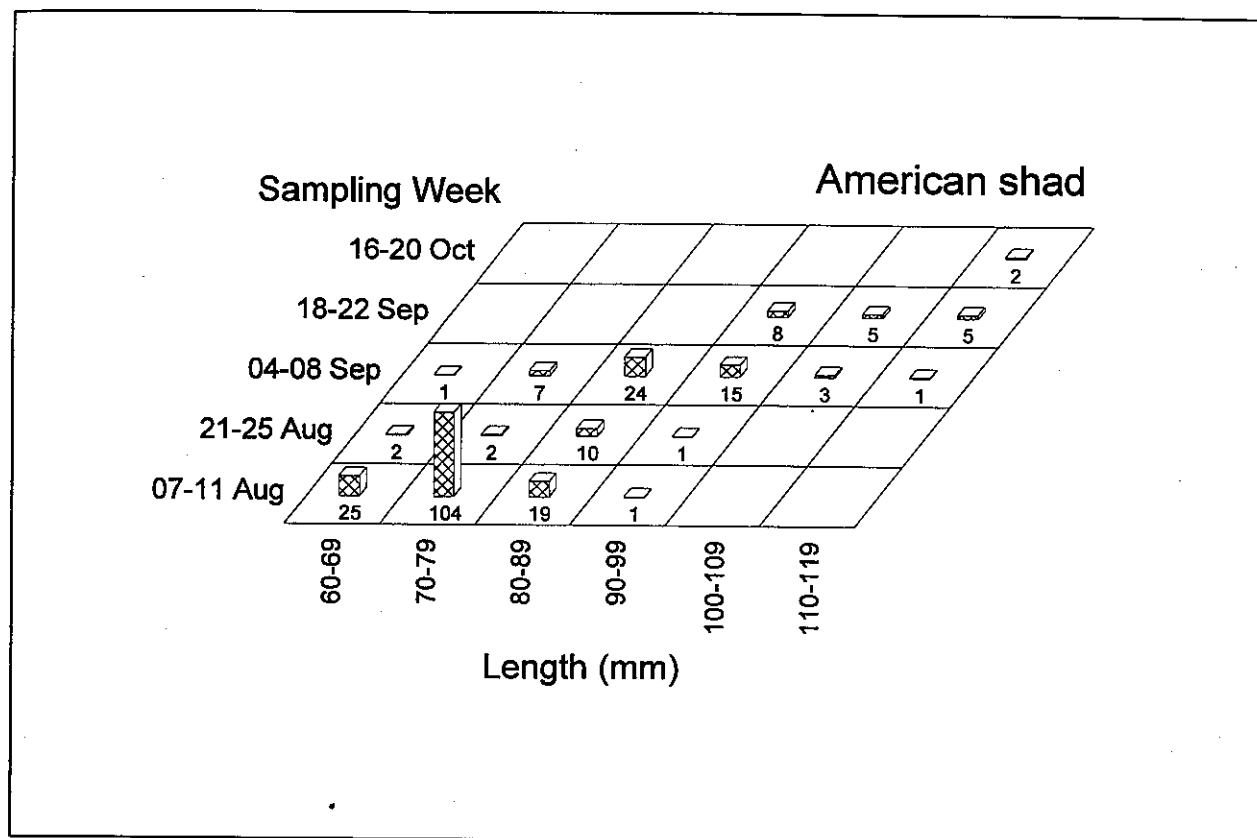


Figure 3. Weekly Length-Frequency of Juvenile American Shad Caught by Seine in Vernon Pool of the Connecticut River, July – October, 2000.

TABLE 1. AREA (SQUARE METERS) AND VOLUME (CUBIC METERS) OF SAMPLING REGIONS, AND WEIGHTING FACTORS USED TO CALCULATE THE STANDING CROP INDEX FOR JUVENILE AMERICAN SHAD IN VERNON POOL OF THE CONNECTICUT RIVER, JULY - OCTOBER 2000.

REGION	Total Water Surface Area (m2)	Beach Surface Area (m2)	Pelagic Surface Area (m2)	Number of Seine Sample Units (450 m2)	Beach Area Weighting Factor	Allocation Number of Seine Samples
Brattleboro	912828	372683	540145	828	0.139191	3
Cersosimo	795667	259316	536351	576	0.096850	3
Vernon	3127489	1826417	1301072	4059	0.682135	12
Cersosimo Lake	292504	219084	73420	487	0.081824	2
All Regions	5128488	2677500	2450988	5950	1.000000	20

REGION	Total Volume (m3)	Volume of Water In Beach Zone (m3)	Volume of Water In Pelagic Zone (m3)	Beach Weighting Factor	Pelagic Weighting Factor	Allocation Number of Trawl Samples
Brattleboro	4492300	1471112	3021188	0.068325	0.140318	3
Cersosimo	4329334	748642	3580692	0.034770	0.166304	3
Vernon	12140137	5170180	6969957	0.240127	0.323716	6
Cersosimo Lake	569283	334318	234965	0.026440	0.000000	0
All Regions	21531054	7724252	13806802	0.369662	0.630338	12

