**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](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](http://sciencespot.net/Pages/kdzbiopond.html).


**Life in a Pond Cards - Image Credits:**
- Crayfish - [http://www.mackers.com/crayfish/pics.htm](http://www.mackers.com/crayfish/pics.htm)
- Aquatic plants - [http://naturalaquariums.com/plantedtank/0509.html](http://naturalaquariums.com/plantedtank/0509.html)
- Aquatic worm - [http://www.state.ky.us/nrepc/water/aquawo03.gif](http://www.state.ky.us/nrepc/water/aquawo03.gif)
- Aquatic nymphs - [http://www.fishguideme.net/FlyFishing/Images/bugs.jpg](http://www.fishguideme.net/FlyFishing/Images/bugs.jpg)
- Mallard - [http://www.nhptv.org/Natureworks/mallard.htm](http://www.nhptv.org/Natureworks/mallard.htm)

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Pond Water Web

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.

T. Trimpe 2006  http://sciencespot.net/
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?
**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

<table>
<thead>
<tr>
<th><strong>Aquatic Worms</strong></th>
<th><strong>Bullheads (Catfish)</strong></th>
<th><strong>Great Blue Heron</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Detritus &amp; bacteria</td>
<td>Aquatic plants, algae, insects, worms, fish eggs, &amp; small fish</td>
<td>Small fish, reptiles, &amp; insects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Snapping Turtle</strong></th>
<th><strong>Aquatic Nymphs (Insects)</strong></th>
<th><strong>Mallard</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Invertebrates, fish, reptiles, birds, mammals, &amp; plants</td>
<td>Other aquatic insects, small crustaceans, &amp; worms</td>
<td>Seeds &amp; plants; may also eat insects, mollusks, crustaceans</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Diet</th>
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<tbody>
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