

Lake Champlain Sea Lamprey Assessment Program

Results of Sea Lamprey Assessment Activities 2005



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Introduction

Sea lamprey assessment activities conducted during the spring and summer of 2005 included the trapping of migrating adult sea lamprey and electrofishing surveys of larval populations. Traps were installed on eight streams during the spawning migration to limit their reproduction in these tributaries. Trapping of migratory phase sea lamprey was identified as a primary control method for seven streams and as part of an integrated approach on one stream in the supplemental EIS. A trap was also set in Beaver Brook, New York for a second consecutive year to evaluate the potential of using traps to control larval populations in this stream where lampricide treatments have been known to be problematic. Electrofishing surveys were conducted on a total of nine streams. Five of those streams are scheduled for lampricide treatment in the fall of 2006. Three streams were surveyed to evaluate the effects of trapping on the larval population. One stream was surveyed for the first time to quantify the recently discovered sea lamprey population in order to determine if this stream should be included in the long term control program. Sea lamprey larvae were also collected for bioassay tests conducted by New York DEC.

Migratory Phase Trapping

Sea lamprey spawning runs were monitored in eight streams during the spring of 2005 using portable assessment traps. A permanent trap associated with the Frog Pond Dam on the Great Chazy River has been operated since 1995 and is part of an integrated control approach. Sea lamprey were removed from the traps every 2-4 days. Length, weight, and sex were recorded for all lamprey. Non-target species captured were identified, recorded, and released. Any mortalities were recorded.

Streams where traps were deployed included six streams where trapping was identified as the primary control method in the supplemental EIS (Figure 1). Youngman Brook, which was also identified as a stream where trapping could be used as a control method was dropped from the list in 2005. One sea lamprey has been caught in the 4 years since trapping has been implemented, leading us to believe that the farm impoundment downstream from our trap site is limiting the upstream migration of sea lamprey. A trap was set in Beaver Brook, Westport, NY, for a second year, to evaluate the feasibility of using traps to control the larval population there. Beaver Brook has been problematic for lampricide treatments due to low discharge and the perceived low number of lamprey killed per cost of treatment. Results of trapping operations are listed in Table 1.