TABLE 2. STATION NAMES AND LATITUDE/LONGITUDE COORDINATES FOR BEACH SEINE SAMPLES IN Vernon POOL OF THE CONNECTICUT RIVER, JULY - OCTOBER 2000.				
RIVER REGION	SHORE	STATION (BEACH NUMBER)	MINUTES OF	
			LATITUDE N 42 Deg.	LONGITUDE W 72 Deg.
Brattleboro	VT	1	51.9255	33.2941
Brattleboro	NH	2	51.9929	33.1879
Brattleboro	VT	3	51.8968	33.2822
Brattleboro	NH	4	51.9117	33.1598
Brattleboro	VT	5	51.8737	33.2727
Brattleboro	NH	6	51.8675	33.1341
Brattleboro	VT	7	51.8321	33.2630
Brattleboro	NH	8	51.7837	33.1249
Brattleboro	VT	9	51.8129	33.2584
Brattleboro	NH	10	51.4018	33.2066
Brattleboro	VT	11	51.7713	33.2397
Brattleboro	NH	12	51.3173	33.1191
Brattleboro	VT	13	51.4312	33.3382
Brattleboro	NH	14	51.3046	33.1035
Brattleboro	VT	15	51.3401	33.3706
Brattleboro	NH	16	51.2814	33.1059
Brattleboro	VT	17	51.3270	33.3766
Brattleboro	NH	18	51.2545	33.0841
Brattleboro	VT	19	51.3095	33.3840
Brattleboro	NH	20	51.2716	33.0954
Brattleboro	VT	21	51.1998	33.4244
Brattleboro	NH	22	51.2280	33.0760
Brattleboro	VT	23	51.1657	33.4202
Brattleboro	NH	24	51.2090	33.0628
Brattleboro	VT	25	51.1714	33.2593
Brattleboro	NH	26	51.1749	33.0550
Brattleboro	VT	27	51.1526	33.2741
Brattleboro	NH	28	51.1937	33.1158
Brattleboro	VT	29	51.1660	33.2216
Brattleboro	NH	30	51.1685	33.1021
Brattleboro	VT	31	51.1323	33.1857
Brattleboro	NH	32	51.1236	33.0806
Brattleboro	VT	33	51.1040	33.2952
Brattleboro	NH	34	51.1346	33.1047
Brattleboro	VT	35	51.0769	33.2470
Brattleboro	NH	36	51.1623	33.1327
Brattleboro	VT	37	50.9990	33.0589
Brattleboro	NH	38	51.0640	33.0155
Brattleboro	VT	39	51.0167	33.0551
Brattleboro	NH	40	50.9986	32.9806
Brattleboro	VT	41	50.9942	33.2817
Brattleboro	NH	42	50.6922	32.7754
Brattleboro	VT	43	50.9832	33.2651
Brattleboro	NH	44	50.5639	32.7361
Brattleboro	VT	45	50.8573	33.2048
Brattleboro	NH	46	50.4804	32.7448
Brattleboro	VT	47	50.6755	32.8840
Brattleboro	NH	48	50.3419	32.7304
Brattleboro	VT	49	50.6485	32.8648
Brattleboro	NH	50	50.2923	32.7100
Brattleboro	VT	51	50.6439	32.9017
Brattleboro	NH	52	50.2676	32.7126
Brattleboro	VT	53	50.6221	32.8894

Table 2
Table 2 Beach Seine.xls
1/31/01

TABLE 2. STATION NAMES AND LATITUDE/LONGITUDE COORDINATES FOR BEACH SEINE SAMPLES IN Vernon POOL OF THE CONNECTICUT RIVER, JULY - OCTOBER 2000.				
		MINUTES OF		
RIVER		STATION	LATITUDE	LONGITUDE
REGION	SHORE	(BEACH NUMBER)	N 42 Deg.	W 72 Deg.
Brattleboro	VT	55	50.3951	32.8583
Brattleboro	VT	57	50.3634	32.8403
Cersosimo	NH	54	50.1685	32.7202
Cersosimo	NH	56	49.9046	32.6941
Cersosimo	NH	58	49.8384	32.6834
Cersosimo	VT	59	50.1186	32.8186
Cersosimo	NH	60	49.5969	32.6430
Cersosimo	VT	61	50.0469	32.8196
Cersosimo	NH	62	49.5126	32.6496
Cersosimo	VT	63	50.0960	32.8262
Cersosimo	NH	64	49.4802	32.6362
Cersosimo	VT	65	50.0257	32.8243
Cersosimo	NH	66	48.9618	32.3895
Cersosimo	VT	67	49.9757	32.8106
Cersosimo	NH	68	48.8995	32.3828
Cersosimo	VT	69	49.9204	32.7984
Cersosimo	NH	70	48.8769	32.3835
Cersosimo	VT	71	49.8398	32.7912
Cersosimo	NH	72	48.8442	32.3932
Cersosimo	VT	73	49.5438	32.7932
Cersosimo	NH	74	48.8215	32.3967
Cersosimo	VT	75	49.5173	32.7778
Cersosimo	NH	76	48.6312	32.3305
Cersosimo	VT	77	49.3245	32.7262
Cersosimo	VT	79	49.2461	32.6862
Cersosimo	VT	81	49.0282	32.5713
Cersosimo	VT	83	48.9513	32.5365
Vernon	NH	78	48.4866	32.2750
Vernon	NH	80	48.2457	32.1131
Vernon	NH	82	48.2104	31.8710
Vernon	NH	84	48.0319	31.7799
Vernon	VT	85	48.4618	32.5088
Vernon	NH	86	47.9749	31.6672
Vernon	VT	87	48.4355	32.4971
Vernon	NH	88	47.9872	31.6469
Vernon	VT	89	48.2695	32.3307
Vernon	NH	90	48.0080	31.6550
Vernon	VT	91	48.2456	32.3175
Vernon	NH	92	48.0240	31.6508
Vernon	VT	93	47.8682	31.9313
Vernon	NH	94	48.0606	31.6635
Vernon	VT	95	47.3485	31.4840
Vernon	NH	96	48.0987	31.6603
Vernon	VT	97	47.3411	31.4301
Vernon	NH	98	48.0471	31.5997
Vernon	VT	99	47.3290	31.3525
Vernon	NH	100	47.9911	31.5845
Vernon	VT	101	47.3428	31.4538
Vernon	NH	102	47.9621	31.5452
Vernon	VT	103	47.2810	31.2483
Vernon	NH	104	47.9455	31.4903
Vernon	VT	105	47.2511	31.2035
Vernon	NH	106	47.9482	31.5137
Vernon	VT	107	47.1011	31.0094

