

Name \_\_\_\_\_

Class \_\_\_\_\_

Date \_\_\_\_\_

### Field Trip: Exploring the Biodiversity of a Pond Ecosystem

**Background:** A pond is a quiet body of water that is too small for wave action and too shallow for major temperature differences from top to bottom. However, it is often difficult to classify the differences between a pond and a lake, since the two terms are artificial and the ecosystems really exist on a continuum. Generally, in a pond, the temperature changes with the air temperature and is relatively uniform. Lakes are similar to ponds, but because they are larger, temperature layering or stratification takes place in summer and winter, and these layers turnover in spring and fall.

Ponds get their energy from the sun. As with other ecosystems, plants are the primary producers. The chlorophyll in their leaves captures energy from the sun to convert carbon dioxide and water to organic compounds and oxygen through the process of **photosynthesis**. Nitrogen and phosphorus are important nutrients for plants. The addition of these substances may increase primary productivity.

You should have already read the information on “Organisms in a Pond Ecosystem”, so you should know about the interactions between organisms in this ecosystem.

### Procedure

1. In your group, select people to fill the following jobs:
  - recorder: responsible for filling out the data sheet
  - sorter: responsible for sorting the organisms
  - organizer: responsible for labeling the collection jars
  - collector: responsible for wearing the waders and collecting the invertebratesAlthough you have specific jobs, you should all be willing to help each other.
2. Listen for specific instructions from your teacher.
3. Complete the visual observations of the ecosystem.
4. After you have completed your observations, begin sampling your portion of the pond for macroinvertebrates. Put 2 to 4 cm (1 to 1.5 inches) of pond water in the plastic tub and the collecting jars.
5. Standing on the edge of the shore, reach out with the net and pull it toward you through the water, scraping gently along the bottom and through the plants. Repeat two more times. After the third sweep, dump the contents of the net into the plastic tub.
6. Examine your catch and use the plastic spoons, forceps and pipettes to collect your pond organisms. Look at them carefully and compare them to the ID charts provided.
7. **Place each different kind of invertebrate in a different container.** Label each container with your group number and group type. Separate out all of the invertebrates from the pan before proceeding to the next step.
8. Clean out the plastic tub and repeat steps 5 through 7.
9. After you have completed two sweeps with the dip net and sorted all the animals, clean out the plastic tub and dump all the type 1 animals into it. Count how many you collected. Record the number of animals on the data sheet.
10. Rinse out one of the collecting jars, fill it three quarters full with water and put two or three type 1 animals in the jar and put a lid on it. These will be preserved as voucher specimens. Return the other animals in the pan to the pond. Repeat this procedure for each of the other kinds of invertebrates your group collected.

11. Rinse out the net, plastic tub and empty collecting jars and bring your voucher specimens and data sheet to your instructor.

Group member names and jobs:

\_\_\_\_\_

\_\_\_\_\_

Organisms	Guidance	Yes/No	Notes: describe what you see or name the organisms you can identify
Phytoplankton	Does the water look greenish?		
Periphytic algae	Is there algae attached to vegetation and rocks?		
Submerged plants	Are there plants growing under water?		
Floating plants	Are there plants floating on the surface?		
Emergent plants	Are there plants with growing with only their roots in the water?		
Shore plants	Are there plants growing in wet soil at the edge of the pond?		
Zooplankton	We will collect some pond water to look for microorganisms back in the lab.		
Invertebrates	We will collect these.		
Vertebrates	Look for fish, frogs, salamanders, turtles, snakes, birds and mammals.		
Decomposers	Do you think there are bacteria living on the bottom of the pond?		

Keep this information as it will be useful when you complete your lab write-up.