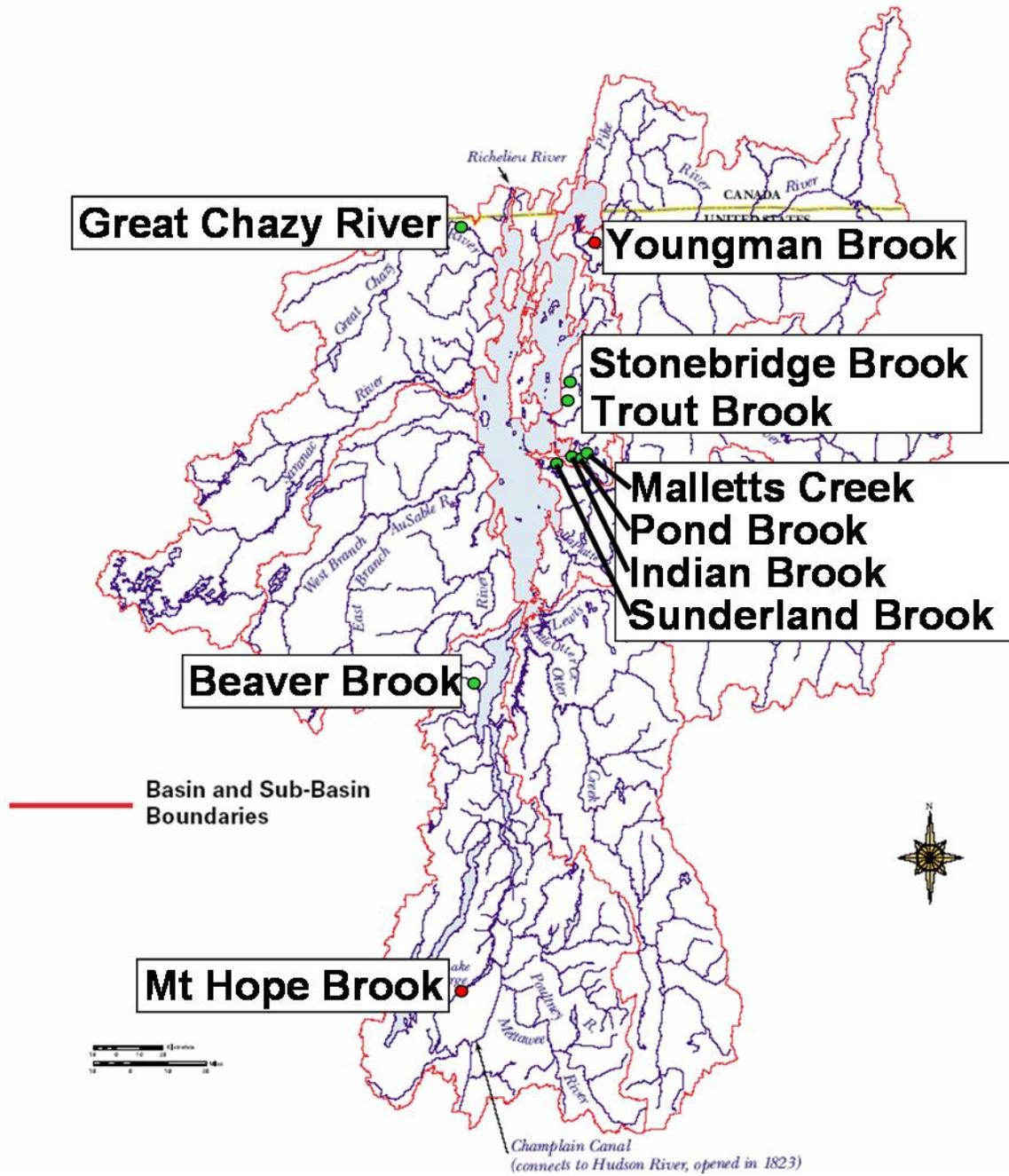


Figure 1. Location of trapping sites operated during the spring of 2005 to capture migrating adult sea lamprey. Green points continued to be trapped while red points were removed from trapping program.

Table 1. Results of migratory phase sea lamprey trapping 2005.

Stream	Date Set	Date Pulled	# Lamprey Caught	% change from '04
Sunderland Brook	4/13/2005	6/11/2005	2	-86.67%
Indian Brook	5/3/2005	6/11/2005	0	0.00%
Pond Brook	4/13/2005	6/3/2005	2	-86.67%
Malletts Creek	4/15/2005	6/21/2005	149	-45.02%
Trout Brook	4/11/2005	6/15/2005	37	-80.73%
Stone Bridge	4/12/2005	6/11/2005	33	-59.76%
G. Chazy	4/21/2005	6/10/2005	192	-76.92%
Beaver Brook	4/19/2005	6/20/2005	141	+2.92%

Larval Assessment

Lampricide Treated Streams

Larval sea lamprey populations were surveyed in nine tributaries during the summer of 2005. Surveys followed the Great Lakes Fishery Commission's (GLFC) Quantitative Assessment Sampling (QAS) protocol. Five streams were surveyed in preparation for lampricide treatments scheduled for the fall of 2006. These surveys are needed to confirm the need for treatment and to help determine the contribution of a stream to the Lake Champlain lamprey population. In New York, the Salmon River (Figure 2), the Little Ausable River (Figure 3), the Ausable River (Figure 4), and Putnam Creek (Figure 5) were surveyed. The only stream scheduled for treatment for 2006 and surveyed in Vermont was Lewis Creek (Figure 6). Population estimates derived from these surveys are listed in Table 2.

Table 2. Results of quantitative assessment surveys conducted for baseline data for 2006 lampricide treatments.

Stream	Population Estimate- Ammocoetes	Population Estimate- Transformers
Salmon River	62,161	0
Little Ausable River	164,781	0
Ausable River	648,532	1,801
Putnam Creek	101,906	0
Lewis Creek- Reach 1	59,292	237
Lewis Creek- Reach 2	141	0

Distribution sampling

In conjunction with surveys on the Little Ausable and Salmon Rivers in NY, sampling was conducted above the areas where lampricide treatments have historically been conducted.

New York DEC has received reports of sea lamprey adults being seen above the falls, (river km 6.2), which was thought to be the upstream barrier to sea lamprey migration. Two areas of optimal sea lamprey habitat were sampled above the falls to determine if sea lamprey larvae were present. One standard sampling plot (approximately 15m²) was

sampled just upstream from the USGS gauging station on Salmon River Rd. (river km 7.2). Another standard sampling plot was located where the Old Military Turnpike crosses the Salmon River (river km 9.3). No sea lamprey or other lamprey species larvae were observed at either sampling location.

Two sites were also sampled on the Little Ausable River above the falls (river km 9.7) which marks the upstream extent of known sea lamprey migrations. These samples were taken due to the fact that the falls on the Little Ausable are similar to those on the Salmon River. One standard sampling plot was located at the Telegraph Rd. crossing (river km 10.3). The other plot was located where Route 22 comes close to the river (river km 11.2). No sea lamprey or other lamprey species larvae were observed at either location.

From these limited surveys we cannot rule out the chance that sea lamprey may spawn above the falls on either stream. However, the absence of sea lamprey larvae from these sites does suggest that, if present, sea lamprey larval numbers are low.

