A Report on the Peconic River Alewife Spawning Run - 2012

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Alewives successfully ascended the permanent Rock Ramp in Grangebel Park (Figure 1) for a third year. Efforts continue to advance, albeit slowly, 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. During 1995 and 1996, alewives were captured below Grangebel Park dam by dip net and transferred upstream over the dam by bucket. 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 transferred alewives upstream over the Grangebel Park dam. 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. The fish ladder was in place for the duration of the spawning run (March 1 through May 1). 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.

During the period of 2000 – 2009, a project proposal was developed to install a permanent fish passage option at Grangebel Park. With guidance from the US Fish and Wildlife Service a preferred option was selected and an engineering Company with Fish Passage design experience was selected to prepare the final engineering designs for a Rock Ramp (Figure 1). After a protracted permit application process a contactor was selected by the town of Riverhead to

conduct the work. A local company (Terry Brothers) began the work on the North spillway. Upon completion of the North spillway repairs, construction efforts moved to the South spillway in early December 2009. The Rock Ramp fish passage project was completed on February 22, 2010 with the opening of the coffer dam. Alewives were observed ascending the new Rock Ramp three weeks later.

With the completion of a permanent Rock Ramp fish passage during the winter of 2009/2010 a monitoring program was implemented. This report will present the results from 2010 through 2012. 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 data collection efforts for the period 1995. 1996 and 2010 to 2012. These data sets provide the foundation for determining the success of this effort and provide basic biological data on the Peconic River Alewife spawning run.

Survey Objectives:

1. To determine 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 February 17, 2012 with the placement of water temperature data loggers and continued through early May. Data loggers were placed at Upper Mills dam

downstream of the gauging station, at Woodhull dam downstream of the spillway, in Grangebel Park upstream of the Rock Ramp and in the tidal portion of the Peconic River east of Peconic avenue. Three observation locations were used in the search for spawning alewives during this investigation (Figure 3). The sites were Grangebel 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 Grangebel 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). To view this site go to the Seatuck Webpage, then proceed to the Conservation page and look for the Alewife project. 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 2012 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 with a12 inches deep pocket 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 2012. In addition a ¾ inch stretched mesh by four foot diameter cast net was available but not employed to capture alewives in this effort.

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. Each fish would then be palpated to determine sex, measured to the nearest millimeter in total length, and returned. 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 transferred to a 10 gallon open topped 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 variable conditions at the site: replacement of the steel culvert with a concrete box culvert during 2010; slight changes in the configuration of the pool; and visibility have 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 and around the edges of the pool during 2010 and 2012. The estimate of abundance presented here are just that estimates of the spawning run size. Seatuck Environmental in cooperation with Cornell Cooperative Extension have attempted to gather more precise counts of the spawning run utilizing a video counter. This effort has not been completely successful to date.

Observations have been 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 fisheries database.

Results:

Between February 26, 2012 and May 9, 2012, the Woodhull dam site was visited on 34 occasions. Alewives were observed on 26 of the 34 visits (76.5%) and represents an increase over 2011, itremains lower than the 96.8% for 2010. The peak spawning run during 2011 was from April 5 to April 27, a more compact run than observed in 2010 (Table 1). 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 was operational for about half of the 2011 run, it is safe to say that the 2011 spawning run were similar to the 2010. However, it appears that alewives were more broadly distributed in the Peconic River above Grangabel Park and in a different fashion than during 2011, unlike 2010 when most of the fish seemed to congregate below the Woodhull dam. An estimated 50,000 to 75,000 alewives were observed during 2012 at the base of Woodhull Dam.

A total of 1107 alewives were captured, measured for total length and palpated to determine sex (Table 2). The overall sex ratio was 694 males to 413 females (1.68:1 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. A wider range of sizes for both Male and female alewives was observed during 2012 than had been seen in previous years. The size range for males ranged from 224 mm TL to 305 mm TL, the largest range observed for the time period. The size range for females ranged from 241 mm TL to 325 mm TL. The upper end of the size range was expanded by 12 mm TL over the previous high (Table 2).

Beginning in 2011scale samples have been collected from a subsample of the alewives captured. These scales samples have been archived for subsequent aging. During 2011 a total of 78 scale samples were collected, 38 males and 40 females. The size range of the males was 232 mm TL to 289 mm TL with and average of 263.4 mm TL. The size range of the females was 234 mm TL to 298 mm TL with and average of 274.3 mm TL. During 2012 a total of 134 scale samples were

collected, 76 males and 58 females. The size range of the males was 224 mm TL to 290 mm TL with an average TL of 257.4 mm TL. The size range of the females was 241 mm TL to 325 mm TL with an average of 282.6 mm TL.

Water temperature data were collected during each visit to the Peconic River by hand held thermometer. In an effort 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 were placed during 2012. One was immediately upstream of the Rock Ramp; One was in the tide water east of Peconic Avenue; One was about 50 feet downstream of Woodhull dam; and One was below the gauging station dam down stream of Upper Mills dam. In addition, a temperature probe was placed in Alewife Creek just upstream of the culvert on North Sea Road. Data from Woodhull Dam and Alewife Creek are presented here (Fig. 4a). A quick examination of the data suggests that the water temperatures began the season slightly warmer than 2011, but followed a very similar trend to 2011.

Weight data was collected for the first time from a portion of the fish when scale samples were collected. A total of 101 weight samples were collected 59 males and 42 females. The males had a mean length of 258.8 mm TL that is very consistent with the mean length for the total sample. The mean weight for the males was 154.7 gms with a range of 123 gms to 194 gms (about ¼ of a pound). The females had a mean length of 276.9 mm TL that is very consistent with the mean length for the total sample of females. The mean weight for the females was 199.3 gms with a range of 152 gms to 292 gms (Slight less than ½ pound). The weight to length data is presented in Figure 5.

Discussion:

These data represent the third year's efforts to quantify the timing and extent of the Peconic River Alewife run. All data collected here will be 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. Options are being explored to improve on the fish counters operation in the Peconic River. It is uncertain whether the camera will be in operation in the Peconic for the spring of 2013 or utilized in the Carmen's River to obtain further insight into the Alewife run present there. The operation of the video camera counter is separate from this effort but an important component of our understanding relative to the size and extent of alewife runs on Long Island.

It appears from field observations though out the Peconic Estuary that low water flow conditions are affecting the alewife distribution. For example, Ligonee Creek, which flows from Long Pond in Sag Harbor, was dry during the spring of 2012. Some alewives did try to enter the system on high tides but were left stranded when the tide receded. The fish that might have spawned in Long Pond either did not spawn or were forced to seek another location (i.e. the Peconic River or Alewife Creek). Low flow conditions affected the alewife run in Alewife Creek as well. The flow conditions were such that access through the box culvert on North Sea Road had less than an inch of water flowing through it. In order to provide sufficient water for fish passage a series of baffles (Parking lot curbs) were placed to restrict the flow thus increasing the depth of water flowing through the culvert. In addition, small holding pools were built below the culvert to hold the fish as they gathered to ascend the culvert.

The collection of biological data will be undertaken again during 2013 with a target of 600 alewives for length and sex information, scales from approximately 200 fish, water temperature data collections, and another set of in the field observations. In addition data from a permanent water quality monitoring station located at the Route 105 Bridge can be reported along with the fisheries data collected.

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 over the past three years. I would like to acknowledge those folks who helped during 2012 and thank them for their assistance:

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Table 1. Peconic River Alewife Observations, Woodhull Dam, 2010 to 2012.

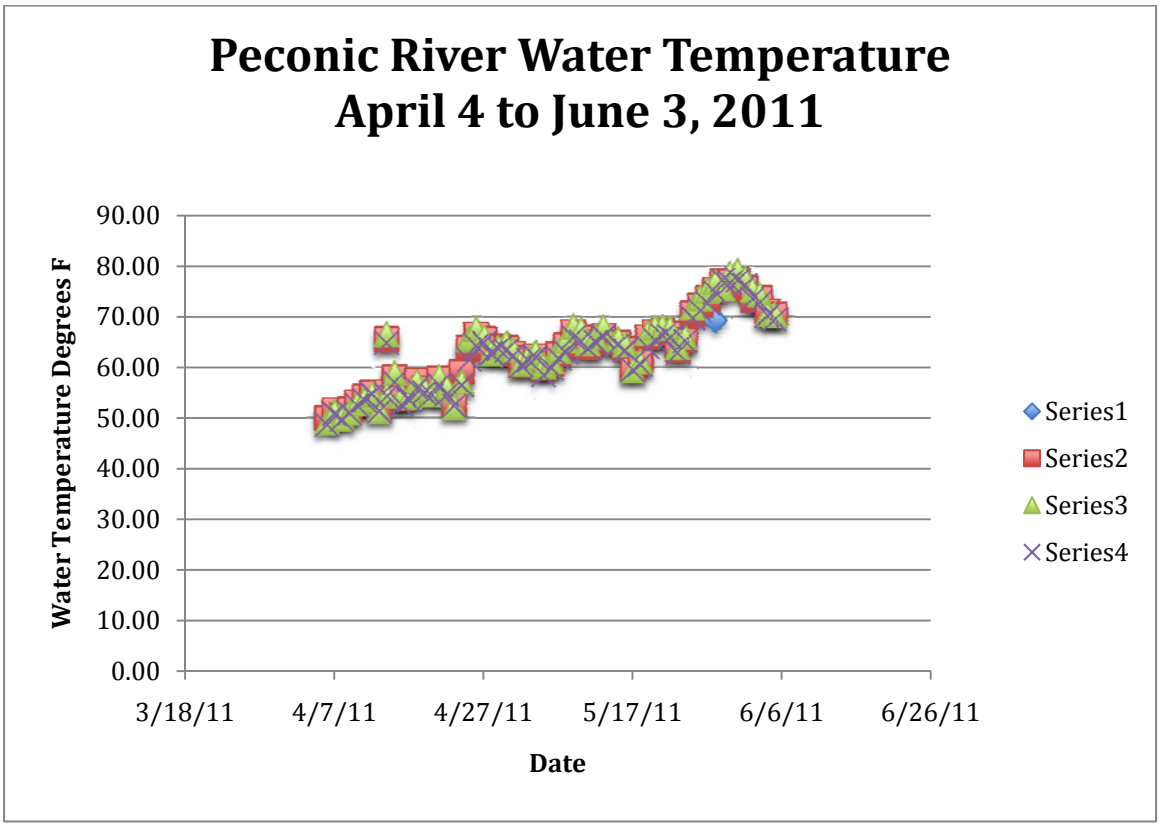
Date	2010 P/A	Min. Number	Max. Number	2011 P/A	Min. Number	Max. Number	2012 P/A	Min. Number	Max. Number
Jan. 1 - 31	A			A			A		
Feb. 1 - 28	A			A			A		
Mar. 1 - 10	A			P	5	5	P	1	1
Mar. 11 - 20	P	50	400	P	1	25	P	50	10000
Mar. 21 - 30	P	25	750	P	3	3	P	500	6000
Apr. 1 - 10	P	15	6000	P	5	500	P	2000	7000
Apr. 11 - 20	P	200	6000	P	15	500	P	50	4000
Apr. 21 - 30	P	250	5000	P	1	400	A		
May 1 - 10	P	3	1500	A			A		
May 11 - 20	A			A			A		

