

Studying Pond Creatures

Getting the most out of class excursion to a nearby pond

by Chris Earley

Grade levels: 2-5

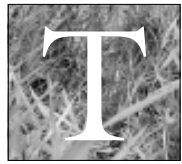
Subject areas: science

Key concepts: adaptations, food webs, pond ecosystems

Skills: observation, classification, exploration

Location: outdoors and indoors

Materials: hand nets, magnifying glasses, white plastic basins, laminated identification sheets or field guides



here's something about a pond that intrigues

almost every child — a combination of water, frogs, mud, nets, and buckets that seems to be a kind of kid magnet. And because ponds are found nearly everywhere, often nearby, they are great destinations for field trips. A freshwater aquatic environment is often teeming with life that is easily observed, even by very small children. Even a prairie farm dugout or flooded roadside ditch will harbor creatures such as chorus frogs, mosquito larvae, snails, and larval salamanders. Such places provide living examples of food webs, life cycles, and animal and plant adaptations. In learning about pond creatures first hand, your students will develop an appreciation for the outdoors and its inhabitants.

Field trip objectives

Three main objectives of a field trip to a pond, or to any natural area, are that children should:

- Ⓢ be comfortable in and familiar with natural habitats
- Ⓢ ask questions about the natural world and discuss the validity of the answers



Photographs by Chris Earley

- Ⓢ understand that their behavior and actions affect the environment and that they can take an active part in preserving resources

Preparing for the trip

Going to a new environment is one of the most exciting experiences children can have, but the new and unknown can be scary. Help to ease any apprehensions students may have by talking about the pond before they go so that they will develop a familiarity and link the pond visit to their classroom experience. To ensure their physical comfort on the trip, provide students and their parents with a list of items to wear or to bring. The list should include rubber

boots, raincoat, sun hat and sun screen, long-sleeved shirt, long pants, and insect repellent if it is mosquito season.

To make sure that *you* are comfortable, visit the pond ahead of time to ensure that it is a safe environment for children and suitable for the activities you are planning. Avoid ponds with steep drop-offs or slippery banks, and check that there is sufficient clearance around the water's edge to accommodate your class and their equipment. Take a net and bucket and do some sampling so that you can find the best sampling spots and become familiar with the pond creatures. Finally, decide where to set boundaries along the pond's edge to contain the students' activity. If you go to the pond more than two weeks ahead of the class's visit, try to visit again a couple of days before your trip to check the water level. Ponds can change rapidly due to recent rain or drought, so be ready to modify your boundaries if necessary.

Protecting the pond environment and your students

Certain rules should be followed to ensure the safety of the students as well as the protection of the pond habitat.

- Ⓢ Recruit parents and other adult volunteers so that you have at least one adult on the trip for every five students.
- Ⓢ Be sure that each student has a partner.
- Ⓢ Remind students that they are expected to follow the same rules of behavior that are used in the classroom: pushing and shoving will not be tolerated.
- Ⓢ Do not allow students to step into the pond. Explain that their rubber boots are for walking in the mud around the edge of the pond. Let students know that if they step into the pond they will be stepping on living creatures that dwell on the bottom; and if they walk in the pond they will stir up mud and make it difficult to see what is to be caught. The fact that staying out of the water lessens the chance that someone will fall into it is a bonus safety feature.
- Ⓢ Have the students wash their hands after their pond exploration and before eating snacks or lunch.

Using nets and basins

Small nets such as those used for netting fish in an aquarium are great for a pond visit because they are sturdy and cannot get too heavy with mud. You will also need to set up several basins, half-filled with pond

water, into which students can place pond creatures for observation. If available, use shallow white plastic basins rather than buckets for observing pond organisms. The creatures show up well against the white background; and because the basins are wide and shallow, more students can see into them, making observation

of a single creature much easier. The water in a basin can get quite murky as students add their catches to it, so you may wish to give each group two basins. Have students empty their nets into the first one and then use a clean net or a white plastic spoon to transfer a creature from the first basin into the “clean” basin.