Trapping Assessment

Surveys were conducted on three streams to determine the effect of blocking and trapping of adult sea lamprey on the larval population. Results are listed in Table 3. On Trout Brook, Vermont, a QAS was conducted along the entire sea lamprey accessible portion of the stream (Figure 7). Trapping operations for control began in Trout Brook during the spring of 2002. The 2005 survey found sea lamprey only in the areas near the mouth. The sizes of larvae captured suggest that there has been successful spawning since the inception of the trapping program on Trout Brook, however the numbers of small larvae were relatively low compared to the numbers of larger larvae which were likely spawned prior to 2002. There is no previous population estimate to compare 2005 results, however the size distribution of larvae captured suggest that there has been a reduction in recruitment coinciding with trapping operations. Additional surveys are recommended in the next few years to determine if there is a change from the population levels documented during the 2005 survey.

A QAS was conducted on Malletts Creek, Vermont to assess the effects of trapping (Figure 8). Surveys were conducted in the same reach as a previous survey conducted in 2001. The survey reach started at the upstream extent of a large wetland near the mouth of Malletts Creek and extended up to the falls which is the upstream extent of lamprey migration. The quantitative survey conducted in 2001 produced a population estimate of 21,223 ammocoetes and 6,061 transformers. Results from the 2005 survey indicate a 79% decrease in the abundance of sea lamprey. These results are encouraging and additional surveys are recommended at four year intervals to further document the effects of trapping on the larval sea lamprey population.

Detection surveys were also conducted on Stone Bridge Brook, Vermont, where trapping has been an ongoing effort since the inception of the experimental program in 1990. Stone Bridge Brook received a lampricide application in 1991 as part of the experimental program. Since then, trapping has prevented the reestablishment of larval sea lamprey

populations as documented by repeated sampling efforts. In 2005, a detection survey of all available habitat, 1/4 of the distance to the mouth, immediately downstream of the trapping site, confirmed the continued absence of sea lamprey larvae (Figure 9). Detection surveys should continue to monitor the status of sea lamprey populations in Stone Bridge Brook.

Table 3. Results of quantitative assessment surveys conducted for assessment of trapping activities.

Stream	Population Estimate- Ammocoetes	Population Estimate- Transformers
Trout Brook	2,253	0
Malletts Creek	4,442	342

Quantifying new sea lamprey populations

Sea lamprey were first detected in the Lamoille River during detection surveys in 2002. Prior to that collection, it was believed that sea lamprey did not inhabit the Lamoille River and as a result it was not included in the long-term control program. During the summer of 2005 a quantitative assessment survey was conducted for the first time on the Lamoille River. The sampled reach extended from Peterson dam, in the town of Milton downstream to the lake. The river splits into two channels near the mouth. Sea lamprey were found to be distributed throughout the entire reach sampled, including both branches at the mouth (Figure 10). Although densities of sea lamprey larvae were low (0.12 larvae/m²), the large size of the river produced a substantial population estimate of 38,719 larvae. It is our recommendation that the Lamoille River be considered for inclusion into the long-term sea lamprey control program.

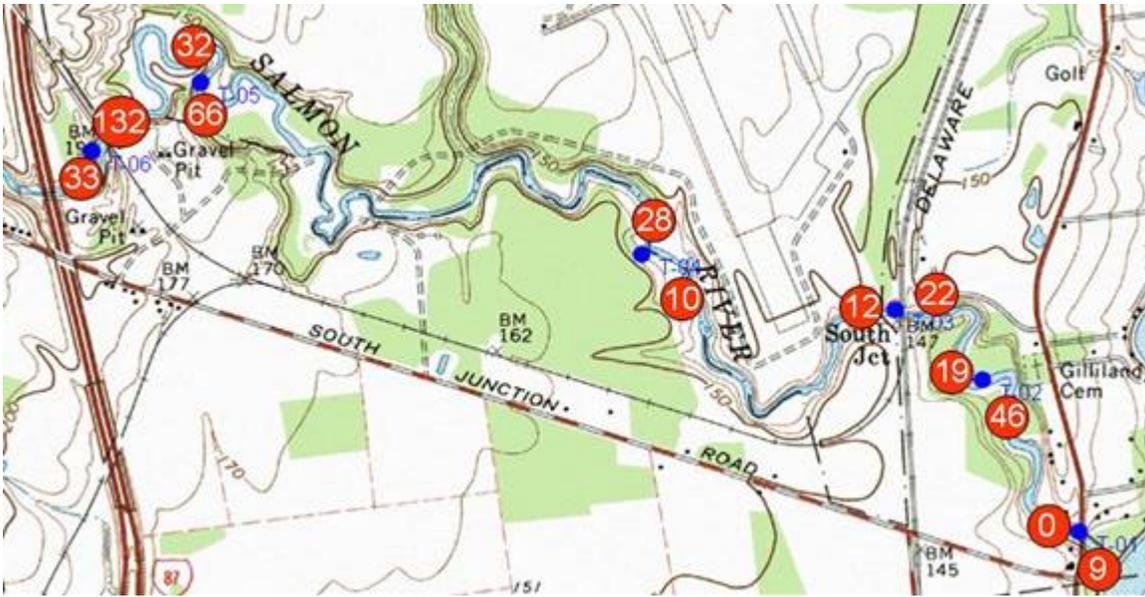


Figure 2. Salmon River sampling locations and number of sea lamprey collected (red circles).

