A Report on the Peconic River Alewife Spawning Run -2011

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The Peconic River Anadromous fish restoration efforts continue to move forward. Alewives successfully ascended the permanent Rock Ramp in Grangabel Park (Figure 1) for a second year. Efforts continue in the development of future alewife passage projects upstream along the main stem of the Peconic River in order to return alewives to their historic spawning range.

The history of this effort to aid alewife passage in the Peconic River began with a Peconic Estuary Program Demonstration Grant in 1995. In 1995 and 1996, alewives were captured below Grangebel Park dam by dip net and moved upstream over the dam. In addition, several hundred alewives were captured from the alewife run into Big Fresh Pond in Southampton to augment those fish moved from within the Peconic River system. During 1997 to 1999, students from the Riverhead Middle Schools Science Program, under the guidance of Mr. Robert Conklin, captured and moved alewives upstream over the Grangebel Park dam for several years. Through these efforts and the interests of the local community effort (The Peconic River Fish Restoration Commission) funds were secured to develop a proposal to purchase and place an Alaska Steep Pass fish ladder in the north spillway of the Grangebel Park dam to aid the Peconic River spawning run. The Alaska Steep Pass was placed and removed annually from 2000 to 2009 for the duration of the spawning run (approximately March 1 through May 1, the duration of the Peconic River spawning run). A local environmental company, Miller Environmental Inc., Calverton, undertook this labor-intensive effort of placement and removal each year. In addition, site monitoring and debris removal was a continuous task during operation undertaken on a volunteer basis by Mr. Robert Conklin.

With the completion of a permanent Rock Ramp fish passage during the winter of 2009/2010 the program moved into a new monitoring phase. For the second year spawning alewives were

captured by dip net at the base of Woodhull dam on Little River the first major tributary to the Peconic River (Figures 2 and 3).

This report will summarize the results of the 2011 data collection efforts and compare them briefly with the 2010 results. These data set the foundation for future data collections and analyses to determine the success of this alewife restoration effort.

Survey Objectives:

1. To detect the presence of spawning alewives upstream of the Rock Ramp;
2. Document the timing of the Alewife run through observations made at three locations;
3. Visually attempt to estimate the size of the spawning run;
4. Collect biological data from a sample of spawning adult alewives;
5. Collect daily water temperature data using in stream data loggers; and
6. Assist with the installation and monitoring of a video monitoring system placed in the Rock Ramp.

Methods and Materials:

Observations:

Field observations began on March 2, 2011 and continued through May 15, 2011. Three observation locations were used during this investigation (Figure 2). The sites were Grangabel Park, the site of the Rock Ramp fish passage which contained two observation locations the Rock Ramp and the North spillway; Upper Mills dam approximately 1 mile upstream from Grangabel Park; and Woodhull dam on Little River which is the first major tributary upstream of the Rock Ramp draining Wildwood Lake. Data collected at each site followed the procedures established for the Long Island wide alewife survey conducted by the Seatuck Environmental Association (http://www.seatuck.org/current-conservation-projects/137.html). All observational data collected here were reported using protocols established by the Environmental Defense Fund and the South shore Estuary Reserve and maintained by Seatuck. Standard data collections include date, time,

location, water temperature (if possible) weather conditions, alewife presence or absence, and, if present, how many. Notes regarding other species observed at the site were also recorded.

Biological Data Collected:

Biological data collected during 2011 included total length, sex, and scale samples for a subsample of those fish measured. Alewives were captured by dip net at the base of Woodhull dam on Little River, a tributary to the Peconic River (Figure 3). A long handled crab net (7ft 8 in handle) with a 14 inch diameter ring by 12 inches deep bearing 2 ¼ inch stretched mess was the primary gear. Two other dip nets were available for use a 22-inch hoop by 24 inches deep with an 8 ft. 8 in handle and a 13-inch ring by 12 inches deep with a four-foot handle but were not employed during 2011.

