Project: Pond Research

by 4TH GRADE SCIENTISTS AT Midway Heights Elementary

INTRODUCTION:

Our project focused on the pond in our outdoor classroom. We had known for awhile that our pond did not hold water well. There were plans to line the pond better so that it would hold water. This grant helped us to find how we can tell if our pond now has healthy water which would support a lot of different life.

We had a few learning goals to help us understand what indicates a healthy water environment and the life that lives there:

- To learn to test water quality
- To learn to observe ecosystems more closely and carefully
- To understand the living things that can indicate water quality (bioindicators), most specifically in wetland/pond ecosystems
- To learn to manage our pond area so that the pond can support a variety of plants and animals for study, especially mayflies and frogs

Questions we wanted to answer:

- How do we know when a pond is healthy?
- How can we manage our pond to promote diversity?

METHODS:

- We obtained water quality tests that we took to several ponds away from our school to test the qualities of healthy ponds.
- We used the microscopes to look more closely at the water from those healthy pond locations and observe microscopic life.
- We used the water quality testing kits and microscopes at our school pond also.
- We used the trail camera to monitor species of wildlife at our school around the pond.
- We obtained tests for water pH, dissolved oxygen, nitrate, and phosphate.
- We obtained a microscope for viewing microscopic-sized life and another microscope that is slightly less powerful to view insects and larger life up close.

Results:

Figure 1

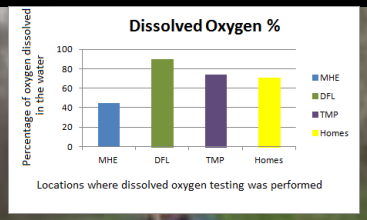


Fig 1 : This figure shows the dissolved oxygen results we obtained with our water quality kits at Midway Heights Elementary (MHE), Dairy Farm Lake (DFL), Two Mile Prairie (TMP), and the homes of some of the students.

Figure 2

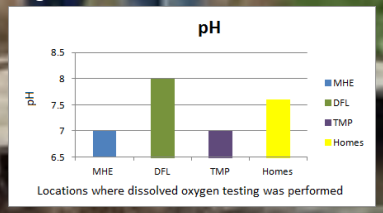
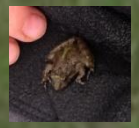
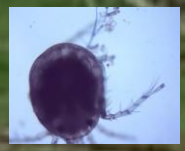


Fig. 2 : This figure shows the pH levels of the same locations as in Figure 1 that were obtained with our water quality kits.

We obtained pH readings from four locations; Midway Heights Elementary (MHE), Dairy Farm Lake (DFL), Two Mile Prairie (TMP), and the ponds and waters on the properties of several Students. These pH readings were between 7 and 8. The Dissolved Oxygen levels were observed at these same locations and were between 45 and 90 percent. We found more life at the Dairy Farm then we did at our pond. (See photos)



Here are some images of some of the life we have seen. Clockwise from the top, we found snails and frogs using our nets at DFL and TMP. We found fly larvae and microscopic ostracods and water mites at DFL. At our pond, we only found mosquito larvae. Our wildlife camera only captured a Robin and several other birds.



Conclusion:

- pH was in the good range at each of our four locations. Our guidelines indicate that a 7 is excellent and that a six or eight is good.
- Dissolved oxygen was very low at our school pond (poor.) At the other locations, dissolved oxygen was good or excellent.
- At our school pond, we observed evidence of one invertebrate and two vertebrate species.
- At our other locations, we observed evidence of six invertebrate and six vertebrate species.
- For frogs, ideal pH is 7, so our pond has been at times good (6,) but has also been excellent (7), so pH is not an issue keeping the frogs away.
- There might be some pollutants affecting our pond
- The poor dissolved oxygen, the varying pH, the lack of microscopic life, and the lack of larger animals being caught on our wildlife camera add up to our pond not being very healthy. We saw at the other sites what healthy ponds should look like. This will help us make the new pond/wetland much healthier than our current pond. We will also be able to look out for bad signs in our ponds at home.

Acknowledgements:

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