Cathance River Water Quality Monitoring

At the Cathance Preserve, Topsham, Maine
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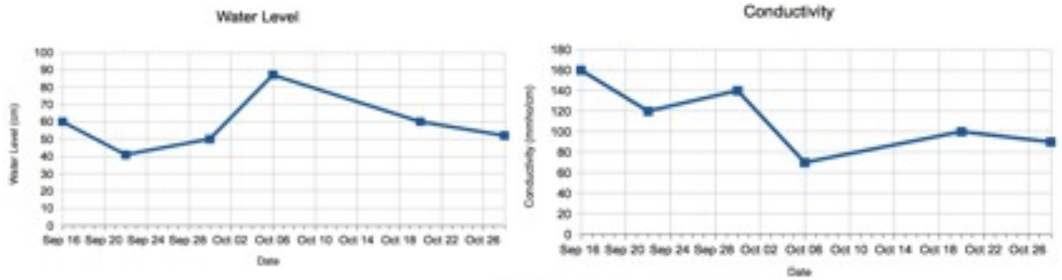
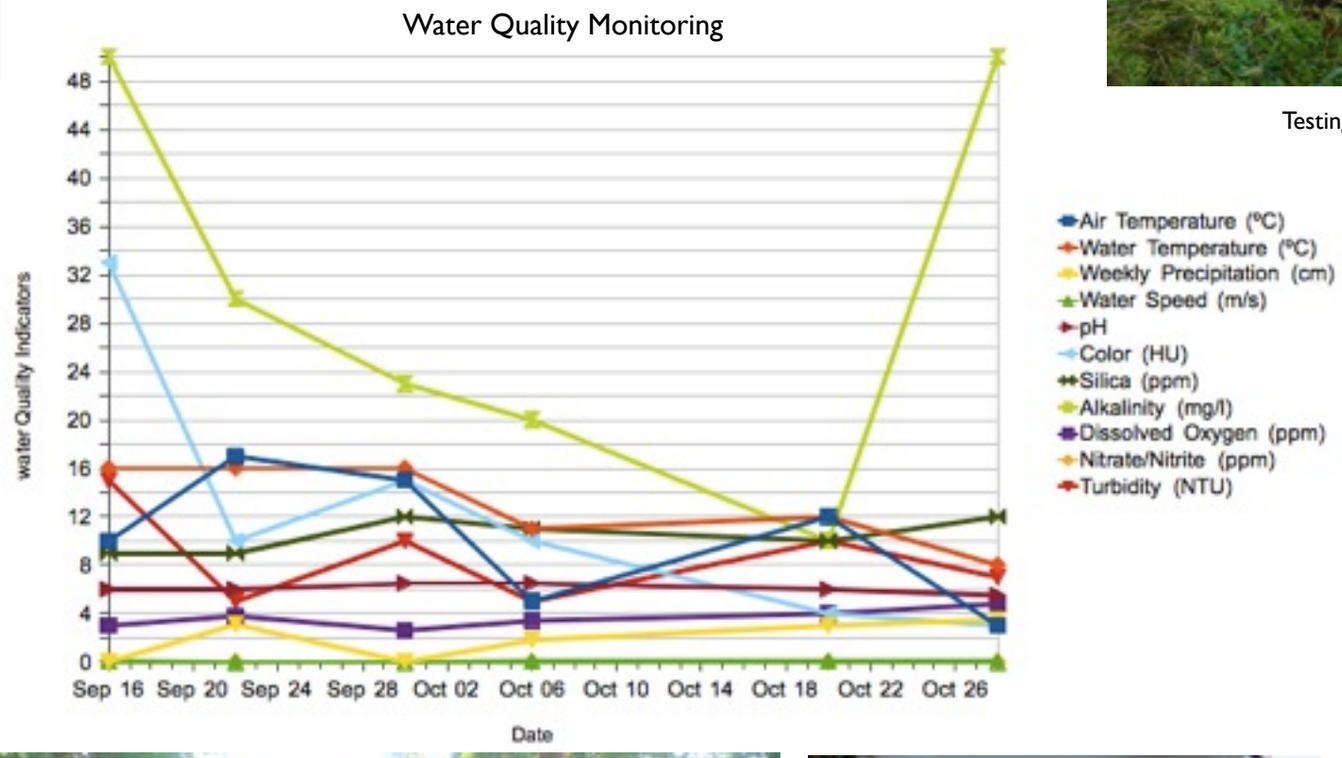
Purpose:
To determine how abiotic factors like water temperature and rainfall affect characteristics of the river's water quality.

Hypothesis:
If the nearby abiotic factors change, then the water quality characteristics of the river will also change.

Conclusions

- Virtually every test demonstrated a direct relationship between characteristics of water quality and various abiotic elements of the river, such as water temperature, rainfall, or both. For instance, the pH of the river was measured at its lowest levels after the largest rains. In an inverse relationship, conductivity was measured at is highest levels with the lowest amount of rainfall. Dissolved oxygen experienced its highest levels during the weeks in which rainfall was the greatest. All three examples demonstrate direct links between water quality characteristics, and abiotic elements of the river.
- The data indicated that the Cathance River is healthy in virtually every category of water quality measurement. In the vast majority of water quality indicators, including pH, conductivity, color, silica, and alkalinity, the average of measured levels existed within healthy ranges. The insect species identified by researchers also suggested that the water quality was healthy, and able to support a spectrum of diversity among organisms. Only in the turbidity test did the average level exist outside the healthy range, and this was extremely close to healthy values.
- The results demonstrated the direct relationship between water quality indicators and abiotic factors. Therefore, the hypothesis, which stated that if the nearby abiotic factors change, then the water quality characteristics of the river will also change, was supported by the results of this experiment.





Testing site at the Cathance Preserve

Aquatic Invertebrates As Water Quality Indicators

- Types of insect larva living in the water can help show how polluted the water is.
- Some types of insects can only survive in very good quality water, while others can withstand more pollution.
- In the Cathance River, the researchers found insects who could only live in moderate to very good water conditions.
- Mayflies and stonefly nymphs were found, which are highly sensitive to pollution.
- Scuds, damselfly nymphs, northern casemakers, and predacious diving beetles were also found, which are moderately sensitive to pollution.
- By the end, the researchers had found 16 high sensitivity insects and 83 moderate sensitivity insects.
- No insects were found that have a low sensitivity to pollution.

Thank You

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