Activity: Linking the Chain

Summary: Students work with paper cutouts to learn about the parts of a food chain — specifically herbivores, carnivores and producers.

You Need:

- 30-60 minutes
    - Pencils
    - Straightedges or rulers
    - Drawing paper
    - Scissors
    - Glue

Procedure

Part 1

Have each student draw a large triangle, a rectangle, a circle and a square on a sheet of drawing paper. All four shapes should fit on one sheet.

- Cut out each shape.
- Write the word “carnivore” on the square.
- Write the word “herbivore” on the triangle.
- Write the word “producer” on the circle.
- Write the words “large carnivore” on the rectangle.
- Have each student place the four paper shapes on a sheet of drawing paper in an order that forms a food chain.
- Draw arrows to show what each of the members eats.
- Explain what a food chain might look like in a nearby river or lake.
- On a chalkboard, generate lists of local animals and plants under the producer, herbivore, carnivore and large carnivore heading.
- Let the students label their shapes again with the name of an animal or plant of their choice.

Some of their answers may include:

- **Producers:** Phytoplankton, algae, aquatic plants, cattails, duckweed, trees.
- **Herbivores:** Ducks, geese, small fish, zooplankton, tadpoles, mayfly nymphs, small crustaceans.
- **Carnivores:** Sculpin, alewife, small fish, turtles, frogs, toads, dragonfly nymphs.
- **Large carnivores:** Lake trout, walleye, bass, herons, gulls, red tailed hawks, humans.

Part 2

Scenario: A disease has greatly reduced the carnivores in your chain. Have the students remove the square from their chain. Ask questions about interrelatedness to guide discussion and exploration.

- If carnivores, such as walleye (large carnivore) are reduced by disease what happens to small fish, plankton populations?
    - The food chain will be disrupted. Populations of small fish may increase because the walleye are not consuming them. Second, the zooplankton population may be reduced because more small fish will consume them. Third, the phytoplankton population may increase because fewer zooplankton will consume them.

Optional for 7-8th grades:

Scenario: Runoff containing contaminants (chemicals) and raw sewage from older storm water and sewage systems has greatly reduced the number of producers in your chain. Remove the circle. Ask questions about interrelatedness to guide discussion and exploration. For example:

- If pollutants reduced the growth and production of phytoplankton, what happens to the chain? Result: This food chain will be unable to support large numbers of animals.
- If raw sewage enters your river or lake and provides too many nutrients for aquatic plants, what happens to the food chain? Result: An over production of phytoplankton, aquatic plants.

Notes: It is also possible that toxic algae (e.g., Microcystis) or invasive plants (e.g., Eurasian Water Milfoil) may enter the food chain, as a result of poor water quality. Some plants and animals may survive in these conditions, although some will not survive, changing the food chain. Researchers are studying the impact of invasive species, excess phosphorus (nutrient), as well as climate extremes on the Great Lakes.

Source

Adapted for the Great Lakes Education Program with permission from "Marsh Munchers," Project WILD Aquatic. Modified by Brandon Schroeder, Michigan Sea Grant.

For more lessons:

Food Webs

- Food Chains and Webs
  - Activity: Linking the Chain
- Food Web II
  - Activity: Who's Hungry?

- Fish Life Cycle
  - Activity: Drawing the Fish Life Cycle

- Survival Game
  - Activity: Ruffe Musical Chairs

- Environmental Decision Making
  - Activity: Hydropoly – A Decision-Making Game
- Fish Habitat and Humans
  - Activity: Habitat Field Work

Data Sets

- Lake Michigan Fish Community
- Types of Plankton in the Great Lakes
- Where in Lake Michigan Does Plankton Live?
- Scuds and Mussels