

An ecological study to
determine the water
quality of the
Sandseakill

Conducted by Schalmont High School

By

Christopher S. Gentile

Abstract

The River Watch from Schalmont High School Conducted an ecological study of the water quality of the Sandseakill. The Schalmont River Watch did this study to determine the water quality of the Sandseakill due to possible dump runoff and the fact the Thruway runs over it. This is crucial because the Sandseakill is part of the Mohawk water shed, which eventually leads into the Hudson River, as part of its water shed. There were tests done to check the water quality of the stream. These tests consisted of a macroinvertebrate collection, chemical analysis and physical characteristics of the stream. The macro results of these indicated fair water quality and the chemical analysis was acceptable according to New York States Department of Environmental conservation (DEC). This is important because the Sandseakill is a tributary of the Hudson and it is crucial that the water quality is monitored.

Background

The Sandseakill test site is located in Pattersonville, New York. The testing site was between two bridges. The upstream bridge was a Thruway (I-90) overpass. Wooded areas surrounded the stream. There was a suspicion of possible dump runoff leaking into the stream. The stream was only about a Quarter of a mile away from the Mohawk River. This stream is a part of both the Mohawk and Hudson watersheds due to that the Mohawk connects to the Hudson. This streams (DEC) class is "C".

Results

Six kicks of macroinvertebrates were collected each trip. The macroinvertebrate tests on September 29, 2005 showed that the average biotic index was a 62, which gave a water quality of good, but the average index of biotic integrity test gave 18, which is only a fair water quality. On October 6, 2005 the results were somewhat different because the average biotic index test was only a 48, which gives a fair water quality, and the index of biotic integrity test was only a 14, which reads out as a poor water quality.

Chemical analysis was conducted using LaMotte test kits. The amount of dissolved oxygen was 10 parts per million (ppm), which is good, and the Ph was an 8.5 which is only a little out of the optimal range. The temperature was 17.5 degrees Celsius. The phosphate was only .1 ppm and there was no turbidity or nitrates in the stream at all.

For the physical characteristics cross-sectional area and velocity were measured to determine the discharge. The average discharge of September was 2.8 cubic feet per second (ft³/sec.) and in October the average discharge was 1.5(ft³/sec.).

Sandseakill Macroinvertebrate Analysis

Sandseakill macroinvertebrate	September 29,2005	October 6,2005
Average Biotic Index	62	48
Water Quality	Good	Fair
Average Index Of Biotic Integrity	18	14
Water Quality	Fair	Poor

Sandseakill Chemistry

Date	Stream	D.O.	pH	Temp.	Phosphate	Turbidity	Nitrate
9/29/05-	Sandseakill		8.5	17.5 C	0.1/PPM	0/NTU	0/ppm
10/6/05		10/PPM					

Discussion

At the Sandseakill a macroinvertebrate sampling and chemical analysis took place to determine the water quality of the stream. The macro test is important because these organisms are living things and can be broken up into three different taxas. Some are highly pollution sensitive, while some are only moderately affected by pollution or not affected at all by it. Depending on which taxa the organisms were mostly from it is possibly to determine the health of the stream. In September, the average biotic index of this stream was a 62, which is a good water quality and in October, the average biotic index was only a 48, which is a fair water quality. Many things, possibly a temperature change, could have caused this change in the water quality or precipitation could of sent some of the macros down stream. . This gives a pretty good look at what the streams current health is.

The chemistry test was to determine what is in the water. The dissolved oxygen levels were 10/ppm where 6/ppm is the minimum acceptable level. The Ph was an 8.5, which is only slightly out of the optimum range. The phosphates and nitrates were both low, which is good because if these levels were high there would be excessive plant and algae growth. The turbidity was zero, which means the water is very clear. Chemistry is important to measure because it is a snapshot in time. This test gives the water quality for the moment that the water was collected; it gives a non-altered sample of the stream to analyze.

Conclusion

The macro test outcome was a both a good and fair water quality. This shows that organisms from mainly taxas one and two live in the stream. The chemistry analysis was the same from both trips, which shows that the stream chemistry was stable and in the acceptable ranges.

Suggestions

These tests are necessary to determine the water quality of the Sandseakill. It is important that the water quality of the stream is good because it is a tributary of the Mohawk, which is a tributary of the Hudson watersheds. In the future monitoring this stream is important to keep track of the incoming water of both the Mohawk and Hudson.