Taking Learning Outside

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Abstract

The purpose of the project was to try to show how different weather changes would change the temperature, pH, and transparency of the water in the outdoor stream and why there are few animals in the outdoor lab (woods). We did this by taking the pH of the water in the stream every week on Thursday. While we are out in the outdoor lab (woods), we also measured the transparency, cloud cover, and the temperature of the water. Each week we made observations about the area around the stream and the lack of animal prints along the streamline.

Research Question: How does climate change affect the nearby stream and the organisms that are around it?

Hypothesis: If we measure the pH, temperature, transparency and recorded observations of the stream in the outdoor lab, then we can discover why there are few organisms in the area.

Materials

LaMotte pH Wide Range Kit
LaMotte Turbidity Kit
Red Spirit-Filled Total Immersion 12" Thermometer (-20 to 150 C)
Clipboards
Sneakers
Pencils
GLOBE Protocols

Methods

Turbidity test steps used were:

The materials we used to find the turbidity were found in the LaMotte Turbidity Kit®.

Step 1: We filled up the turbidity tube with water from stream.

Step 2: Then placed the base of the tube on the outline of the turbidity chart.

Step3: Now we looked down through the sample water at the Secchi Disk icon under the tube.

Step 4: We compared the appearance of the Secchi disk icon under the tube to the gray Secchi disks on either side of the tube to determine the turbidity in JTU.

pH test steps used were:

The materials we used to find the pH were a test tube, color chart, pH Wide Range TesTab®.

Step 1: The first thing we did was fill the test tube with water to the 10 mL line.

Step 2: We added one pH Wide Range TesTab®.

Step 3: After that, cap the tube and mix until the tablet has disintegrated.

Step 4: Now compare the color of the sample to the pH Color Chart. Record the results as the pH.

Temperature test steps used were:

To find the temperature, you need a thermometer and water.

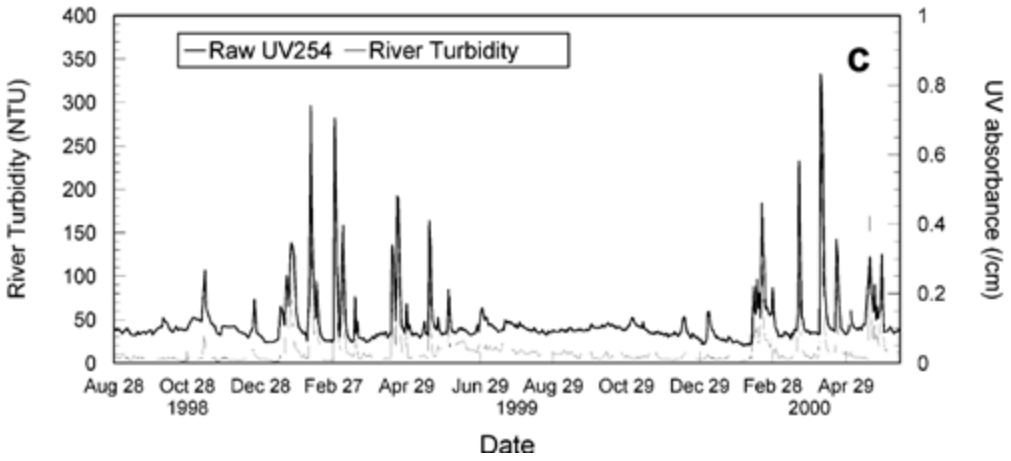
Step 1: Place the thermometer in water. Do not touch the bottom of the stream.

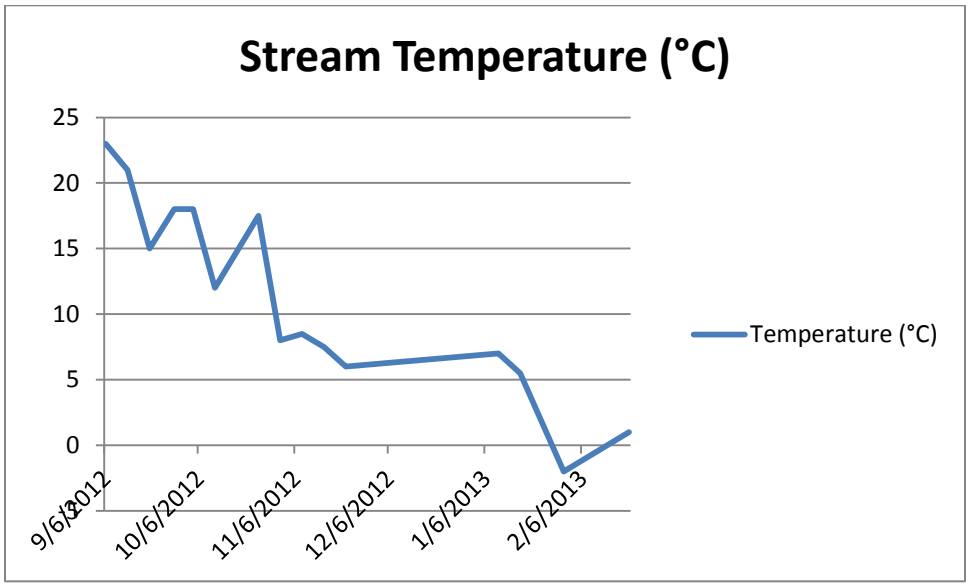
Step 2: Wait for about 3 minutes.