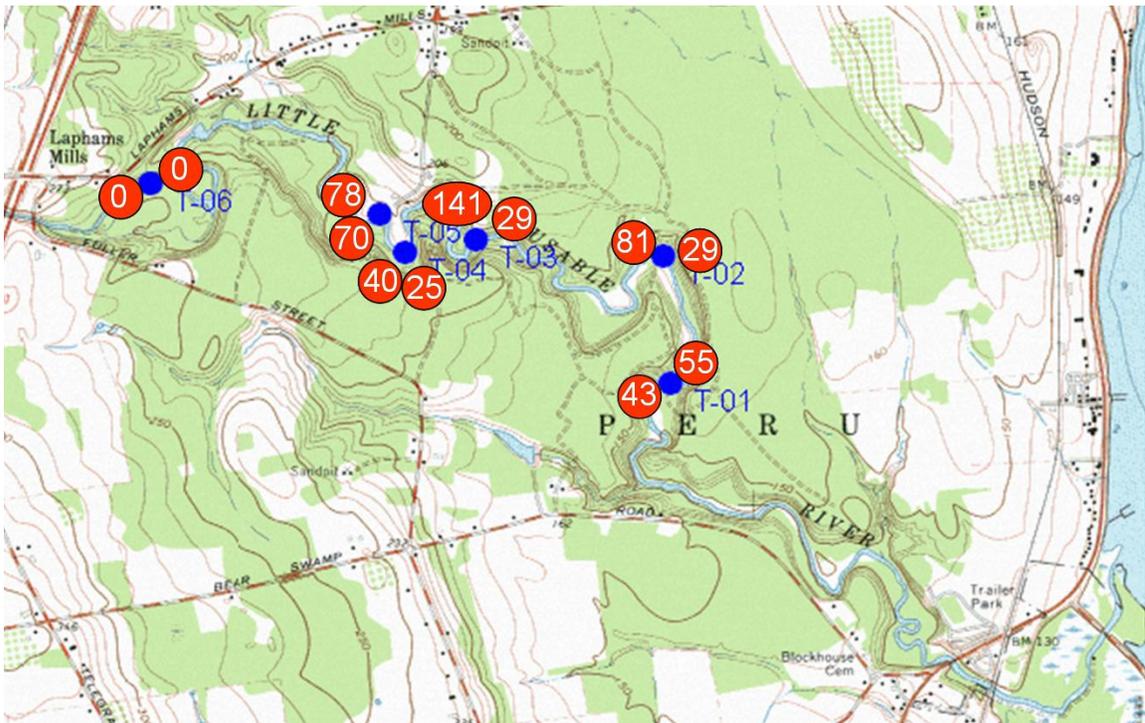


Figure 3. Little Ausable River sampling locations and number of sea lamprey collected (red circles).