All fish were captured at the base of the outflow pipe at Woodhull dam and placed in a five gallon bucket with fresh water for each batch of fish collected. Fish would be dipped until fifteen to twenty five had been captured. The fish would then be palpated to determine sex, measured to the nearest millimeter in total length, and returned to the pool below the dam. On a couple of occasions when fish were readily available and I had help alewives would be dipped placed into a five gallon bucket and then placed in an Igloo cooler filled with fresh water for processing.

On each visit to Woodhull dam an attempt was made to estimate a minimum and maximum number of alewives in the pool. These estimates were used to gauge the strength of the spawning run. Unfortunately, due to replacement of the steel culvert with a concrete box culvert during 2010 the configuration of the pool and resultant loss of visibility adversely affected my ability to view alewives effectively in the pool below the dam. Alewives were readily visible attempting to ascend the downstream portion of the box culvert. Because of the physical changes to the outflow during 2010 make my estimates of abundance are less reliable than those reported for the spawning run of 2010.

All observations were recorded on standard data forms provided by the Seatuck Environmental Association and entered onto the Seatuck Environmental Association's wed database. In addition,

all data was entered onto DEC Fresh Water Fisheries data sheets for entry into the Statewide database.

Results:

Between March 2, 2011 and May 13, 2011, the Woodhull dam site was visited on 34 occasions. Alewives were observed on 23 of the 34 visits (67.6%) and represents is a decrease from 2010 when alewives were observed on 96.8% of the visits (Table 1). The peak spawning run during 2011 was from April 5 to April 27, a more compact run than observed in 2010. The 2010 spawning run was from April 5 through May 1. The 2011 spawning run appeared to be smaller than the 2010 run, however a couple of factors affected my ability to observe alewives in 2011. First, the spillway at Woodhull dam was modified during 2010 changing the distribution of fish in the pool below the outfall. Second, even though the Northeast had a wet spring, rainfall on Long Island was below normal thus reducing stream flows during the 2011 spawning run again affecting distribution.

During 2010 I estimated a spawning run size between 24,000 and 40,000 fish. I could not make the same estimates during 2011; however, the Seatuck Environmental society was able to secure funds to place a fish counter at the head of the Rock Ramp to capture images of passing fish. The software that supported this camera system documented the fish passing through the weir constructed to hold the camera (Figure 1) providing a count. Based upon this effort a total of 15,000 alewives passed through the weir while the camera was in operation. The camera was not placed until after the spawning run had commenced and due to some logistical issues was not fully operational during the entire spawning run thus making the count a very conservative estimate. Based upon the fact that the camera did not make a complete census of the 2011 run it is safe to say that the 2011 spawning run was similar to the 2010. However, it appears that alewives were more broadly distributed in the Peconic River above Grangabel Park in a different fashion than during 2011, unlike 2010 when most of the fish seemed to congregate below the Woodhull dam.

A total of 410 alewives were captured, measured for total length and palpated to determine sex. The overall sex ratio was 252 males to 158 females (1.49:1 Male to Female) Table 2. The sex

ratio for 2010 was 1.4:1 Male to Female. The average size of the fish captured during 2011 was slightly smaller than those captured during 2010. The average size of the males decreased from 263.1 mm to 260.5 mm, where as the average size of the females decreased from 273.2 mm to 272.2 mm. Additional collections are needed in order to refine these data.
During 2011, scale samples were collected from 78 spawning alewives, 38 males and 40 females. These scale samples will be archived until such time as they can be aged. Scale samples will be collected during the 2012 survey. The scale sampling protocol is to collect a scale sample from every third fish measured.

Water temperature data were collected during each visit to the Peconic River by hand held thermometer. In order to improve upon the water temperature data, four water temperature data loggers were placed in the river to collect water temperature at six-hour intervals for the duration of the spawning season. Two data loggers were placed at the top end of the Rock Ramp attached to the Camera Weir, one was placed about 50 feet downstream of Woodhull dam and one was placed just down stream of the gauging station dam at Upper Mills. These data are presented in Figure 4. There is no discernable difference between the four locations. Series 1 and 2 data loggers were located at the Rock Ramp, Series 3 was located at Woodhull Dam and Series 4 was located at Upper Mills dam downstream of the gauging station. Water temperature data loggers will be placed at theses sites again during 2012.

