

Pond Water Web – Lesson Plan

Purpose: As a result of this lesson, students will become familiar with common organisms found in a pond and discover their importance in a balanced aquatic habitat as they create food webs. Students will also investigate how an environmental change (pollution, disease, introduction of exotic species, etc.) affects a pond habitat.

Lesson Objectives

As a result of this lesson, students will be able to:

- (1) Identify common plants and animals living in an aquatic environment.
- (2) Create a food web illustrating the relationship of organisms in an aquatic habitat.
- (3) Determine the impact of environmental changes on a pond habitat.

Materials

Copies of **Life in a Pond** cards for each group
Scissors & glue
Large sheets of construction paper
Copies of student worksheets

Lesson Procedures

1. Ask students to brainstorm a list of plants and animals that can be found in a pond habitat. Student should record their responses on their worksheet. Create a class list of all the plants and animals.
2. Provide copies of the *Life in a Pond cards* for each group. Have each group cut apart the cards.
3. Discuss the different organisms found in a food web – producers, consumers, and decomposers. Have the groups separate their cards into the different categories and record the organisms on the student worksheet.
4. Create four food chains (three, four, and five links) using the cards provided. Students should write the food chains on their worksheet.
5. Challenge the students to create a food web using at least 10 of the critter cards – the three with stars must be used. They should lay the cards out on the table and determine how each one will fit into the food web. Once they have it developed, provide a large piece of construction paper and glue to create a display.
6. Allow time for the groups to compare their food webs and record their answers on the student worksheet.
7. Refer to your list of plants and animals created at the start of the lesson. Ask students to create a card for one or more of the organisms and add them to their food web. Access to printed or online resources may be needed to assist them in identifying the diets of the various animals.

Discussion Questions:

1. What would happen to the food web if a specific organism was removed due to disease or pollution?
2. What would happen to the food web if the population of one of the organisms was to double?
3. How would the introduction of an exotic (invasive) species affect the food web?

Assessment

Students can be assessed through a variety of methods throughout the project. During the introduction, evaluation of the student responses to gain insight into their knowledge of the various life forms found in an aquatic habitat. Evaluating the food webs will determine if the students were able to organize the plants and animals to create an accurate food web. Evaluating student responses during follow-up discussions will identify misconceptions. Additional activities to address misconceptions should be provided.

Extension Ideas

1. Invite an aquatic biologist to visit the class and discuss his/her work. Allow time for the students to ask any questions they may have.
2. Take a field trip to a pond or lake in your community. Take the water samples back to the classroom and use microscopes to find other organisms. If you are not able to take a field trip, ask students to bring in water samples from other ponds in the community.
3. Provide access to Internet sites or printed resources to allow students to learn more about aquatic habitats and find answers to any questions they may have. Challenge students to create a “Did you know ...?” display to share the things they learned about pond life.

Resources

Microscope Mania – This unit is available at <http://sciencespot.net/Pages/classbio.html#micro> and introduces students to microscopes and the microscopic world.

Pond Water Sites – A collection of pond water websites for students is available at the Science Spot in the *Kid Zone* area at <http://sciencespot.net/Pages/kdzbiopond.html>.

Identification Guides – There are several good identification guides available online. *Golden Guide: Pond Life* book (ISBN# 1-58238-130-5) is a good resource for students. A brief guide for determining water quality based on macroinvertebrates is available at the *Discover Carolina* website at <http://www.discovercarolina.com/html/s05nature09a02b.html>.

Life in a Pond Cards - Image Credits:

Largemouth Bass – <http://www.cannondam.com/lynnsguideservice/images/largemouthbass.jpg>

Bluegill – <http://www.wildlifedepartment.com/bluegill.htm>

Crayfish - <http://www.mackers.com/crayfish/pics.htm>

Phytoplankton/Zooplankton - http://sherpaguides.com/georgia/barrier_islands/natural_history/index.html

Mosquito larvae - http://ag.arizona.edu/pubs/insects/az1320/oc_camp_larvae_groupalt.jpg

Pond frog - <http://www.wigry.win.pl/plazy2/zabz6.jpg>

Pond snail – <http://lilyblooms.com/images/products/pondsnail.jpg>

Aquatic plants - <http://naturalaquariums.com/plantedtank/0509.html>

Salamander – http://www.netstate.com/states/symb/amphibians/images/eastern_tiger_salamander.jpg