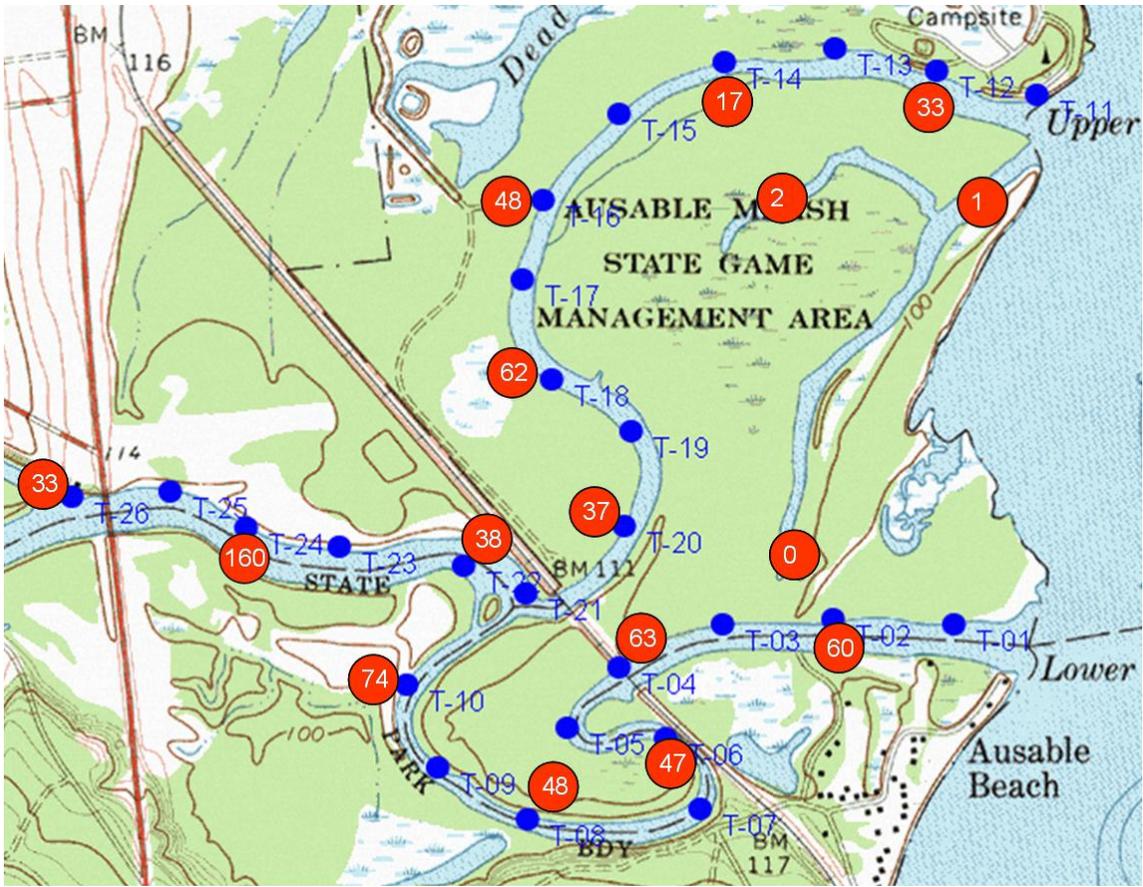


Figure 4. Ausable River sampling locations and number of sea lamprey collected (red circles).

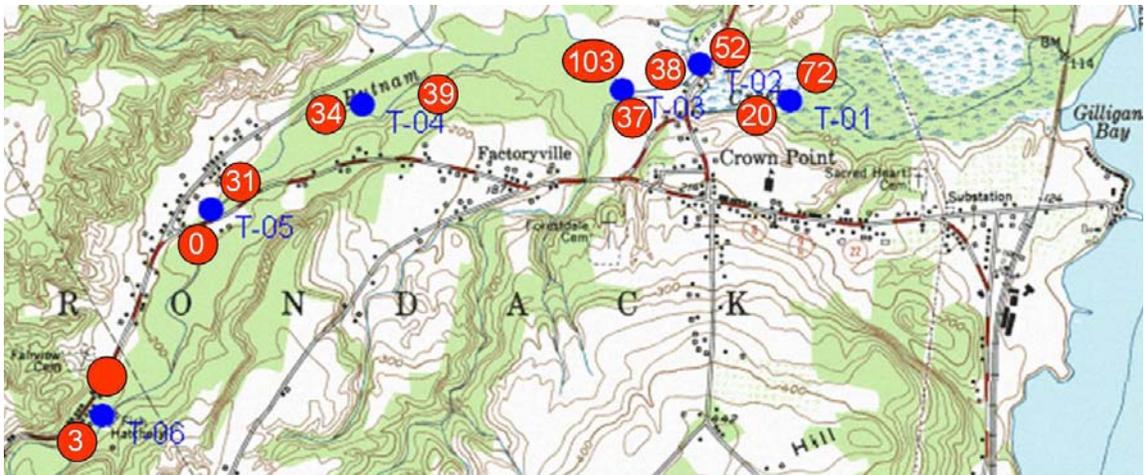


Figure 5. Putnam Creek sampling locations and number of sea lamprey collected (red circles).

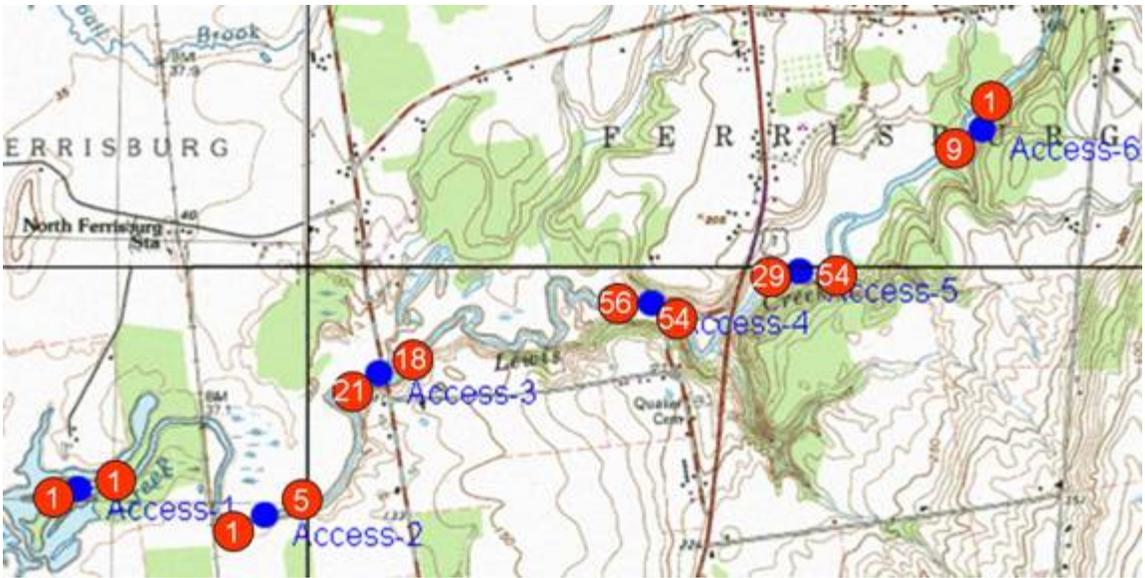


Figure 6A. Lewis Creek sampling locations and number of sea lamprey collected (red circles) for reach 1, below Ferrisburg Falls.