Discussion:

These data represent the second year's efforts to quantify the timing, and extent of the Peconic River Alewife run. All data collected here have been provided to the New York State Department of Environmental Conservation's Fresh Water Fisheries Unit for inclusion in the statewide fisheries database and to other interested parties.

The standard biological and observational data are providing the foundation for future analyses of the Peconic River Alewife spawning run. It is anticipated that with the successful installation of the fish counter during 2011 and with improved operations during 2012 that a more accurate accounting of the run can be obtained. Every effort will be made to get the fish counter in place

before the run commences and to solve the logistical problems associated with its operation during 2011.

The collection of biological data will be undertaken again during 2012 with a target of 600 alewives for length and sex information, scales from approximately 200 fish, water temperature data collections, a more compete census of the spawning run via the fish counter and another set of in the field observations. With the addition of a third year's data, some basic assessment of the spawn run can commence.

During 2011, additional avian predators were observed at all three sampling locations, Grangabel Park, Woodhull dam and Upper Mills dam. In fact the fish counter captured images of Double Crested Cormorants chasing and capturing alewives. Cormorants were also observed feeding actively above and below Grangabel Park and successfully capturing alewives. In addition, Herring gulls and Great Back Backed gulls were successful in capturing alewives moving through the Rock Ramp. At Woodhull dam and Upper Mills dam Osprey, Great Egret, and Black Crowned Night Heron were seen in and around the pools where alewives congregated.

Acknowledgement:

This project has been a collaborative effort since its inception and this has continued with these data collection efforts. I have received help from a number of folks that I would like to acknowledge and thank for their assistance:

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Table 1. Peconic River Alewife Observations at Woodhull Dam, 2010 and 2011

	2010	Min	Max	Samples	2011	Min	Max	Samples
Mar 2					N	0	0	0
Mar 5					N	0	0	0
Mar 11					Y	5	6	0
Mar 12					Y	2	2	0
Mar 14					Y	1	1	0
Mar 15					Y	5	5	0
Mar 16	Y	50	50	0	Y	15	25	0
Mar 17					Y	1	3	0
Mar 18	Y	75	100	0	Y	8	10	0
Mar 19	Y	60	100	0				
Mar 20					Y	1	3	0
Mar 21	Y	250	400	39				
Mar 22	Y	200	300	51	Y	3	3	0
Mar 24					N	0	0	0
Mar 25	Y	50	75	10				
Mar 27	Y	500	750	34	N	0	0	0
Mar 28	Y	25	50	0	N	0	0	0
Mar 30					N	0	0	0
Apr 1	Y	150	250	0				
Apr 3	Y	15	30	0	N	0	0	0
Apr 4					Y	5	10	0
Apr 5	Y	1000	1500	68	Y	50	100	25
Apr 6	Y	750	1000	40	Y	350	500	17
Apr 7	Y	2500	5000	53				
Apr 8	Y	2500	4000	55	Y	200	400	35
Apr 9	Y	3000	6000	0	Y	200	500	12
Apr 10	Y	1500	2500	36	Y	200	400	82
Apr 11					Y	200	500	0
Apr 13					Y	300	500	30
Apr 14	Y	1500	2000	0				
Apr 15	Y	200	300	17	Y	100	200	50
Apr 17					Y	200	500	84
Apr 19	Y	1000	1500	0	Y	200	300	0
Apr 20	Y	3000	6000	102	Y	15	20	0
Apr 22	Y	2500	5000	0	N	0	0	0
Apr 24	Y	1500	2000	0				
Apr 25					Y	200	400	75
Apr 27	Y	250	500	26	Y	52	52	0
Apr 29	Y	300	500	42	Y	1	1	0
May 1	Y	1500	2000	39	N	0	0	0
May 2	Y	50	100	0				

Figure 2. The Peconic River estuary.

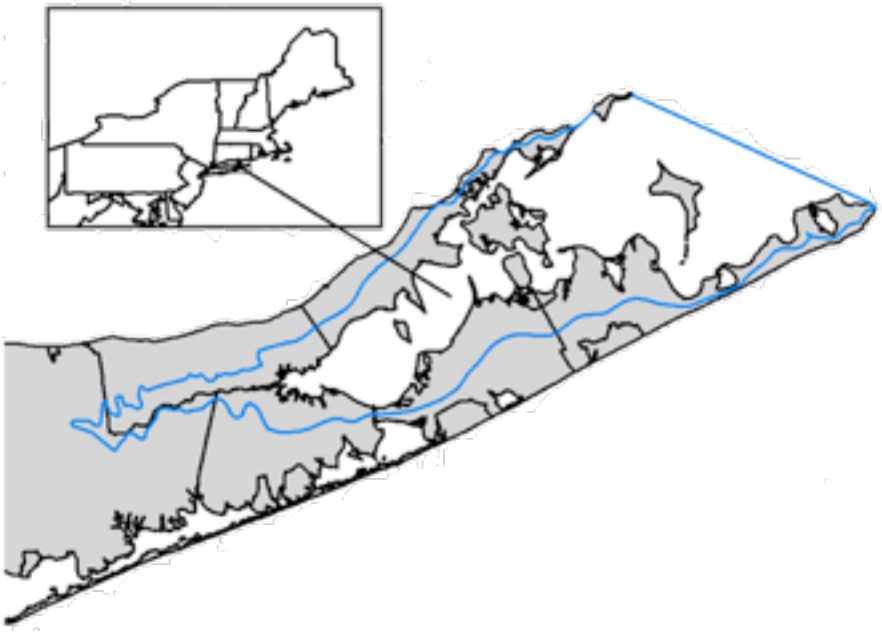

Figure 3. Observation sites on the Peconic River.