Encourage the students first to look into the water and try to scoop out what they can see. When they catch something, have them gently turn their nets inside out and dip the contents into the basin. After a few of these scoops, have them do some “blind scoops;” that is, have them scoop through the water among pond plants even though they may not see any creatures there. When they look

closely into their nets they will likely see damselfly and dragonfly nymphs or water mites. Even if they see only algae and debris in their nets, they should still empty the nets into basins because many creatures that are not visible in the net will be easily spotted once they are swimming in the basin. Because they jump and may get stepped on before they escape, frogs and toads should not be caught, only pointed out and watched.

When the creatures in the basins are to be released, have two students, one on each side, gently dump the



Common Pond Organisms

The following are common pond animals and aquatic plants that you might expect to see on a field trip with your students. If they are unfamiliar to you, look them up in a book before the trip to see what they look like. Better yet, have your students study them in the library as a pre-visit activity.

water mite	giant water bug
spider	caddisfly larva
water strider	diving beetle
dragonfly nymph and adult	leech
newt	snail
damselfly nymph and adult	water scorpion
crayfish	duck weed
mosquito larva and pupa	cattail
water boatman	pond lily
backswimmer	algae

whole basin into the pond and then rinse it. Some creatures such as snails may be stuck to the basin and should be carefully removed and released.

Answering questions

Be prepared for lots of questions...

What is this?

Ponds are full of creatures that look so bizarre that your students are bound to ask you what they are. If you do not know what a creature is, try to focus on one of its adaptations instead of its name. You could say, "I don't know what it is, but look at those paddle-like legs that it uses for swimming." Then encourage students to think of a descriptive name for the creature based on their observation of its special features (such as "pale green pond paddler"). Use this name as other similar creatures are found.

It is not essential to identify every creature, as the purpose of the field trip is to see the diversity of life and how creatures adapt to their habitat. For students who

wish to identify the creatures they catch, it is useful to have on hand some laminated identification sheets showing common pond creatures. Alternatively, provide pocket-sized field guides such as the *Golden Guide Pond Life* by George Reid. This is an excellent resource that covers the little creatures; has pictures of larger organisms that you may see on your pond visit, such as muskrats, cattails, ducks, and herons; and discusses such concepts as food webs, characteristics of water, habitat types, and habitat succession. And do not forget another useful resource that you will have brought with you: your students. When I was in Grade 5, my teacher took our class to the local conservation area to study ponds. Because I lived right beside the area and had spent a lot of time there on my own with nets, buckets, books, and binoculars, my teacher used me as a resource. This worked out well for everyone: the teacher has a "pond biologist" on her field trip, the other students got answers to many of their questions, and I went on to a career as an interpretive naturalist! You probably have students who have visited ponds already and will love to share their knowledge.

Pre-visit Activity

Amazing adaptations: Creating a pond creature

Materials: books about pond organisms, drawing materials

Procedure:

1. Read about aquatic organisms with the class and then discuss the following:

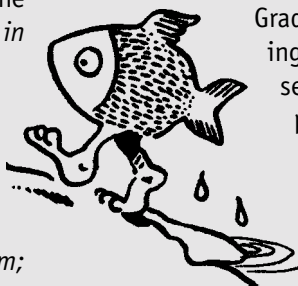
Ⓞ In what ways are aquatic and terrestrial animals the same? (*Both need oxygen; both need to move around in their environment; both need food.*)

Ⓞ How might an aquatic organism breathe? (*Go to the surface for air; swim just below the surface using a "snorkel" to breathe; use gills to breathe underwater.*)

Ⓞ How might an aquatic animal move? (*Swim using paddle-like legs and/or a long tail; crawl along the bottom; skate on the surface.*)

2. After these discussions, have students make a drawing of an imaginary pond creature. Ask them to decide what the creature eats, how it breathes, how it moves, and where in a pond it would live (surface, edge, bottom, in pond weeds). Because you are trying to make the students comfortable before their visit to a pond, let them have fun with their creations. They will usually design creatures wonderfully adapted to the pond, even though some may move with underwater rockets and eat "pond pizza."

3. Ask students to present their creature to the class. You may wish to repeat this activity after the pond visit, thereby giving students an opportunity to incorporate real adaptations that they have observed.



Post-visit activity

Making a pond field guide

Following the visit to the pond, have students create a pond field guide that can be used on future visits or by other classes. Each student could be in charge of researching and completing the entry for a particular organism.

Field guides made by students in Grades K-1 could consist simply of drawings of each pond creature they have seen. For older students, make a template page that has a box for a drawing, and several headings followed by space for information to be entered. Headings could include: Size and shape, Number of legs, Means of locomotion (float, swim, crawl), Food, Predators, Number of eggs, and Descriptive name (e.g., "pale green pond paddler"). Finding information for some of these categories will likely require library research.

If you have a digital camera, be sure to take it with you on your pond visit. Many digital cameras have a super-macro mode for photographing small things close up. Practice with this feature before you go. Back in the classroom, students can refer to these photos as they make their drawings (but do not allow the photos to replace the valuable experience of drawing a newly found creature!). Once the book is bound, take it on future pond field trips and let other classes borrow it. It could even be added to the school's library.

Does it bite?

The majority of pond creatures that will be caught are harmless to humans, but some can inflict a painful bite. As a precaution, tell your students not to touch the animals with their bare hands and to leave them alone once they are in a bucket or basin. Backswimmers, diving beetles, spiders, giant water bugs, turtles, and leeches are some of the creatures that bite. Snails, on the other hand, do not, and are great to touch and good for learning patience. Have the students put a small amount of water and a small snail in their palm, and wait. Eventually, the snail will come out of its shell and crawl across their hand. Of course, they have to be sure they have a live snail and not just a snail shell, or it could be a very long wait!

Can I keep it?

This question often comes up as soon as a frog is spotted or a turtle caught. Communicating the point that an animal should be left in its own environment can be difficult. Point out that everything that lives in the pond depends on everything else, that each is an important strand in a web of life, and that to remove a creature is not fair to it or to the other organisms in its environment.

Nature tidbits

Be prepared with some nature tidbits in case a certain creature is caught. Some examples are:

- ⊗ The eyes of a whirligig beetle are divided into two parts: the upper part sees above the water and the bottom part sees below the surface.
- ⊗ Some water spiders catch minnows for their dinner.
- ⊗ Diving beetles and backswimmers take air with them when they dive.
- ⊗ A male stickleback (a small fish) builds a nest and, after a female has laid her eggs in it, guards the eggs.
- ⊗ Caddisfly larvae build their own “shells” out of pebbles, sticks, or leaves and carry it along with them. If they are disturbed, they will hide inside their moveable home.
- ⊗ Frogs and dragonflies have a three-stage life cycle: egg → frog tadpole or dragonfly nymph → adult.



⊗ Mosquitoes have a four-stage life cycle, just as butterflies do: egg → larva → pupa → adult.

Becoming pond stewards

Remember that the focus of the trip is not only to catch and observe small aquatic animals, but also to encourage students to think about how they can help the pond. For instance, they could collect any litter that they find around the pond and

carry it back with them for recycling or disposal. They could keep a record of all the creatures they observe and publish it in a school newsletter to let others know about the diversity of life in the pond. Classes could create and present skits about pond creatures to encourage other classes to visit and learn about the pond. Older students could monitor water quality and publish their results; this might include making interpretive signs to place around the pond to inform visitors about the organisms that live there and about human activities that threaten the health of the pond environment.

If you still feel uncomfortable about taking your class to a pond by yourself, local nature centers usually offer pond-study programs. Try attending one of these with your class and pick up ideas for your own future field trip. Once you are comfortable with ponds, try other habitats such as forests, meadows, and rivers. There is no limit to what the outdoor classroom has to offer. ✽

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Resources

- Dawe, Karen, and Neil Dawe. *The Pond Book*. Somerville House Publishing, 1990.
- Hickman, Pamela. *A New Frog: My First Look at the Life Cycle of an Amphibian*. Kids Can Press, 1999.
- Reid, George. *Pond Life: A Guide to Common Plants and Animals of North American Ponds and Lakes* (Golden Nature Guide). St. Martin's Press, 2001.
- Rockwell, Anne. *Ducklings and Pollywogs*. Macmillan Publishing Company, 1994.
- Stokes, Donald. *Observing Insect Lives*. Little, Brown and Company, 1983.