



Pond Life Post-visit

Classroom Activities

Brief Synopsis

Students will identify macroinvertebrates collected from a local pond, and based on the biodiversity of species found, decide if it is a healthy ecosystem or not. Students will then determine what factors influenced this pond to be either a healthy or non healthy ecosystem.

Ages: Designed for 5th–8th grade

Time Considerations: Approximately 1 hour.

Materials: Large clear containers for water samples, fish nets, pond nets, Field ID guides for macroinvertebrates (or access to the internet), paper

**If these supplies are not available to you, please refer to the “Teacher Tips” section on page 2.

Vocabulary: Biodiversity, macroinvertebrate, ecosystem, bio-indicator

Outcomes:

1. Students will understand the meaning of macroinvertebrate.
2. Students will be able to describe the characteristics of a healthy pond ecosystem.
3. Students will use logical thinking to determine whether or not there is a healthy pond ecosystem.
4. Students will use careful observations to identify different species of macroinvertebrates.
5. Students will understand how the biodiversity of macroinvertebrates can determine the health of a pond ecosystem.

Minnesota Academic Standards:

Science: 4.III.A.1

Math: 4.V.B.1

Language Arts: 4.I.A.1, 4.I.B.1, 4.II.D.1, 4.III.A.1-3, 5.I.A.1, 5.I.B.1, 5.III.A.1,2&4, 6.III.A.1&6, 7.I.A.1, 7.I.B.1, 7.III.A.1&6, 8.1.B.1, 5&8, 8.III.A.1,2,6&7

Revised Jan 2008

Background:

As the students have learned from their visit to Eagle Bluff, one can gather a lot of information by studying the macroinvertebrate species in pond ecosystems. This activity focuses on the quality of the pond by examining the biodiversity of species found.

Activity: Portable Pond

Pond health can be influenced by a number of different factors. Your students will study the biodiversity of a local pond ecosystem to determine whether or not it is healthy. The students will then discuss why the pond is or isn't healthy.

Procedure:

1. Options:

- Visit a local pond with your students and, using equipment similar to that at Eagle Bluff, collect a water sample (with macroinvertebrates) in a container to bring back to the classroom. Allow appropriate time for students to collect samples before returning to classroom.

OR

- Visit a local pond on your own to collect the water sample(s) (with macroinvertebrates) using equipment similar to Eagle Bluff. Return to your classroom with the water samples.
2. Back inside the classroom, split the class into groups of 4-5 with a water sample. In their groups, students must find and identify all of the macroinvertebrates. Students will use either field guides from the school, school library, community library, or free internet guides from websites listed on page 2. Each group will have a “Macroinvertebrate Bio-indicator and Diversity Sheet” where they will record the number of species they find.
 3. After all the groups are finished, have them complete the worksheet and determine the “Diversity Index”. The macroinvertebrates that are found can be placed in one of three categories: Sensitive, Somewhat Sensitive, or Tolerant (in regards to pollution). Calculating the Diversity Index will indicate whether the sampled pond is healthy or not. Discuss contributing factors to the health of the pond.



Assessment/Discussion:

- What kind of area is it in (industrial vs. subdivision, rural vs. urban, etc)? Are there any factories in the immediate area? Was there any noticeable pollution near the pond?
- Why is looking at aquatic insects important to determining the health of a pond ecosystem?
- Why are pond ecosystems important?

Extensions:

- Discuss what steps can be taken to maintain the health of this pond? (If pond is healthy)
- Discuss what steps can be taken to rid the pond of pollutants or make the pond more healthy? (If pond is not healthy)

Teacher Tips

- This project can be as simple or involved as you would like it to be. Feel free to adapt it to your needs.
- If macroinvertebrate or pond life identification guides are not available to you, some of the websites listed under “Additional Resources” contain online field guides.
- If collecting supplies are not available at your school, call your local DNR office, they may be able to lend you some supplies through their MinnAqua program and may also provide some of the programming.

Additional Resources

<http://people.virginia.edu/~sos-iwla/StreamStudy/StreamStudyHomePage/StreamStudy.HTML>

SOS Stream Study home page. Includes online dichotomous key of macroinvertebrates.

<http://www.weloveteaching.com/hopepond/macrobug/macrobug.htm>

Illustrations and drawings of macroinvertebrates.

<http://www.pond-life.us>

Pictures and information of macroinvertebrates.

<http://bugguide.net>

Contains more pictures and information of and about macroinvertebrates.

<http://www.fishpondinfo.com/bugs.htm>

Personal webpage based on an interest in pond life. There is a lot of good information and links to other similar websites.

<http://www.watersheds.org/nature/index.htm>

Contains a link to a movie that students created about stream macroinvertebrates and why they are important.