Table 2
Table 2 Beach Seine.xls
1/31/01

TABLE 2. STATION NAMES AND LATITUDE/LONGITUDE COORDINATES				
FOR BEACH SEINE SAMPLES IN Vernon POOL OF THE CONNECTICUT				
RIVER, JULY - OCTOBER 2000.				
		MINUTES OF		
RIVER		STATION	LATITUDE	LONGITUDE
REGION	SHORE	(BEACH NUMBER)	N 42 Deg.	W 72 Deg.
Vernon	NH	108	47.7681	31.1934
Vernon	VT	109	46.8380	30.7601
Vernon	NH	110	47.7284	31.1257
Vernon	VT	111	46.5809	30.6698
Vernon	NH	112	47.7520	31.1641
Vernon	VT	113	46.5315	30.6682
Vernon	NH	114	47.5999	30.9487
Vernon	NH	116	47.5869	30.9346
Vernon	NH	118	47.3001	30.4170
Vernon	NH	120	47.1317	30.3791
Vernon	NH	122	47.0937	30.3818
Vernon	NH	124	47.0502	30.2996
Vernon	NH	126	47.0071	30.2895
Vernon	NH	128	46.7989	30.2935
Vernon	NH	130	46.7695	30.2993
Vernon	NH	132	46.6186	30.3132
Vernon	NH	134	46.5492	30.3401
Vernon	NH	136	46.5217	30.3546
Vernon	NH	138	46.3821	30.3575
Cersosimo Lake	VT	991	49.7639	33.0567
Cersosimo Lake	VT	992	49.8296	33.1013
Cersosimo Lake	VT	993	49.8778	33.1700
Cersosimo Lake	VT	994	49.9080	33.1873
Cersosimo Lake	VT	995	49.9531	33.2030

TABLE 3. STATION NAMES, LATITUDE/LONGITUDE COORDINATES, AND TOW DIRECTIONS FOR MIDWATER TRAW TOWS IN VERNON POOL OF THE CONNECTICUT RIVER, JULY-OCTOBER 2000.					
REGION	STATION	MINUTES OF		TOW	
		LATITUDE	LONGITUDE	DIRECTION	
		N 42 deg.	W 72 deg.		
Brattleboro	'T45'	51.6353	33.1946	'N05'	
Brattleboro	'T44'	51.5040	33.2375	'N357'	
Brattleboro	'T43'	51.3778	33.3065	'N354'	
Brattleboro	'T42'	51.2472	33.3464	'N354'	
Brattleboro	'T41'	51.1176	33.3344	'N350'	
Brattleboro	'T40'	50.8798	33.1682	'N23'	
Brattleboro	'T39'	50.7544	33.1007	'N24'	
Brattleboro	'T38'	50.6533	32.9855	'N26'	
Brattleboro	'T37'	50.5655	32.8532	'N36'	
Brattleboro	'T36'	50.4359	32.8027	'N32'	
Brattleboro	'T35'	50.3027	32.7722	'N20'	
Brattleboro	'T34'	50.1691	32.7596	'N12'	
Cersosimo	'T33'	50.0345	32.7473	'N04'	
Cersosimo	'T32'	49.8997	32.7348	'N04'	
Cersosimo	'T31'	49.7651	32.7233	'N04'	
Cersosimo	'T30'	49.6301	32.7318	'N01'	
Cersosimo	'T29'	49.4963	32.7216	'N02'	
Cersosimo	'T28'	49.3663	32.6770	'N05'	
Cersosimo	'T27'	49.2458	32.5951	'N14'	
Cersosimo	'T26'	49.1221	32.5243	'N21'	
Cersosimo	'T25'	48.9980	32.4614	'N24'	
Cersosimo	'T24'	48.8635	32.4495	'N16'	
Cersosimo	'T23'	48.7315	32.4112	'N10'	
Cersosimo	'T22'	48.5986	32.3901	'N08'	
Cersosimo	'T21'	48.4697	32.3400	'N13'	
Vernon	'T20'	48.3384	32.3018	'N13'	
Vernon	'T19'	48.2177	32.2309	'N19'	
Vernon	'T18'	48.1191	32.1056	'N28'	
Vernon	'T17'	48.0184	31.9837	'N36'	
Vernon	'T16'	47.9142	31.8670	'N39'	
Vernon	'T15'	47.8080	31.7538	'N39'	
Vernon	'T14'	47.7060	31.6338	'N39'	
Vernon	'T13'	47.6147	31.4989	'N43'	
Vernon	'T12'	47.5263	31.3622	'N44'	
Vernon	'T11'	47.4371	31.2223	'N49'	
Vernon	'T10'	47.3485	31.0844	'N49'	
Vernon	'T9'	47.2484	30.9655	'N49'	
Vernon	'T8'	47.1297	30.8777	'N44'	
Vernon	'T7'	47.0372	30.7493	'N40'	
Vernon	'T6'	46.9524	30.6134	'N44'	
Vernon	'T5'	46.8182	30.5944	'N36'	
Vernon	'T4'	46.6833	30.5742	'N25'	
Vernon	'T3'	46.5495	30.5544	'N06'	
Vernon	'T2'	46.4404	30.6389	'N352'	
Vernon	'T1'	46.3505	30.7530	'N327'	

Table 3
Table 3 Trawl.xls
1/31/01

Table 4. Weekly and Regional Number of Fish Taxa Caught by Beach Seine in Vernon Pool of the Connecticut River, July - October 2000.

		NUMBER OF FISH OF CAUGHT IN SAMPLING WEEK								
	Hauls per Week	10-14 Jul	24-28 Jul	07-11 Aug	21-25 Aug	04-08 Sep	18-22 Sep	02-06 Oct	16-20 Oct	All Weeks
American shad										
Brattleboro	3	0	0	0	0	31	0	0	0	31
Cersosimo	3	0	0	0	2	1	0	0	0	3
Vernon	12	0	0	780	6	3	12	0	0	801
Cersosimo Lake	2	N	N	N	7	16	6	0	2	31
All Regions	20	0	0	780	15	51	18	0	2	866
Bluegill										
Brattleboro	3	0	9	15	3	4	2	2	0	35
Cersosimo	3	8	22	6	1	10	6	2	9	64
Vernon	12	104	71	114	46	85	60	173	29	682
Cersosimo Lake	2	N	N	N	1	0	2	2	11	16
All Regions	20	112	102	135	51	99	70	179	49	797
Yellow perch										
Brattleboro	3	2	17	19	6	16	2	1	3	66
Cersosimo	3	6	9	4	17	12	5	29	3	85
Vernon	12	91	20	70	37	75	51	100	20	464
Cersosimo Lake	2	N	N	N	17	9	24	3	9	62
All Regions	20	99	46	93	77	112	82	133	35	677
Golden shiner										
Brattleboro	3	0	2	0	0	0	0	0	0	2
Cersosimo	3	0	24	0	0	0	0	0	0	24
Vernon	12	32	50	96	20	34	18	24	134	408
Cersosimo Lake	2	N	N	N	0	0	0	1	0	1
All Regions	20	32	76	96	20	34	18	25	134	435
Largemouth bass										
Brattleboro	3	0	0	10	1	2	9	0	0	22
Cersosimo	3	3	0	4	3	1	1	1	1	14
Vernon	12	18	35	59	33	33	43	27	2	250
Cersosimo Lake	2	N	N	N	3	2	12	3	5	25
All Regions	20	21	35	73	40	38	65	31	8	311
Black crappie										
Brattleboro	3	0	0	0	1	5	0	0	0	6
Cersosimo	3	0	1	14	0	5	5	5	0	30
Vernon	12	2	3	31	22	29	13	42	1	143
Cersosimo Lake	2	N	N	N	71	0	0	0	1	72
All Regions	20	2	4	45	94	39	18	47	2	251

N = Not Sampled

Table 4 (Continued)

		NUMBER OF FISH OF CAUGHT IN SAMPLING WEEK								
	Hauls per Week	10-14 Jul	24-28 Jul	07-11 Aug	21-25 Aug	04-08 Sep	18-22 Sep	02-06 Oct	16-20 Oct	All Weeks
Spottail shiner										
Brattleboro	3	2	5	1	0	0	0	0	1	9
Cersosimo	3	0	9	5	3	0	0	0	0	17
Vernon	12	0	2	6	13	18	0	66	0	105
Cersosimo Lake	2	N	N	N	0	0	0	0	0	0
All Regions	20	2	16	12	16	18	0	66	1	131
Pumpkinseed										
Brattleboro	3	0	0	2	0	3	3	0	0	8
Cersosimo	3	4	1	0	6	0	0	6	4	21
Vernon	12	16	11	16	4	8	2	5	3	65
Cersosimo Lake	2	N	N	N	0	0	0	0	0	0
All Regions	20	20	12	18	10	11	5	11	7	94
Chain pickerel										
Brattleboro	3	0	0	0	0	1	0	0	0	1
Cersosimo	3	0	0	0	2	0	3	2	0	7
Vernon	12	5	3	4	6	6	8	13	3	48
Cersosimo Lake	2	N	N	N	0	0	0	0	1	1
All Regions	20	5	3	4	8	7	11	15	4	57
Rock bass										
Brattleboro	3	0	0	5	3	6	3	5	0	22
Cersosimo	3	0	4	0	1	0	0	1	2	8
Vernon	12	0	1	1	4	6	0	4	0	16
Cersosimo Lake	2	N	N	N	0	0	0	0	0	0
All Regions	20	0	5	6	8	12	3	10	2	46
White perch										
Brattleboro	3	0	0	0	0	0	0	0	0	0
Cersosimo	3	1	0	0	0	0	0	0	0	1
Vernon	12	0	0	0	0	0	0	0	0	0
Cersosimo Lake	2	N	N	N	31	0	4	4	4	43
All Regions	20	1	0	0	31	0	4	4	4	44
Smallmouth bass										
Brattleboro	3	1	1	6	3	3	2	1	0	17
Cersosimo	3	4	1	0	0	0	0	0	0	5
Vernon	12	1	1	3	7	0	4	0	0	16
Cersosimo Lake	2	N	N	N	1	0	0	0	0	1
All Regions	20	6	3	9	11	3	6	1	0	39
Tessellated darter										
Brattleboro	3	12	1	1	0	0	1	1	0	16
Cersosimo	3	0	0	0	0	0	1	0	2	3
Vernon	12	1	0	0	0	0	0	0	0	1
Cersosimo Lake	2	N	N	N	0	0	0	1	1	2
All Regions	20	13	1	1	0	0	2	2	3	22

N = Not Sampled

Table 4 (Continued)

	Hauls per Week	10-14 Jul
Yellow bullhead		
Brattleboro	3	
Cersosimo	3	
Vernon	12	
Cersosimo Lake	2	
All Regions	20	
Percina sp.		
Brattleboro	3	
Cersosimo	3	
Vernon	12	
Cersosimo Lake	2	
All Regions	20	
Lampreys		
Brattleboro	3	
Cersosimo	3	
Vernon	12	
Cersosimo Lake	2	
All Regions	20	
All Taxa Combined		
Brattleboro	3	
Cersosimo	3	
Vernon	12	2
Cersosimo Lake	2	
All Regions	20	3

Table 4 (Continued)

	Hauls per Week	NUMBER OF FISH OF CA			
		10-14 Jul	24-28 Jul	07-11 Aug	21-24 Aug
White sucker					
Brattleboro	3	3	1	0	1
Cersosimo	3	0	0	0	0
Vernon	12	2	0	0	0
Cersosimo Lake	2	N	N	N	1
All Regions	20	5	1	0	2
Common Shiner					
Brattleboro	3	0	0	0	0
Cersosimo	3	0	0	0	0
Vernon	12	0	0	0	3
Cersosimo Lake	2	N	N	N	0
All Regions	20	0	0	0	3
Northern pike					
Brattleboro	3	0	0	1	0
Cersosimo	3	0	0	0	0
Vernon	12	1	0	0	0
Cersosimo Lake	2	N	N	N	0
All Regions	20	1	0	1	0
Banded killifish					
Brattleboro	3	0	0	0	0
Cersosimo	3	0	0	0	0
Vernon	12	0	0	0	0
Cersosimo Lake	2	N	N	N	0
All Regions	20	0	0	0	0
Walleye					
Brattleboro	3	1	0	0	0
Cersosimo	3	0	0	0	0
Vernon	12	1	0	0	0
Cersosimo Lake	2	N	N	N	0
All Regions	20	2	0	0	0
Fallfish					
Brattleboro	3	0	0	0	0
Cersosimo	3	1	0	0	0
Vernon	12	0	0	0	0
Cersosimo Lake	2	N	N	N	0
All Regions	20	1	0	0	0
Notropis sp.					
Brattleboro	3	0	0	0	0
Cersosimo	3	0	0	0	0
Vernon	12	0	1	0	0
Cersosimo Lake	2	N	N	N	0
All Regions	20	0	1	0	0

N = Not Sampled

Table 5. Weekly and Regional Number of Fish Caught by Midwater Trawl in Vernon Pool of the Connecticut River, July – October, 2000.