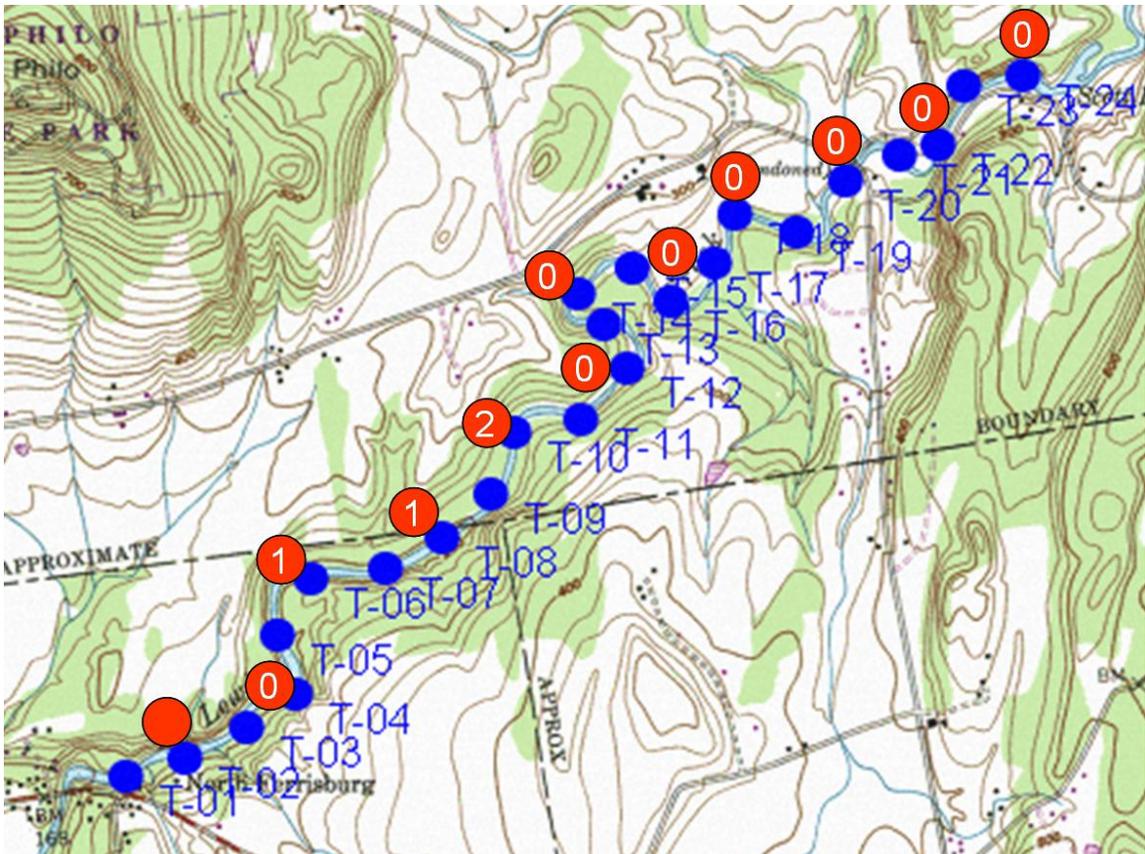


Figure 6B. Lewis Creek sampling locations and number of sea lamprey collected (red circles) for reach 2, between Ferrisburg Falls and Scotts Pond Dam.

