Discussion

Water Quality

The assessments conducted during the 2009 Large River Project, when compared to the results of the 2008 Large River Assessment Project (Shenk, 2009), 2007 Large River Assessment Project (Hoffman, 2008), Upper Susquehanna Subbasin Survey (Buda, 2008), and Middle Susquehanna Subbasin Survey (Buda, 2009), show that most of the water quality parameters in the mainstem of the Susquehanna River and the mouths of most of its larger tributaries are below water quality limits. Total orthophosphate is the parameter that exceeded its limit most often. Total sodium, total phosphorus, chloride, nitrite, and total organic carbon each exceeded their respective limits at least at one site. Even with these exceedances, the data analysis shows that the river from Sidney, N.Y., to Towanda, Pa., has fairly good water quality.

Macroinvertebrate Communities

The Upper Susquehanna River starts at Otsego Lake in Cooperstown, N.Y., and continues to the confluence with the Chemung River in Sayre, Pa. This is a fairly rural area that mostly consists of forest and agricultural land, with the exception of one large population center, Binghamton, N.Y. Six of the eight sites that were sampled in 2009 were in the Upper Susquehanna River area. Due to higher seasonal flows during the sampling time frame, staff focused on these sites because they were not sampled during 2008. Also, the river system is smaller in this area and thus easier to effectively sample during higher flow conditions.

The most upstream site sampled was at Sidney, N.Y. (SUSQ 394), approximately 50 miles downstream of Otsego Lake. This site was rated slightly impaired with one of the highest diversity of taxa and high number of EPT taxa when compared to all the sites sampled in 2009. The site at Windsor, N.Y. (SUSQ 365), was rated nonimpaired due to its highest rating in both percent of dominant taxa and Shannon-Wiener Diversity index. After the river flows briefly into Pennsylvania, it turns north and flows back into New York upstream of the site in Kirkwood, N.Y. (SUSQ344). As found in the 2007 survey, this site is slightly impaired with highest ratings for Hilsenhoff Biotic Index, percent Ephemeroptera, and percent Chironomidae, but a very low rating for diversity of taxa.

The first site after the river flows through Binghamton, N.Y., is the station in Apalachin, N.Y. (SUSQ327). In the 2007 and 2008 surveys, this site was moderately impaired; however, in the 2009 survey, it was nonimpaired. This could be attributed to the smaller number of sites for comparison in 2009 but the nonimpaired rating held even when compared to all site data for the past three years. There are significant increases in diversity of taxa, number of EPT taxa, and percent Ephemeroptera from the 2008 and 2007 surveys. The site at Nichols, N.Y. (SUSQ 312), was nonimpaired with high ratings in all categories. The first site after the river heads south into Pennsylvania is at Sayre, Pa. (SUSQ 300), which is also nonimpaired, with the highest overall rating among the 2009 sites.

The Chemung River confluence is just downstream of SUSQ 300 and upstream of the site at Towanda, Pa. (SUSQ 271). This site was slightly impaired in 2009 with two very low ratings for diversity of taxa and number of EPT taxa. Some of the observed degradation in the macroinvertebrate community could be contributed to the Chemung River. The site on the Chemung River at Athens, Pa. (CHEM 3), was moderately impaired with the lowest ratings for Hilsenhoff Biotic Index, percent Ephemeroptera, percent dominant taxa, percent Chironomidae, and Shannon-Wiener Diversity for all of the 2009 sites. Two of the biggest decreases in ratings from the 2007 survey were in percent Chironomidae and diversity of taxa.

Future Goals

The assessments at the Susquehanna River sites are fairly consistent between this study and past studies, not withstanding the reduced number of sampling points in 2009 due to the high flows. The 2007, 2008, and 2009 Large River Assessment projects used the same protocol with very similar end results, while staff used different protocols in 2005 with very similar results. Future studies will continue, conditions permitting, and expansion of the project will be investigated. SRBC is interested in adapting lake and reservoir protocols to help assess the last 45 miles of reservoirs, as well as collecting fish community data at the current stations.

Towanda, Pa.

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