

Pond Communities

Modified from Wet and Wild World, Ecosystem Matters, USDA

Background:

Ponds and wetlands are a vitally important part of our ecosystem. Yet, many people throughout history have viewed them as creepy, mosquito-ridden swamps; smelly bodies of water collecting trash; or inconveniences to a housing developer or a highway builder. They are, in fact, beneficial habitat for many animals and plants and have value to people as well as to our total environment.

Wetlands exist in many forms, locations, and climates. They appear differently across the United States and around the globe. Southern swamps surrounded by trees dripping with Spanish moss provide many of the same ecological functions as wetlands in the rolling, glacier, pothole country of the northern prairie. Wetlands can be swamps, wet meadows, marshes, tidal areas, bogs, and more.

Ponds are bodies of water that are found in many places and often have wetlands on their edges. Ponds are home to amphibians, ducks, fish, and beaver. Deer, coyote, and raccoons drink from the edges and birds nest there; hawks and eagles hunt from above. Frogs, sparrows, and night hawks may feed on mosquitoes and other insects there, while eagles and bats may feed on the frogs. Entire food webs can be observed at the pond's edge. Similar to small lakes, they can be found in farmlands, cities, prairies, and mountains. Some have water all year. Others have water only part of the year, when they fill up with extra rainfall and help prevent floods. And ponds abound in plant life.

Water contained in ponds moves through the ground to replenish the groundwater that many farmers and cities depend on, especially in the dry western states. Ponds trap pollutants that wash off the ground and filter them out of the water before it reaches the groundwater. People who fish use ponds and lakes for recreation as do people who simply enjoy looking at the surrounding plants and animals.

People often fail to look closely at wetlands or ponds. Without a thorough examination, people do not see or understand many of the special things that are taking place right below their eyes, ears, and nose.



Guiding Questions:

1. Who and what inhabits a pond community?
2. How can your senses help you find out what special things are taking place there?
3. Why are ponds and wetlands important?

Student Learning Outcome:

1. Using the senses and good observation skills, discover and describe what inhabits a pond community.
2. Using the “scope,” study plants and animals up close, look overhead and all around and note any patterns, colors and shapes; record what is found.
3. Choosing three different animals, note signs of these around the pond and discuss the adaptations that help the animals live in the water.
4. Explain why a pond community is important to humans and to the ecosystem.

Materials:

- Toilet paper tubes for each student
- Yarn
- 4-5 blank notebooks
- Black Craft paper
- Short dip nets
- *Pond Life*, George K. Reid, Ph.D.
- Large display paper or notebook

- Towels or hand wipes for cleaning up

Materials for Extensions:

- Bucket
- Clear one-gallon jar
- Aquarium aerator
- Aquarium hose
- Magnifying glass
- Light
- Foam core board
- Art supplies
- Journal
- 10 Hoola hoops
- *Beaver at Long Pond*, William T. George and Lindsay Barrett George or *Between Cattails*, Terry Tempest Williams)

Procedures—Preparation:

1. Have students research ponds and wetlands and find images of the mini ecosystems that thrive in these water bodies.
2. To help develop observation skills, have students make scopes out of empty toilet paper tubes and yarn. They can be decorated or kept simple. Wrap them in black paper and keep the ends open to make them look more like telescopes. The scopes are for viewing objects up close. When your students use them, their attention will be more focused. Carry them on regular walks around the school and school grounds to help students become practiced at looking at specific objects on walls, statues, trees, and anything along the route. Encourage them to look on top, along the sides, and underneath.
3. Because some students may never have visited a pond, plan your visit and review the following guidelines before visiting the pond:
 - Walk slowly; do not run.
 - Stay with the group.
 - Be quiet except during group discussions and then talk softly.
 - Respect all living and non-living things.
 - Don't pick plants unless told to do so.
 - Follow directions.
 - You may also ask them to bring a change of shoes if possible and to wear old sneakers or other closed toe shoes that they don't mind getting muddy.

Procedures—Investigation:

1. Before approaching the pond have students sit down and discuss the senses they will use to explore the pond. While sitting have them feel natural materials around them. Ask them to describe their experiences. If possible, take the objects apart and look inside. Ask: **How did it feel, how did it smell, and how did it look?**
2. Walk slowly toward the pond and ask students to plug their ears so they cannot hear for one minute. When the time is up ask: **What did you smell? What did you see?**
3. Ask them to sit again, close their eyes, and to listen carefully until they hear five sounds. Each time they hear a new sound have them lift a finger until their hands are open. Clap when they can open their eyes. Ask: **What sounds did you hear? What do you think made these sounds?**