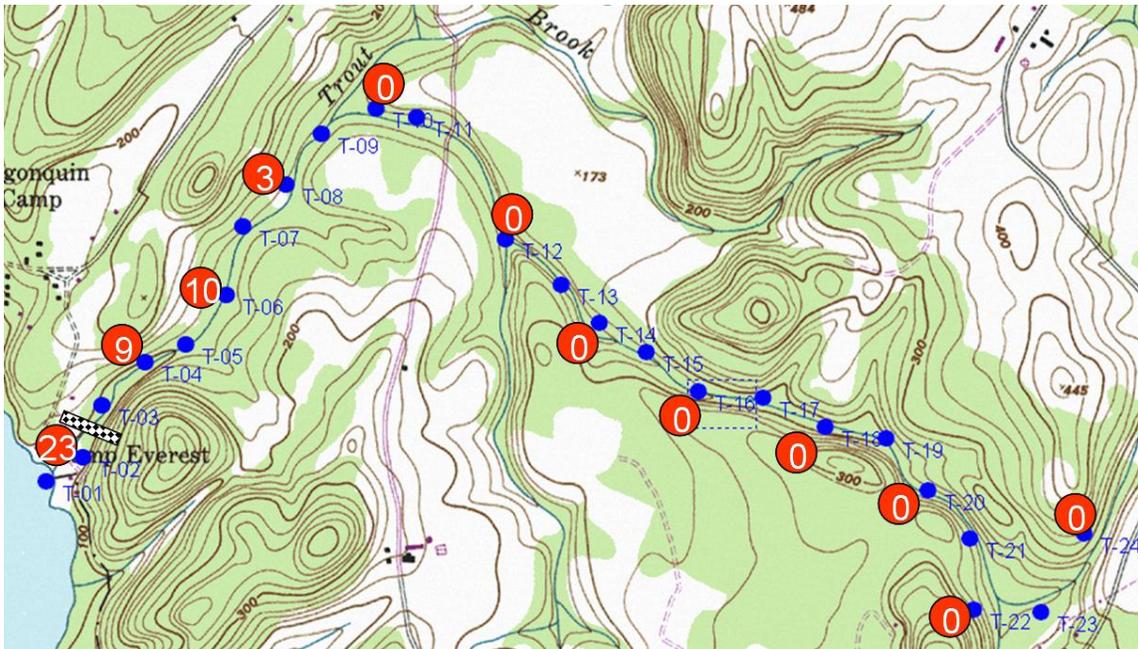


Figure 7. Trout Brook sampling locations and number of sea lamprey collected (red circles). Trap site is shown as a checkered rectangle.

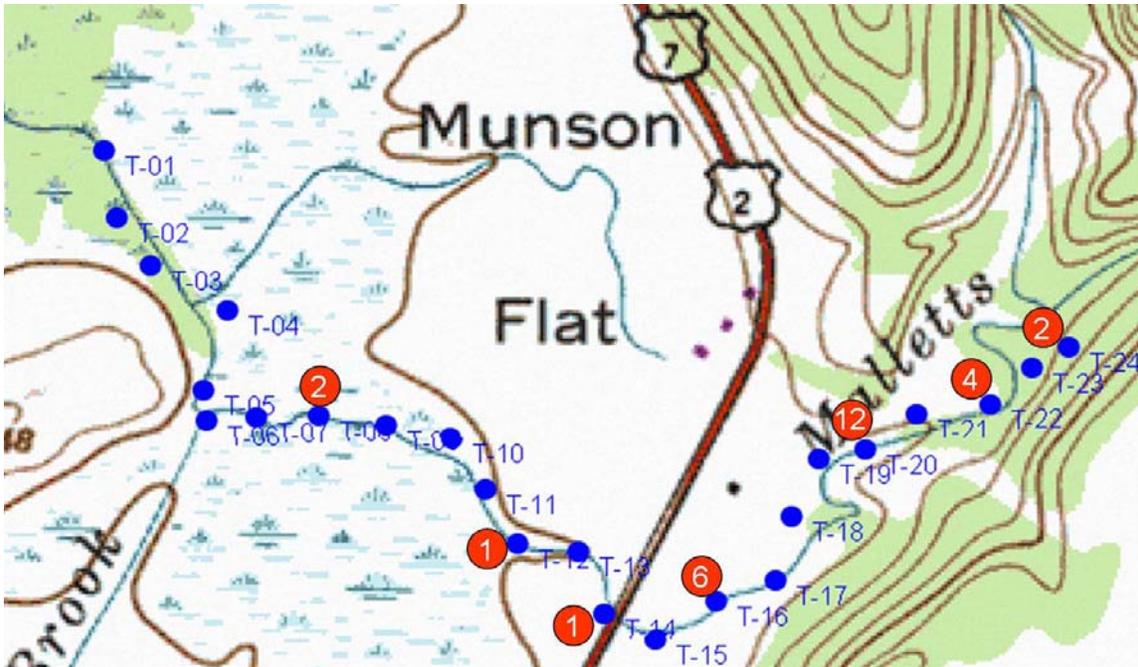


Figure 8. Malletts Creek sampling locations and number of sea lamprey collected (red circles). Trap site is shown as a checkered rectangle.

