

Grade 4

Title: Wetland Food Webs

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Student Learning Objective(s):

- The students will research and learn about plants and animals that live in the wetlands.
- The students will appreciate the interdependence of the organisms, including humans, involved in a food web.
- The students will make the connection between the importance of natural resources and the ways we impact them.

LA GLE's

- Grade: 4 # 1: Ask questions about objects and events in the environment (e.g., plants, rocks, storms) (SI-E-A1)
- Grade: 4 # 71: Describe and explain food chains/webs and the directional flow of energy in various ecosystems (e.g., construct a model, drawing, diagram, graphic organizer) (SE-E-A2)
- Grade: 4 # 72: Predict and describe consequences of the removal of one component in a balanced ecosystem (e.g., consumer, herbivores, nonliving component) (SE-E-A2)

Materials needed:

- Books about Louisiana's Wetlands:

Hickman, Pamela. (1993). *Wetlands*. Toronto: Kids Can Press Ltd.

Johansson, Philip. (2008). *Marshes and Swamps: A Wetland Web of Life*. Berkeley Heights, NJ: Enslow Publishers, Inc.

Laycock, George. (1978). *Exploring the Great Swamp*. New York: David McKay Company, Inc.

Lockwood, C.C. (1995). *C.C. Lockwood's Louisiana Nature Guide*. Baton Rouge, LA: Louisiana State University Press.

National Wildlife Federation. (1997). *Wading Into Wetlands*. New York: Learning Triangle Press.

Stone, Lynn. (1983). *A New True Book: Marshes and Swamps*. Chicago, IL: Childrens Press.

Tveten, John. (1979). *Exploring the Bayous*. New York: David McKay Company, Inc.

- Sticky labels
- String/ yarn

Detailed Procedure. Describe what the students will do in each stage. Include guiding questions you might ask to help students.

1. Engage:

Science Process Skills Indicate which science process skills students will develop in this part of the lesson.

- Observation Classification Communication Measurement Estimation Prediction Inference
 Identifying Variables Controlling Variables Defining Operationally Forming Hypotheses
 Experimenting Graphing Modeling

1. Begin by asking students to silently think about all of the "parts" that make up a "typical" cheese burger.
2. As a class, generate a list on the front board of cheese burger "parts".
 - Cheeseburger Ingredients: meat patty, bun, lettuce, cheese, tomato, mustard, ketchup
3. Ask students:
 - Where did the meat patty come from (a cow)?
 - What did the cow need to grow (food and water)?
 - What kind of food did the cow eat (grass)?
 - What did the grass need to grow? (water and sunlight).
4. Illustrate this general flow on the front board.
 - meat patty
 - cow
 - grass
 - sunlight & water
5. Explain that the students have constructed a food chain for each cheeseburger ingredient. A food chain shows the transfer of energy from the sun to plants to animals.
6. Explain that food chains are found throughout nature. They help us to better understand what living things need to survive and grow.

2. Explore:

Science Process Skills Indicate which science process skills students will develop in this part of the lesson.

- Observation Classification Communication Measurement Estimation Prediction Inference
 Identifying Variables Controlling Variables Defining Operationally Forming Hypotheses
 Experimenting Graphing Modeling

1. The teacher will place students in groups of three or four. She will give each group 1 or 2 books about Louisiana Wetlands. The books will contain information about animals and plants that live there and information about what they eat. Books:

Hickman, Pamela. (1993). *Wetlands*. Toronto: Kids Can Press Ltd.

Johansson, Philip. (2008). *Marshes and Swamps: A Wetland Web of Life*. Berkeley Heights, NJ: Enslow Publishers, Inc.

Laycock, George. (1978). *Exploring the Great Swamp*. New York: David McKay Company, Inc.

Lockwood, C.C. (1995). *C.C. Lockwood's Louisiana Nature Guide*. Baton Rouge, LA: Louisiana State University Press.

National Wildlife Federation. (1997). *Wading Into Wetlands*. New York: Learning Triangle Press.

Stone, Lynn. (1983). *A New True Book: Marshes and Swamps*. Chicago, IL: Childrens Press.

Tveten, John. (1979). *Exploring the Bayous*. New York: David McKay Company, Inc.

2. The students will work together to create their own wetland food chain. In order to do this, students must research the plants and animals in the books and gain information about what that plant or animal eats, and what plant or animal might eat them. The students will be required to use at least four different organisms in their food chain.
3. After all groups have finished creating their food chains, the groups will have a spokesperson come and share the information with the class. They must explain what their organisms are, what they eat, and who eats them. The teacher will record all of the food chains on the board.

3. Explain:

Outline the line of questioning you will use to assist students in understanding the concept. List at least 5 good questions and identify the question category (Gallagher & Aschner) in which your question falls (see text, Figure 7.6).

The teacher will ask the students:

1. What did we observe about the food chains? (There are many different types of food chains, organisms are eaten by several different animals, the sun is the primary food source, animals in one area depend on each other for survival.)
2. How can humans be part of the food chain? (Humans eat animals in the food chain, they can also be eaten by larger animals, like alligators.)
3. What is the difference between producer and a consumer? Which organisms in our food chain would be producers? Consumers? Are they at the beginning of the food chain or the end? (Producers are living things which take the non living matter from the environment, such as minerals and gases and uses them to support life. Green plants are considered producers and they are at the beginning of the food chain. Next are the consumers. These living things need the producers to be their food.)
4. What is meant by herbivores, carnivores, and omnivores? Which organisms in our food chain represent herbivores? Carnivores? Omnivores? (Animals who eat plants are called **herbivores**. They are considered consumers and are next in the food chain. Animals who eat other animals are called **carnivores**. They are also considered consumers and are a link farther along on the food chain, since they need the herbivores for their food. Animals and people who eat both animals and plants are called **omnivores**, and they are also part of the consumer piece of the ecosystem.)
5. What would happen if we combined all of these food chains? (We would create a complex food web.)

4. Expand:

Science Process Skills Indicate which science process skills students will develop in this part of the lesson.

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|--|--|---|---|-------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> Observation | <input type="checkbox"/> Classification | <input checked="" type="checkbox"/> Communication | <input type="checkbox"/> Measurement | <input type="checkbox"/> Estimation | <input type="checkbox"/> Prediction | <input type="checkbox"/> Inference |
| <input type="checkbox"/> Identifying Variables | <input type="checkbox"/> Controlling Variables | <input type="checkbox"/> Defining Operationally | <input type="checkbox"/> Forming Hypotheses | | | |
| <input type="checkbox"/> Experimenting | <input type="checkbox"/> Graphing | <input type="checkbox"/> Modeling | | | | |

1. The teacher will write the names of the organisms listed on the board on sticky labels. She will assign each child to an organism. The students will get in a circle in the room and will pretend that they are their assigned organism. The teacher will wear a nametag that says, "Sun". She will also make sure that someone else represents the "Human" if it was not mentioned previously on the board.
2. The students will work together to create a "living wetland food web." The teacher will hold a ball of yarn and will say, "Who needs the sun in order to live?" She will hold on to one end of the yarn and will throw it to a student who represents a plant. The "plant" will then throw it to someone who represents an animal that would eat that plant. Next, that animal will throw the yarn either to something it would eat, or something that would eat it. This game continues until the class has created a complex food web. If a student receives the ball of string a second time, he should pass it to a student he hasn't already passed to. As the activity progresses, those who researched the listed organisms can help decide where to pass the string.
3. Once the web has been completed, have the students shift around until the web is pulled tight. Have the students discuss the fact that sometimes a plant or animal's role in the web will change, or disappear entirely. What effect will it have on the web?
4. If time permits, the teacher will read scenarios to describe what can happen to parts of the web when the wetland habitat is disturbed. Whichever organisms are affected will tug on the yarn. Students who feel the tug will raise their hands to show how many organisms can be affected by the change. Scenarios:
 - It is raining. A lawn care company's truck skids and crashes near the wetland, spilling hundreds of gallons of weed killer. The rain washes the chemicals into the wetland. What is affected? (Plants)
 - A stream is blocked by a huge pile of dumped garbage. The part of the stream that usually flows through the wetland dries up (Fish)
 - The wetland is destroyed when someone buys the land and builds a shopping mall there. (Everything)

5. Evaluate:

What exactly will you do, or what evidence/data will you collect, to ascertain whether the students can achieve the objectives you listed at the top of this lesson?

1. The teacher will check to determine if the food chain shows a correct linear relationship (i.e., producer, primary consumers and secondary consumers).
2. The teacher will check to see that arrows are pointing from organisms being eaten to organisms eating it.
3. The teacher will have students share their food chains with the class. This will provide an opportunity to check students' understanding about food chains.
4. The teacher will observe the students as they make a living food web, to make sure the students understand how a food web works.

Brain Compatible Learning Strategies Used in This Lesson:

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|---|---|--|--|--|
| <input checked="" type="checkbox"/> Brainstorming/Discussion | <input type="checkbox"/> Drawing and Artwork | <input type="checkbox"/> Field Trips | <input type="checkbox"/> Games | <input checked="" type="checkbox"/> Graphic Organizers |
| <input type="checkbox"/> Humor | <input type="checkbox"/> Manipulatives, Experiments, Labs, Models | <input type="checkbox"/> Metaphors, Analogies, and Similes | | |
| <input type="checkbox"/> Mnemonic Devices | <input checked="" type="checkbox"/> Movement | <input type="checkbox"/> Music, Rhythm, Rhyme, and Rap | <input type="checkbox"/> Project/Problem-Based Instruction | |
| <input checked="" type="checkbox"/> Reciprocal Teaching, Cooperative Learning | <input type="checkbox"/> Role Plays, Drama, Pantomimes | <input type="checkbox"/> Storytelling | | |
| <input type="checkbox"/> Technology (student use) | <input type="checkbox"/> Visualization/Guided Imagery | <input type="checkbox"/> Visuals | <input checked="" type="checkbox"/> Writing/Journals | |

Lesson Source:

Gorgone, Judith. (1991). The Food Chain. Retrieved March 30, 2009, from <http://www.planetpals.com/foodchain.html>.

Marsh Market. Retrieved March 30, 2009, from http://www.seaworld.org/swc/wetlands/activity-marsh_market.pdf.

Ohio Department of Education. Food Chains and Food Webs. Retrieved March 30, 2009, from http://ims.ode.state.oh.us/ODE/IMS/Lessons/Content/CSC_LP_S02_BB_L05_I03_01.pdf.