Leeches - http://www.upfishing.com//images/leeches_idiobdella.jpg

Great Blue Heron – http://www.islandnet.com/beaconhillpark/graphics/216_heron13K400.jpg

Aquatic worm - <http://www.state.ky.us/nrepc/water/aquawo03.gif>

Bullhead Catfish - <http://www.upfishing.com/catfish.html>

Aquatic nymphs - <http://www.fishguideme.net/FlyFishing/Images/bugs.jpg>

Mallard - <http://www.nhptv.org/Natureworks/mallard.htm>

Snapping Turtle - <http://www.fcps.k12.va.us/StratfordLandingES/Ecology/Reptiles/snapping%20turtle/snapping%20turtle.jpg>

Raccoon - http://www.hsus.org/wildlife/a_closer_look_at_wildlife/raccoons.html

Pond Water Web

Name _____

1. How many plants and animals can you name that might be found in a pond habitat? Make a list in the space below.

2. Cut apart the Life in a Pond cards provided by your teacher. Organize the cards into the following categories: producers, consumers, and decomposers. List their names in the boxes below.

Producers	Consumers	Decomposers

3. Create four food chains in the space below. Remember, each food chain must start with a producer!

	→		→					
	→		→		→			
	→		→		→		→	
	→		→		→		→	

4. Use at least 10 of the cards to create a food web to show the relationship between the organisms in a pond habitat. You must use the three cards with stars! After you have created the food web, glue it onto a large piece of construction paper and add arrows to show the feeding relationships.

5. Compare your food web with another group.

How many cards did you use in your food web? _____

How many cards did they use in their food web? _____

What is the longest “food chain” in your food web? _____

What is the longest “food chain” in their food web? _____

Discussion Questions

1. What would happen to your food web if the aquatic plants died out because of pollution?

2. What would happen to your food web if the population of great blue heron was to double?

3. Asian carp consume zooplankton, which many fishes typically feed on in their juvenile stages, and have no known predators. How would the introduction of an Asian carp affect your food web?

Life in a Pond -Page 1



Largemouth Bass

Young - Zooplankton & insects
Adult - Fish, crayfish, & frogs



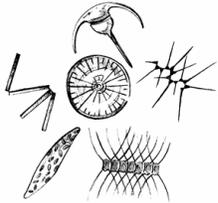
Bluegill

Young - Zooplankton
Adult - Insect larvae, crayfish,
leeches, snails, small fish



Crayfish

Young - Zooplankton
Adult - Fish, plants, worms,
insects, snails, & plankton



Phytoplankton

(Includes algae, diatoms, &
other microscopic plant life)

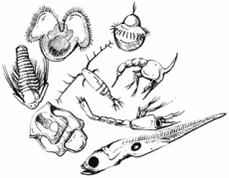


Aquatic Plants



Mosquito Larvae

Algae, plankton, & bacteria



Zooplankton

(Microscopic animals)
Detritus & phytoplankton



Raccoon

Plants, earthworms, fish,
amphibians, & crayfish



Eastern Tiger Salamander

Worms, insects, & other
salamanders



Pond Frog

Young - Algae & detritus
Adult - Insects, spiders, small
fish, & worms



Leeches

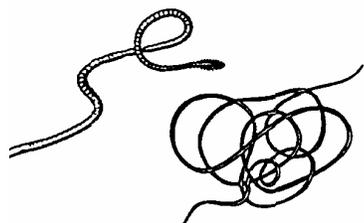
Detritus, insect larvae,
snails & worms



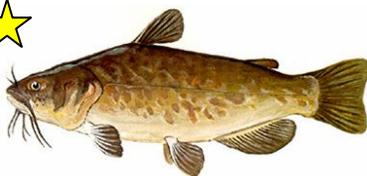
Snail

Phytoplankton, detritus,
& aquatic plants

Life in a Pond –Page 2



Aquatic Worms
Detritus & bacteria



Bullheads (Catfish)
Aquatic plants, algae, insects,
worms, fish eggs, & small fish



Great Blue Heron
Small fish, reptiles, & insects



Snapping Turtle
Invertebrates, fish, reptiles,
birds, mammals, & plants



Aquatic Nymphs (Insects)
Other aquatic insects, small
crustaceans, & worms



Mallard
Seeds & plants; may also eat
insects, mollusks, crustaceans

**Make your own cards by adding a picture of the organism,
its name, and its diet (if it is a consumer.)**

Name _____
Diet:

Name _____
Diet:

Name _____
Diet: