

Great Lakes Food Web

Grade Level: 5-8

Subject Area: Life Science

Duration: 50 minutes or less

Setting: classroom/lab

Skills: organizing and analyzing information, interpreting information, and applying learned information.

Related State Content Benchmark Objectives

- **Identify familiar organisms as part of a food chain or food web and describe their feeding relationships within the web.**
- **Explain common patterns of interdependence and interrelationships of living things.**
- **Predict the effects of changes in one population in a food web on other populations.**
- **Describe how all organisms in an ecosystem acquire energy directly or indirectly from sunlight.**
- **Describe common ecological relationships among species.**
- **Explain how energy flows through familiar ecosystems.**

This activity is modified from “What is a food web?” included in the *Earth Systems-Education Activities for Great Lakes Schools* published by Ohio Sea Grant and copyrighted by The Ohio State University. Used with permission. See Additional Resources for ordering information.

Objectives

Students will be able to:

- describe how organisms are related to each other in a food web; and,
- predict what might happen if an exotic species was placed in the food web.

Materials

- “Organisms in a Great Lakes Food Web” (modified from *Earth Systems – Education Activities for Great Lakes Schools*, ES-EAGLS)

Background

The concept, *food web*, is at the heart of the Schoolship biological stations: benthos, fish, and plankton. Within those three learning stations, students will see plankton (both phytoplankton and zooplankton that eat phytoplankton); benthos or bottom-dwelling organisms that often eat dead plant and animal material (detritus) that has settled to the bottom; and small forage fish that consume zooplankton and benthic organisms.

The food web is important to understand in attempting to explain the impact of exotic species like the zebra mussel. Another concept that is covered in the Schoolship program, particularly at the plankton station, is *biomagnification*. As one moves up the food chain, toxics stored in phytoplankton and zooplankton are carried up the food chain or throughout the food web and magnified.

The Activity

The “Organisms in a Great Lakes Food Web” page should be copied and distributed to students.

1. Students should draw arrows from the organisms that are being eaten to the ones that are eating them.

In general, organisms on higher levels eat those on lower levels. For example, lake trout are eaten by people, but lake trout also eat sculpin and alewife. Size of the organisms and their position in the food web should provide clues to the relationship.

2. Remind students that organisms that live in the bottom sediment may feed upon once-living plant and animal material (detritus). Green plants get their energy from the sun and convert this energy to food.
3. After they have completed their food web diagram, tell them about the zebra mussel (see activity: *What*

do scientists know about invader species of the Great Lakes?, **see page 58**). Have students make some predictions (changes) to their food web based upon their knowledge of what zebra mussels eat.

4. Students should identify the two exotic species already included in the food web diagram.

Additional Resources

To order *Earth Systems – Education Activities for Great Lakes Schools* (ES-EAGLS) contact Ohio Sea Grant Publications, The Ohio State University, 1314 Kinnear Rd., Columbus, OH 43212-1194. For questions about ordering this material, phone: 614-292-8949. The ES-EAGLS is a set of booklets: *Land & Water Interactions in the Great Lakes*; *Great Lakes Climate & Water Movement*; *Great Lakes Shipping*; *Life in the Great Lakes*; and *Great Lakes Environmental Issues*. They are listed at \$8.00/booklet.

The “Great Lakes Food Web” activity is modified from the *Life in the Great Lakes* booklet.

Organisms in a Great Lakes Food Web