	Tows Per Week	NUMBER OF FISH OF CAUGHT IN SAMPLING WEEK								
		10-14	24-28	7-11	21-25	4-8	18-22	2-6	16-20	All Weeks
		Jul	Jul	Aug	Aug	Sep	Sep	Oct	Oct	
Smallmouth bass										
Brattleboro	3	7	5	0	0	0	0	0	0	12
Cersosimo	3	5	3	0	1	0	0	0	0	9
Vernon	6	3	5	0	0	0	0	0	0	8
All Regions	12	15	13	0	1	0	0	0	0	29
Largemouth bass										
Brattleboro	3	0	0	4	0	0	0	0	0	4
Cersosimo	3	0	0	0	0	0	2	0	0	2
Vernon	6	2	0	0	0	0	0	0	0	2
All Regions	12	2	0	4	0	0	2	0	0	8
Bluegill										
Brattleboro	3	0	0	0	0	7	0	0	0	7
Cersosimo	3	0	0	0	0	0	0	0	0	0
Vernon	6	0	0	0	0	0	0	0	0	0
All Regions	12	0	0	0	0	7	0	0	0	7
Spottail shiner										
Brattleboro	3	0	0	0	0	0	0	1	0	1
Cersosimo	3	1	0	0	0	1	0	0	0	2
Vernon	6	0	0	0	0	0	0	0	0	0
All Regions	12	1	0	0	0	1	0	1	0	3
Golden shiner										
Brattleboro	3	0	0	0	0	0	0	0	0	0
Cersosimo	3	0	0	0	0	0	0	0	0	0
Vernon	6	0	0	0	0	0	1	0	0	1
All Regions	12	0	0	0	0	0	1	0	0	1
Notropis sp.										
Brattleboro	3	0	0	0	0	0	0	0	0	0
Cersosimo	3	0	0	0	0	0	0	0	0	0
Vernon	6	0	0	0	0	0	1	0	0	1
All Regions	12	0	0	0	0	0	1	0	0	1
All Taxa Combined										
Brattleboro	3	7	5	4	0	7	0	1	0	24
Cersosimo	3	6	3	0	1	1	2	0	0	13
Vernon	6	5	5	0	0	0	2	0	0	12
All Regions	12	18	13	4	1	8	4	1	0	49

Table 6. Weekly and Regional Mean Catch Per Unit Effort (CPUE) of American Shad and Other Fish Taxa Caught by Beach Seine in Vernon Pool of the Connecticut River, July - October 2000.

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
All Taxa						
10-14 Jul	CPUE	7.00	9.33	19.57	.	16.15
	SE	7.00	4.18	5.29	.	3.99
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	12.00	23.67	14.14	.	15.25
	SE	7.64	12.25	3.59	.	3.18
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	20.00	11.00	84.29	.	63.65
	SE	8.89	11.00	50.63	.	35.83
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	6.00	17.50	15.46	66.00	19.30
	SE	4.58	8.50	2.50	32.00	4.70
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	24.00	14.50	22.85	13.50	21.25
	SE	16.26	5.50	3.68	9.50	3.33
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	7.67	7.33	17.58	24.00	15.20
	SE	3.84	4.10	4.71	10.00	3.20
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	3.33	23.00	35.46	7.50	26.60
	SE	3.33	1.00	13.48	6.50	9.16
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	1.00	11.00	16.00	17.00	12.60
	SE	0.71	11.00	10.41	15.00	6.43
	#HAULS	4.00	2.00	12.00	2.00	20.00
American shad						
10-14 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	55.71	.	39.00
	SE	0.00	0.00	52.06	.	36.50
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	1.00	0.46	3.50	0.75
	SE	0.00	0.00	0.46	2.50	0.41
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	10.33	0.50	0.23	8.00	2.55
	SE	10.33	0.50	0.23	4.00	1.62
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	1.00	3.00	0.90
	SE	0.00	0.00	0.72	0.00	0.46
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	1.00	0.10
	SE	0.00	0.00	0.00	1.00	0.10
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Black crappie						
10-14 Jul	CPUE	0.00	0.00	0.14	.	0.10
	SE	0.00	0.00	0.10	.	0.07
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.33	0.21	.	0.20
	SE	0.00	0.33	0.15	.	0.12
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	4.67	2.21	.	2.25
	SE	0.00	4.67	1.17	.	1.04
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.33	0.00	1.69	35.50	4.70
	SE	0.33	0.00	1.14	15.50	2.71
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	1.67	2.50	2.23	0.00	1.95
	SE	1.67	2.50	1.07	0.00	0.76
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	1.67	1.08	0.00	0.90
	SE	0.00	0.88	0.91	0.00	0.56
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	2.50	3.23	0.00	2.35
	SE	0.00	2.50	2.51	0.00	1.65
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.08	0.50	0.10
	SE	0.00	0.00	0.08	0.50	0.07
	#HAULS	4.00	2.00	12.00	2.00	20.00
Golden shiner						
10-14 Jul	CPUE	0.00	0.00	2.29	.	1.60
	SE	0.00	0.00	1.48	.	1.05
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.67	8.00	3.57	.	3.80
	SE	0.33	5.29	2.51	.	1.92
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	6.86	.	4.80
	SE	0.00	0.00	4.59	.	3.26
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	1.54	0.00	1.00
	SE	0.00	0.00	0.72	0.00	0.49
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	2.62	0.00	1.70
	SE	0.00	0.00	1.65	0.00	1.10
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	1.50	0.00	0.90
	SE	0.00	0.00	1.01	0.00	0.62
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	1.85	0.50	1.25
	SE	0.00	0.00	0.91	0.50	0.62
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	11.17	0.00	6.70
	SE	0.00	0.00	7.96	0.00	4.86
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

		VERNON POOL REGION				
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Yellow perch						
10-14 Jul	CPUE	0.67	2.00	6.50	.	4.95
	SE	0.67	1.15	2.28	.	1.68
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	5.67	3.00	1.43	.	2.30
	SE	5.67	1.73	0.48	.	0.89
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	6.33	1.33	5.00	.	4.65
	SE	3.18	1.33	1.21	.	1.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	2.00	8.50	2.85	8.50	3.85
	SE	2.00	4.50	0.92	0.50	0.90
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	5.33	6.00	5.77	4.50	5.60
	SE	3.93	3.00	1.54	4.50	1.18
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.67	1.67	4.25	12.00	4.10
	SE	0.67	0.88	1.42	7.00	1.20
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.33	14.50	7.69	1.50	6.65
	SE	0.33	7.50	2.90	1.50	2.14
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.75	1.50	1.67	4.50	1.75
	SE	0.75	1.50	0.83	3.50	0.62
	#HAULS	4.00	2.00	12.00	2.00	20.00
Bluegill						
10-14 Jul	CPUE	0.00	2.67	7.43	.	5.60
	SE	0.00	1.33	2.38	.	1.79
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	3.00	7.33	5.07	.	5.10
	SE	2.08	5.04	1.55	.	1.30
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	5.00	2.00	8.14	.	6.75
	SE	3.61	2.00	2.49	.	1.87
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	1.00	0.50	3.54	0.50	2.55
	SE	1.00	0.50	0.84	0.50	0.64
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	1.33	5.00	6.54	0.00	4.95
	SE	0.88	4.00	1.83	0.00	1.34
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.67	2.00	5.00	1.00	3.50
	SE	0.33	2.00	1.58	1.00	1.06
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.67	1.00	13.31	1.00	8.95
	SE	0.67	1.00	5.14	1.00	3.57
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	4.50	2.42	5.50	2.45
	SE	0.00	4.50	1.70	5.50	1.18
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Largemouth bass						
10-14 Jul	CPUE	0.00	1.00	1.29	.	1.05
	SE	0.00	1.00	0.71	.	0.52
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	2.50	.	1.75
	SE	0.00	0.00	0.84	.	0.64
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	3.33	1.33	4.21	.	3.65
	SE	0.88	1.33	1.01	.	0.76
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.33	1.50	2.54	1.50	2.00
	SE	0.33	1.50	0.83	0.50	0.58
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.67	0.50	2.54	1.00	1.90
	SE	0.33	0.50	0.53	1.00	0.40
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	3.00	0.33	3.58	6.00	3.25
	SE	2.52	0.33	1.66	0.00	1.08
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.50	2.08	1.50	1.55
	SE	0.00	0.50	0.65	1.50	0.47
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.50	0.17	2.50	0.40
	SE	0.00	0.50	0.11	1.50	0.21
	#HAULS	4.00	2.00	12.00	2.00	20.00
White perch						
10-14 Jul	CPUE	0.00	0.33	0.00	.	0.05
	SE	0.00	0.33	0.00	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	15.50	1.55
	SE	0.00	0.00	0.00	12.50	1.40
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	2.00	0.20
	SE	0.00	0.00	0.00	2.00	0.20
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.00	2.00	0.20
	SE	0.00	0.00	0.00	2.00	0.20
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	2.00	0.20
	SE	0.00	0.00	0.00	2.00	0.20
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Spottail shiner						
10-14 Jul	CPUE	0.67	0.00	0.00	.	0.10
	SE	0.67	0.00	0.00	.	0.10
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	1.67	3.00	0.14	.	0.80
	SE	1.67	3.00	0.14	.	0.51
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.33	1.67	0.43	.	0.60
	SE	0.33	1.67	0.36	.	0.34
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	1.50	1.00	0.00	0.80
	SE	0.00	1.50	0.76	0.00	0.51
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	1.38	0.00	0.90
	SE	0.00	0.00	0.86	0.00	0.57
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	5.08	0.00	3.30
	SE	0.00	0.00	4.75	0.00	3.10
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.25	0.00	0.00	0.00	0.05
	SE	0.25	0.00	0.00	0.00	0.05
	#HAULS	4.00	2.00	12.00	2.00	20.00
Pumpkinseed						
10-14 Jul	CPUE	0.00	1.33	1.14	.	1.00
	SE	0.00	0.67	0.48	.	0.36
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.33	0.79	.	0.60
	SE	0.00	0.33	0.24	.	0.18
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.67	0.00	1.14	.	0.90
	SE	0.33	0.00	0.42	.	0.31
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	3.00	0.31	0.00	0.50
	SE	0.00	0.00	0.17	0.00	0.22
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	1.00	0.00	0.62	0.00	0.55
	SE	1.00	0.00	0.21	0.00	0.20
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	1.00	0.00	0.17	0.00	0.25
	SE	1.00	0.00	0.11	0.00	0.16
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	3.00	0.38	0.00	0.55
	SE	0.00	3.00	0.18	0.00	0.31
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	2.00	0.25	0.00	0.35
	SE	0.00	2.00	0.18	0.00	0.22
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Rock bass						
10-14 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	1.33	0.07	.	0.25
	SE	0.00	1.33	0.07	.	0.20
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	1.67	0.00	0.07	.	0.30
	SE	1.67	0.00	0.07	.	0.25
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	1.00	0.50	0.31	0.00	0.40
	SE	1.00	0.50	0.21	0.00	0.20
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	2.00	0.00	0.46	0.00	0.60
	SE	1.53	0.00	0.39	0.00	0.34
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	1.00	0.00	0.00	0.00	0.15
	SE	0.58	0.00	0.00	0.00	0.11
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	1.67	0.50	0.31	0.00	0.50
	SE	1.67	0.50	0.24	0.00	0.29
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	1.00	0.00	0.00	0.10
	SE	0.00	1.00	0.00	0.00	0.10
	#HAULS	4.00	2.00	12.00	2.00	20.00
Smallmouth bass						
10-14 Jul	CPUE	0.33	1.33	0.07	.	0.30
	SE	0.33	0.88	0.07	.	0.16
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.33	0.33	0.07	.	0.15
	SE	0.33	0.33	0.07	.	0.08
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	2.00	0.00	0.21	.	0.45
	SE	2.00	0.00	0.15	.	0.31
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	1.00	0.00	0.54	0.50	0.55
	SE	1.00	0.00	0.39	0.50	0.29
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	1.00	0.00	0.00	0.00	0.15
	SE	1.00	0.00	0.00	0.00	0.15
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.67	0.00	0.33	0.00	0.30
	SE	0.67	0.00	0.19	0.00	0.15
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.33	0.00	0.00	0.00	0.05
	SE	0.33	0.00	0.00	0.00	0.05
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Chain pickerel						
10-14 Jul	CPUE	0.00	0.00	0.36	.	0.25
	SE	0.00	0.00	0.13	.	0.10
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.21	.	0.15
	SE	0.00	0.00	0.15	.	0.11
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.29	.	0.20
	SE	0.00	0.00	0.16	.	0.12
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	1.00	0.46	0.00	0.40
	SE	0.00	1.00	0.18	0.00	0.15
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.33	0.00	0.46	0.00	0.35
	SE	0.33	0.00	0.24	0.00	0.17
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	1.00	0.67	0.00	0.55
	SE	0.00	1.00	0.26	0.00	0.21
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	1.00	1.00	0.00	0.75
	SE	0.00	1.00	0.38	0.00	0.27
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.25	0.50	0.20
	SE	0.00	0.00	0.13	0.50	0.09
	#HAULS	4.00	2.00	12.00	2.00	20.00
Tessellated darter						
10-14 Jul	CPUE	4.00	0.00	0.07	.	0.65
	SE	4.00	0.00	0.07	.	0.60
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.33	0.00	0.00	.	0.05
	SE	0.33	0.00	0.00	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.33	0.00	0.00	.	0.05
	SE	0.33	0.00	0.00	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.33	0.33	0.00	0.00	0.10
	SE	0.33	0.33	0.00	0.00	0.07
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.33	0.00	0.00	0.50	0.10
	SE	0.33	0.00	0.00	0.50	0.07
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	1.00	0.00	0.50	0.15
	SE	0.00	1.00	0.00	0.50	0.11
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
White sucker						
10-14 Jul	CPUE	1.00	0.00	0.14	.	0.25
	SE	1.00	0.00	0.14	.	0.18
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.33	0.00	0.00	.	0.05
	SE	0.33	0.00	0.00	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.33	0.00	0.00	0.50	0.10
	SE	0.33	0.00	0.00	0.50	0.07
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.33	0.00	0.00	0.05
	SE	0.00	0.33	0.00	0.00	0.05
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.08	0.50	0.10
	SE	0.00	0.00	0.08	0.50	0.07
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.50	0.00	0.00	0.05
	SE	0.00	0.50	0.00	0.00	0.05
	#HAULS	4.00	2.00	12.00	2.00	20.00
Common Shiner						
10-14 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.23	0.00	0.15
	SE	0.00	0.00	0.17	0.00	0.11
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.31	0.00	0.20
	SE	0.00	0.00	0.21	0.00	0.14
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Banded killifish						
10-14 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.33	0.00	0.00	0.00	0.05
	SE	0.33	0.00	0.00	0.00	0.05
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.33	0.00	0.00	0.00	0.05
	SE	0.33	0.00	0.00	0.00	0.05
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00
Northern pike						
10-14 Jul	CPUE	0.00	0.00	0.07	.	0.05
	SE	0.00	0.00	0.07	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.33	0.00	0.00	.	0.05
	SE	0.33	0.00	0.00	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Walleye						
10-14 Jul	CPUE	0.33	0.00	0.07	.	0.10
	SE	0.33	0.00	0.07	.	0.07
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00
Fallfish						
10-14 Jul	CPUE	0.00	0.33	0.00	.	0.05
	SE	0.00	0.33	0.00	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Percina sp.						
10-14 Jul	CPUE	0.00	0.33	0.00	.	0.05
	SE	0.00	0.33	0.00	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00
Yellow bullhead						
10-14 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.08	0.00	0.05
	SE	0.00	0.00	0.08	0.00	0.05
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 6 (Continued)

VERNON POOL REGION						
		Brattleboro	Cersosimo	Vernon	Cersosimo Lake	All Regions
Lampreys						
10-14 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.08	0.00	0.05
	SE	0.00	0.00	0.08	0.00	0.05
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00
Notropis sp.						
10-14 Jul	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
24-28 Jul	CPUE	0.00	0.00	0.07	.	0.05
	SE	0.00	0.00	0.07	.	0.05
	#HAULS	3.00	3.00	14.00	.	20.00
07-11 Aug	CPUE	0.00	0.00	0.00	.	0.00
	SE	0.00	0.00	0.00	.	0.00
	#HAULS	3.00	3.00	14.00	.	20.00
21-25 Aug	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
04-08 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
18-22 Sep	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	3.00	12.00	2.00	20.00
02-06 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	3.00	2.00	13.00	2.00	20.00
16-20 Oct	CPUE	0.00	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00	0.00
	#HAULS	4.00	2.00	12.00	2.00	20.00

Table 7. Weekly and Regional Mean Density (Number of Fish per 1,000 m3) of American Shad and other Fish Taxa Caught by Midwater Trawl in Vernon Pool of the Connecticut River, July - October 2000.

All Taxa

		VERNON POOL REGION			
		Brattleboro	Cersosimo	Vernon	All Regions
10-14 Jul	DENSITY	1.79	1.64	0.65	1.18
	SE	0.53	0.98	0.32	0.33
	NO.TOWS	3.00	3.00	6.00	12.00
24-28 Jul	DENSITY	1.28	0.75	0.63	0.82
	SE	0.55	0.42	0.36	0.24
	NO.TOWS	3.00	3.00	6.00	12.00
07-11 Aug	DENSITY	0.96	0.00	0.00	0.24
	SE	0.64	0.00	0.00	0.18
	NO.TOWS	3.00	3.00	6.00	12.00
21-25 Aug	DENSITY	0.00	0.25	0.00	0.07
	SE	0.00	0.25	0.00	0.07
	NO.TOWS	2.00	3.00	6.00	11.00
04-08 Sep	DENSITY	1.45	0.18	0.00	0.41
	SE	1.45	0.18	0.00	0.36
	NO.TOWS	3.00	3.00	6.00	12.00
18-22 Sep	DENSITY	0.00	0.44	0.21	0.22
	SE	0.00	0.22	0.14	0.09
	NO.TOWS	3.00	3.00	6.00	12.00
02-06 Oct	DENSITY	0.23	0.00	0.00	0.06
	SE	0.23	0.00	0.00	0.06
	NO.TOWS	3.00	3.00	6.00	12.00
16-20 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00

Table 7 (Continued)

American shad

		VERNON POOL REGION			
		Brattleboro	Cersosimo	Vernon	All Regions
10-14 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
24-28 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
07-11 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
21-25 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	2.00	3.00	6.00	11.00
04-08 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
18-22 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
02-06 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
16-20 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00

Table 7 (Continued)

Smallmouth bass

		VERNON POOL REGION			
		Brattleboro	Cersosimo	Vernon	All Regions
10-14 Jul	DENSITY	1.79	1.36	0.40	0.99
	SE	0.53	0.74	0.29	0.30
	NO.TOWS	3.00	3.00	6.00	12.00
24-28 Jul	DENSITY	1.28	0.75	0.63	0.82
	SE	0.55	0.42	0.36	0.24
	NO.TOWS	3.00	3.00	6.00	12.00
07-11 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
21-25 Aug	DENSITY	0.00	0.25	0.00	0.07
	SE	0.00	0.25	0.00	0.07
	NO.TOWS	2.00	3.00	6.00	11.00
04-08 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
18-22 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
02-06 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
16-20 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00

Table 7 (Continued)

Largemouth bass

		VERNON POOL REGION			
		Brattleboro	Cersosimo	Vernon	All Regions
10-14 Jul	DENSITY	0.00	0.00	0.24	0.12
	SE	0.00	0.00	0.24	0.12
	NO.TOWS	3.00	3.00	6.00	12.00
24-28 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
07-11 Aug	DENSITY	0.96	0.00	0.00	0.24
	SE	0.64	0.00	0.00	0.18
	NO.TOWS	3.00	3.00	6.00	12.00
21-25 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	2.00	3.00	6.00	11.00
04-08 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
18-22 Sep	DENSITY	0.00	0.44	0.00	0.11
	SE	0.00	0.22	0.00	0.07
	NO.TOWS	3.00	3.00	6.00	12.00
02-06 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
16-20 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00

Table 7 (Continued)

Bluegill

		VERNON POOL REGION			
		Brattleboro	Cersosimo	Vernon	All Regions
10-14 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
24-28 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
07-11 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
21-25 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	2.00	3.00	6.00	11.00
04-08 Sep	DENSITY	1.45	0.00	0.00	0.36
	SE	1.45	0.00	0.00	0.36
	NO.TOWS	3.00	3.00	6.00	12.00
18-22 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
02-06 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
16-20 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00

Table 7 (Continued)

Spottail shiner

		VERNON POOL REGION			
		Brattleboro	Cersosimo	Vernon	All Regions
10-14 Jul	DENSITY	0.00	0.28	0.00	0.07
	SE	0.00	0.28	0.00	0.07
	NO.TOWS	3.00	3.00	6.00	12.00
24-28 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
07-11 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
21-25 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	2.00	3.00	6.00	11.00
04-08 Sep	DENSITY	0.00	0.18	0.00	0.04
	SE	0.00	0.18	0.00	0.04
	NO.TOWS	3.00	3.00	6.00	12.00
18-22 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
02-06 Oct	DENSITY	0.23	0.00	0.00	0.06
	SE	0.23	0.00	0.00	0.06
	NO.TOWS	3.00	3.00	6.00	12.00
16-20 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00

Table 7 (Continued)

Golden shiner

		VERNON POOL REGION			
		Brattleboro	Cersosimo	Vernon	All Regions
10-14 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
24-28 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
07-11 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
21-25 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	2.00	3.00	6.00	11.00
04-08 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
18-22 Sep	DENSITY	0.00	0.00	0.12	0.06
	SE	0.00	0.00	0.12	0.06
	NO.TOWS	3.00	3.00	6.00	12.00
02-06 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
16-20 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00

Table 7 (Continued)

Notropis sp.

		VERNON POOL REGION			
		Brattleboro	Cersosimo	Vernon	All Regions
10-14 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
24-28 Jul	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
07-11 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
21-25 Aug	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	2.00	3.00	6.00	11.00
04-08 Sep	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
18-22 Sep	DENSITY	0.00	0.00	0.09	0.05
	SE	0.00	0.00	0.09	0.05
	NO.TOWS	3.00	3.00	6.00	12.00
02-06 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00
16-20 Oct	DENSITY	0.00	0.00	0.00	0.00
	SE	0.00	0.00	0.00	0.00
	NO.TOWS	3.00	3.00	6.00	12.00

TABLE 8. STANDING CROP INDEX (AND STANDARD ERROR) FOR JUVENILE AMERICAN SHAD IN VERNON POOL OF THE CONNECTICUT RIVER, JULY - OCTOBER 2000.

2000 Week	Brattleboro		Cersosimo		Vernon		Cersosimo Lake		All Regions	
	Index	SE	Index	SE	Index	SE	Index	SE	Index	SE
10-14 Jul	0	0	0	0	0	0	0	0	0	0
24 -28 Jul	0	0	0	0	0	0	0	0	0	0
7-11 Aug	0	0	0	0	226127	211312	0	0	226127	211312
21-25 Aug	0	0	576	1867	1867	1867	1705	1218	4148	3085
4-8 Sep	8553	8553	288	288	934	934	3896	1948	13671	11723
18-22 Sep	0	0	0	0	4059	2922	1461	0	5520	2922
2-6 Oct	0	0	0	0	0	0	0	0	0	0
16-20 Oct	0	0	0	0	0	0	487	487	487	487
MEAN	1069	1069	108	36	29123	27129	944	457	31244	28691