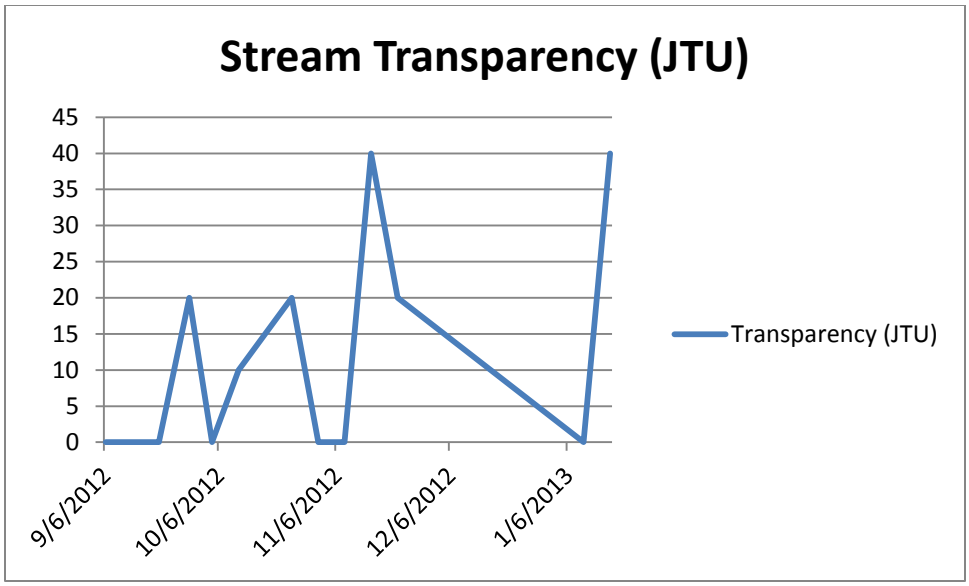
Step 3: Record the results as Celsius.

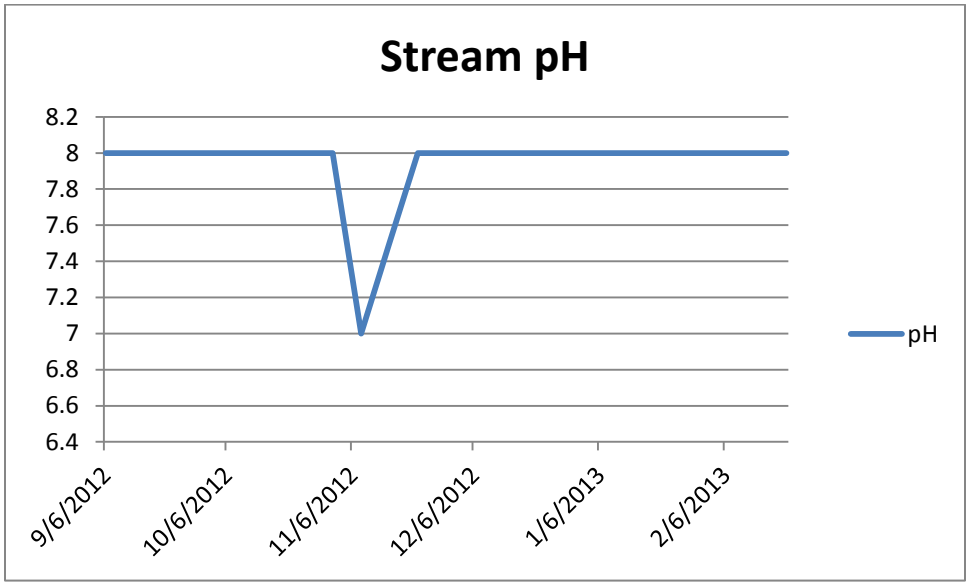
Data Summary

River of the White River






Stream Transparency (JTU)
45
40
35
30
25
20
15
10
5
0
9/6/2012
10/6/2012
11/6/2012
12/6/2012
1/6/2013
Transparency (JTU)


Stream pH
8.2
8
7.8
7.6
7.4
7.2
7
6.8
6.6
6.4
9/6/2012
10/6/2012
11/6/2012
12/6/2012
1/6/2013
2/6/2013
pH

Analysis/Results

The graph on River of the White River
About February through April the river turbidity had unnatural activity. It became unusually high and then dropped dramatically. The raw UV254 became at its highest points around February and April. It stayed close to zero most of the time.

The graph on our streams temperature seems to decrease in the winter. It stayed at a constant level in December and January. Then in February the temperature dramatically dropped.

The graph about Stream Transparency (JTU)
In November 2012 the Transparency got worse fast. Then got better fast for a little, then slowly got better. January 2013 it got worse fast again.

The graph about streams pH was mostly constant then in the end of October it rapidly deceased. At the begging of November it had reached its lowest point. Then in middle of November it stared to increase again.

Conclusions

The weather affected the organisms in our nearby stream. It has done this by the pH being so basic. Also chemicals are in the water clouding it up causing the transparency to be high, not allowing the organisms to see. Our hypothesis was answered we found out that the pH was 8-7.5 which is really high or basic for most organisms in our area. The transparency is also a little high or cloudy or some organisms. In the charts and graphs that we have shown the recent data that we have collected over a period of time. We didn't have enough evidence to support our hypothesis for the climate change.

Acknowledgements

Mr. Steven Smith, Purdue Outreach Scientist

Debbie Sullivan, Superintendent, MSD of Decatur Township

Nathan Davis, Assistant Superintendent,
MSD of Decatur Township

Mr. Mark Anderson, Principal, Decatur Middle School

Mrs. Sandra Feely, Assistant Principal, Decatur Middle School

References/Bibliography

Our Focus Is Fresh Water. (1999, December 14). Retrieved March 20, 2013, from Stroud Water Research Center website: http://www.stroudcenter.com