Table 2. Mean Total Length for Spawning Peconic River Alewives, 2010 & 2011

Year	Number of Males	Mean Total Length	Standard Deviation	Range	Number of Females	Mean total Length	Standard Deviation	Range
1995	20	257.3	13.91	238-282	40	264.6	11.61	235-288
1996	85	266.2	14.09	234-283	78	279.9	11.13	249-308
2010	356	263.1	11.49	235-300	256	273.2	11.67	243-313
2011	252	260.5	10.12	232-289	158	272.2	10.85	234-298
2012	694	257.7	14.06	224-305	413	277.2	14.44	241-325

Figure4. Daily Water Temperatures from Grangabel Park (Series 1&2); Woodhull Dam (Series 3); and Upper Mills Dam (Series 4) during 2011.

c River daily water temperatures during the spring of 2011.



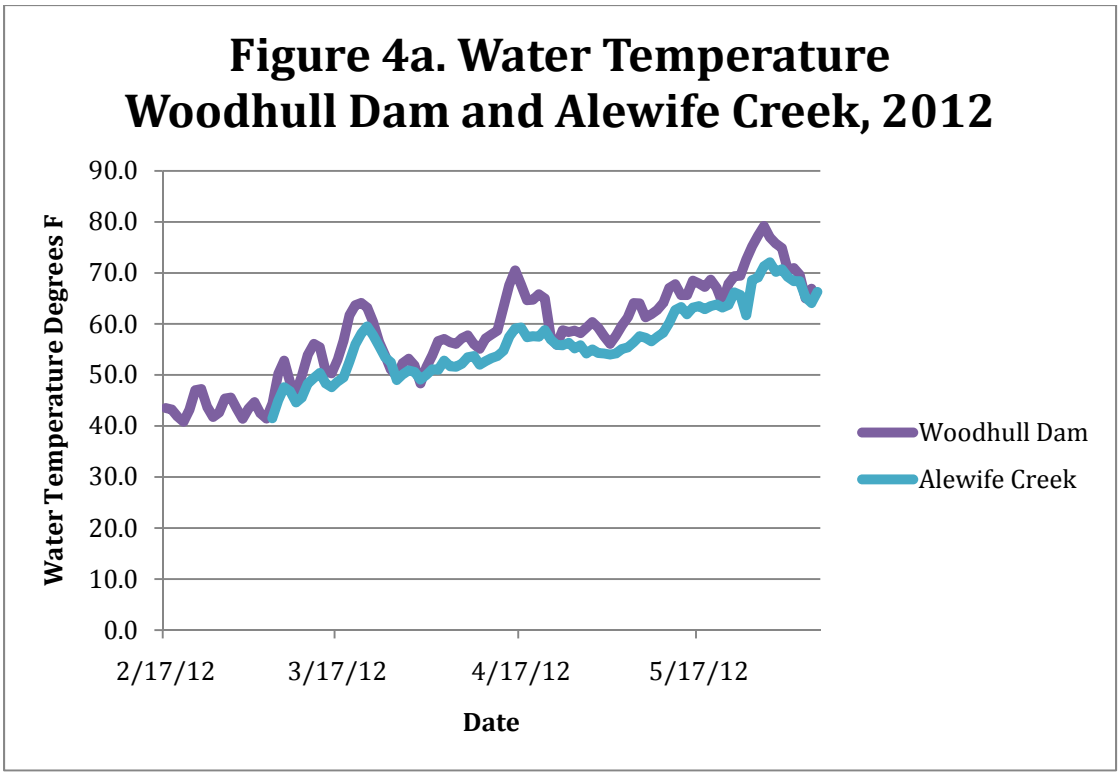


Figure 5. Weight to length relationship for alewives captured at Woodhull Dam during 2012.