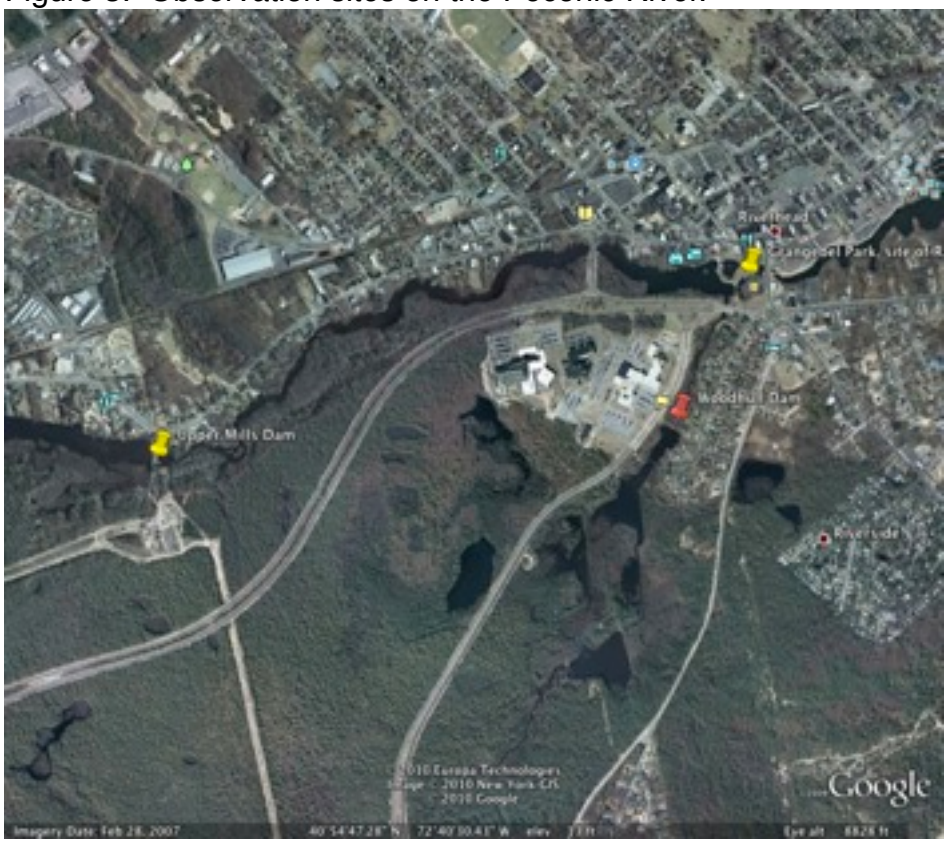
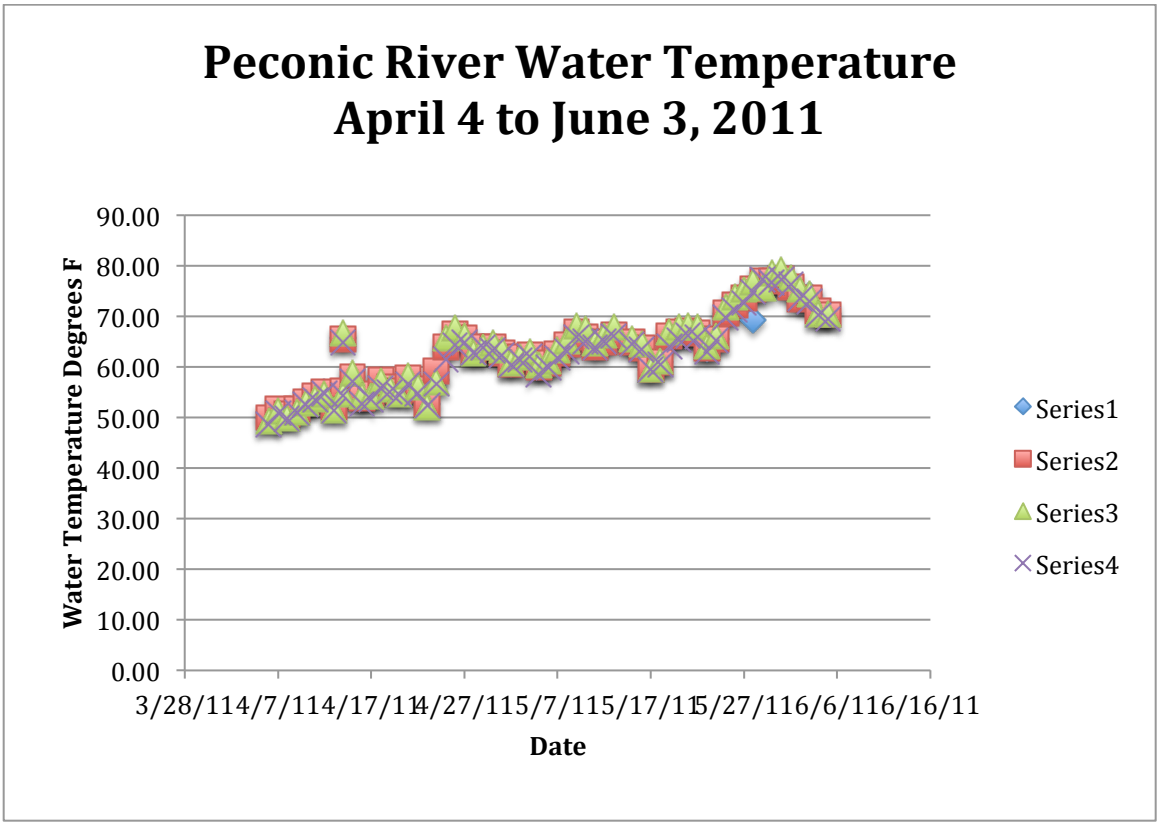
Figure 4. Daily Water Temperatures from Grangabel Park (Series 1&2); Woodhull Dam (Series 3); and Upper Mills Dam (Series 4) during 2011.