4. Begin following a trail to the pond. Instead of looking at the trail, walk slowly, looking up at the sky. Search for different patterns, colors, and shapes and encourage students to use their scopes. Stop at a point when everyone seems to be engaged and have each person locate a favorite pattern, color, or shape. Have them quietly describe the object to the people closest to their left arm. Repeat this process following the trail, but this time have them look at the ground around their feet as they walk. Stop to describe it. Continue the walk to the pond and have them observe for a third favorite shape, color, or pattern without focusing through the scope.
5. At the water's edge, have everyone find a special spot where they can see you easily. They should not be in the water or on wet soil, but they need to be on the edge of the pond. Explore the pond using their senses again. Extend their arms and hold their hands on the surface of the water, but not in it. Then have students place their hands in it. Ask: **How did it feel on the surface and how did it feel in the water?**
6. Get students down into the muck and have them pull up a handful from the bottom. Have them feel and smell the muck and look closely into the muck for insects or signs of other animals. Pick up rocks from the pond's bottom and the sides and turn the rocks over to look under them. Explain that small, jello-like shapes on the rocks are eggs of animals and insects from the pond. Ask: **Do they see anything moving? What does it look like?**
7. Ask for predictions of what may be at the pond. Look into the water very closely for signs of movement or other life. Ask: **What kinds of life can you see? Do you think that plants are a form of life? When have you seen a dead plant? How did you know it was dead? What signs do you see of animals and insects eating plants in the pond? Be sure to look on and under plants. Beware of leaves of three!**
8. After quiet observation, and as safe conditions allow, use dip nets to scoop small animals such as tadpoles, insects, or fish and plant matter from the pond, and observe. Be sure to return everything carefully back to the water where it was found, turning nets inside out and rinsing in the water.

Procedures—Discussion:

1. Walk slowly around the pond and look for signs of animals and people. Find and discuss signs for three different animals at the pond. (There may be a lot of duplication, especially if this is in the city.)
2. Discuss what helps the animal live in water or near the water. Adaptations are special parts of an animal's body that make it possible to live in one place and not another. If there are ducks or geese, look carefully at their feet and discuss adaptations. When observing animals remember to look into the air above the pond, on the surface of the pond, under the water, and along the shore. Poke around in the plants along the pond for nests and look for tracks of animals' feet in the soft soil around the pond. Share with each other your finds. (If the students work in groups of three or four, they should share with other groups.)
3. Before leaving, compare your observations. Using several large notebooks, have the students list or draw what they have seen. They can later record their findings on a long sheet of craft paper in the classroom. Use the small handbook *Pond Life* (a Golden Guide) or a similar guide to identify some of the usual pond dwellers.

Post Visit Back in the Classroom:

1. Compare what everyone saw at the pond. List 10 pond characteristics, including smell, sounds, sights, and textures (e.g., soil or plants). Search for similar characteristics around the school. Ask: **Why or why aren't these found at the school? Would the animals found at the pond be happy on the school grounds?**
2. Discuss why a pond is important. Using a video recorder, have students record a letter to a local elected official about the importance of ponds.

Ask students to:

1. List five important characteristics of a pond that make it different from the schoolyard.
2. Draw a picture of a foot of an animal that lives in a pond.
3. Describe the sounds of the pond and record them using an audio recorder.



Extensions:

1. "Circle Ponds" is an activity to be done at the pond. Have a parent volunteer place large hoops (hula hoops work well) in lush spots along a path leading back to the bus or school- -a route different from the one taken to the pond. Ask your students to use their excellent observation skills along the way. In their journals have them fill their pages with one large circle per page and draw an observation of one living item found in each hoop. Compare and discuss the contents of these ten circles.
2. Bring a bucket of pond water and several inches of "muck" from the floor of the pond back to the classroom to observe. Empty this into a large, clear one-gallon jar. If possible, hook up an aquarium aerator and run a hose into the jar. Place it close to a window and watch for activity. Keep an observations list close to the jar and whenever anyone sees something moving inside the jar, record it (in writing or drawing) on the list. Once a week pull out a small tube of the pond water, look at it through a large magnifying glass in front of a lightbulb and watch for movement. Discuss how some animals have many life cycles. For example, frogs change from eggs to tadpoles to frogs. Look for changes in the jar, too.
3. Read *Beaver at Long Pond* or *Between Cattails* and identify the residents of the pond. Describe the area surrounding these ponds. Create a 3-D class mural of a pond using drawings on foam core board to add new dimensions to the mural. For example, a dragonfly or hawk can be on the board and glued to an "I-shaped" cardboard to lift off the mural.

Resources:

Beaver at Long Pond, William T. George and Lindsay Barrett George, illustrated by Lindsay Barrett George, Greenwillow Books, New York, 1988

Between Cattails, Terry Tempest Williams, illustrated by Peter Parnall, Charles Scribner's Sons, New York.

Pond Life, Revised and Updated by George K. Reid Ph. D., St. Martin's Press, New York, 2001.