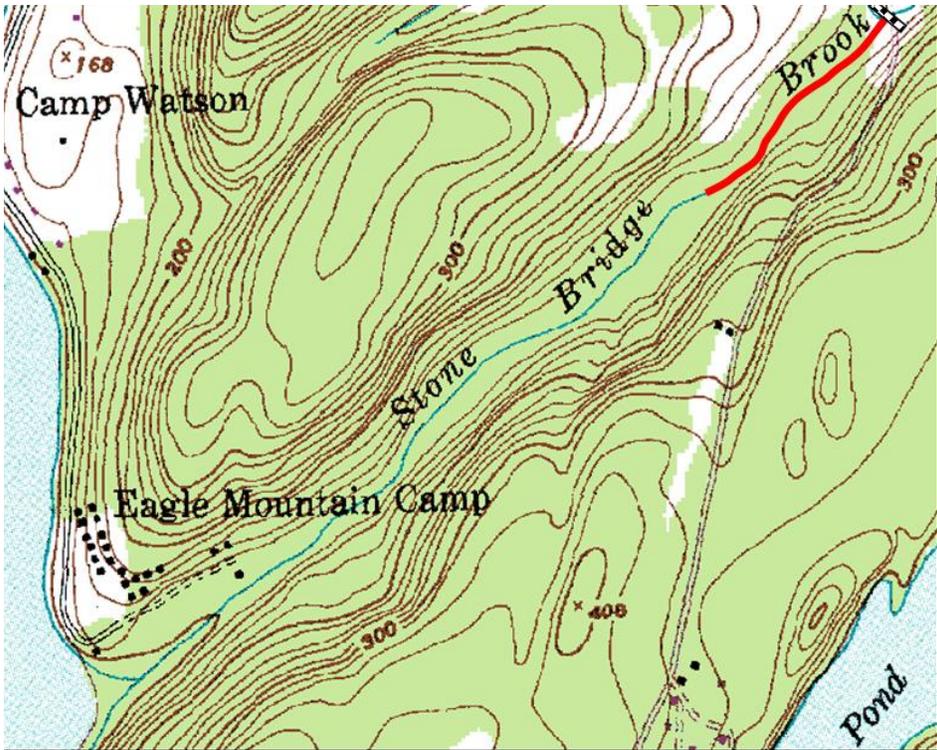


Figure 9. Stonebridge Brook detection survey. All larval habitat highlighted in red was sampled in 2005. Trap site is shown as a checkered rectangle.

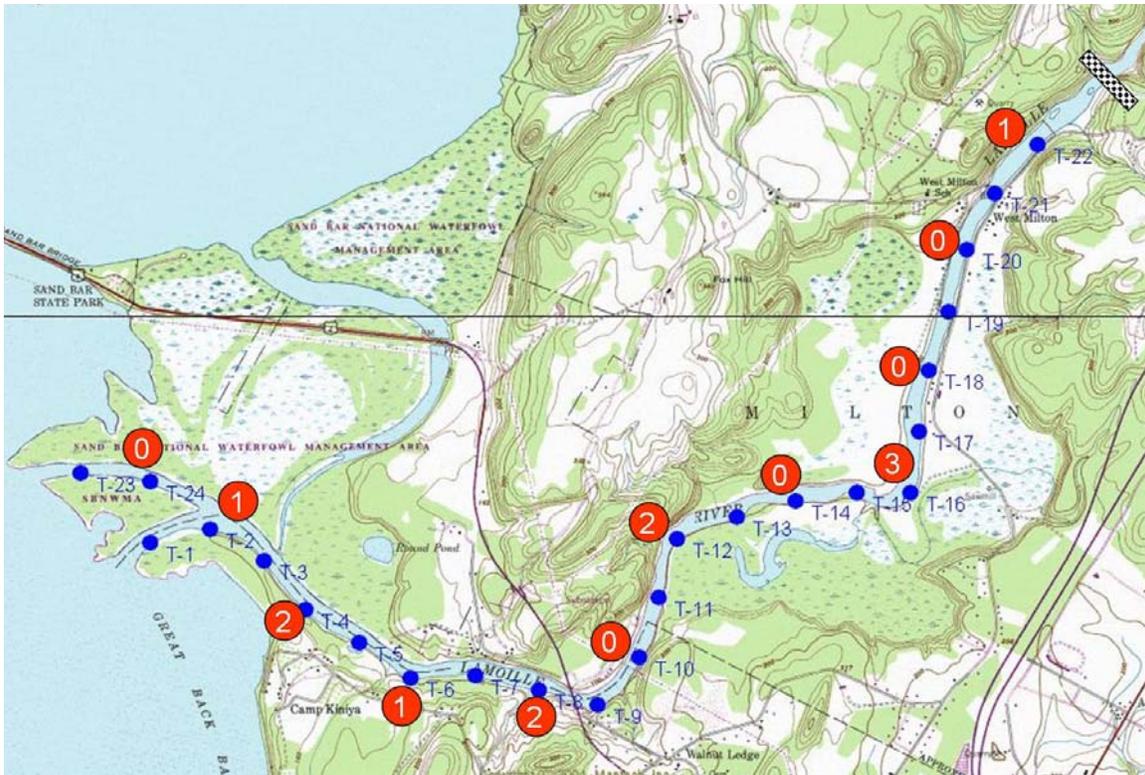


Figure 10. Lamoille River sampling locations and number of sea lamprey collected (red circles). Peterson Dam is shown as a checkered rectangle.