

## **Webology**

*Welcome to the natural world of Fontenelle Forest and Neale Woods Nature Centers! Below is a guide to pre and post field trip activities that you can do with your students either indoors or on your school grounds. These activities will greatly enhance your students' field trip experience and are also a lot of fun!*

*We look forward to your students' arrival and are excited to provide them with a fun and educational experience. If you have any questions, please call us at 731-3140.*

**Suggested Grade Level(s):** 2<sup>nd</sup> and 3<sup>rd</sup>

**Program Objectives:**

- Participants will be introduced to the concept of energy and energy flow throughout the ecosystem.
- Students will learn that the sun is responsible for producing all energy in the environment.
- Students will begin to understand the roles and definitions of producers, consumers, and decomposers.
- Students will understand the concept of a food chain and begin to understand the more complex concept of the food web.

### **Pre- and Post-Trip Activity Suggestions**

#### **The Web of Life**

Adapted from *Connections to our Earth: Exploring Maine's Natural Resources*

**Suggested Timing:** Pre-Trip

**Time:** 30 minutes

**Location:** Indoors

**Materials:** ball of yarn or string

**Procedure:** Have the children stand in a large circle. Explain that the game they are going to play represents how animals and plants depend on each other.

Ask: "What's the source of almost all of the energy on earth?" (The Sun.) Have the child who answers correctly first be the sun and hand him or her the ball of yarn. Then ask: "What depends on the sun to make food?" (Plants.) "Can anyone name a plant?" Have the sun toss the ball of yarn to the plant-child, while holding onto one end. Then ask who is dependent on the plant (for food, shelter, warmth, building material, protection, etc.) When a child answers, toss him or her the yarn and have the child explain the connection. Continue connecting the children with the yarn. At the end, make sure each student is linked to the web.

As you connect the web, keep the yarn on top of the web so that it is easier to untangle after you have completed the activity. Have the children pull up the slack and raise the web above their heads and look through it. Bring the web back down, warning them to hold on tightly to their yarn. Pluck the yarn and note how strongly connected everyone is.

Next, introduce a threat to the web (i.e. extinction of one of the animals or plants due to loss of habitat). Have the affected individuals drop their yarn. Has anyone else's yarn become loose? If so, have them let go also. Continue the process until everyone is unconnected. Explain that this activity is a reflection of what is happening in the real food web.

### Circles of Life

**Concept:** All organisms fall into one of three categories: producer, consumer or decomposer.

**Suggested Timing:** Pre-Trip

**Time:** 15 minutes

**Location:** Indoors or Outdoors

**Materials:** none

**Procedure:** Discuss the definitions of producers, consumers, and decomposers with your class. (Producer: Green plants that convert light or chemical energy into organismal tissue, for example a sunflower; Consumer: Any organism that lives on other organisms dead or alive, for example a deer or fox; Decomposer: An organism that obtains energy from the breakdown of dead organic matter to more simple substances, for example mushrooms)

Divide the students into three groups. The first group will be the producers. They will stand in a circle and raise their arms toward the sun chanting: "Produce, produce, produce..." The second group will represent the consumers. They will surround the producers, forming a circle around them. They will move their arms in and out making grabbing and chewing motions and chanting "Consume! Consume! Consume!..." The third group will be the decomposers. They will surround the consumers in a circle and make tickling motions with their fingers while chanting in a high voice "Decompose, decompose, decompose...." When you have completed this food chain chant, review the definitions with your students.

### A Photographic Food Chain

**Concept:** Many different food chains exist.

**Suggested Timing:** Post-Trip

**Time:** 1 hour

**Location:** Indoors

**Materials:** wildlife and nature magazines, large sheets of paper, glue, scissors

**Procedure:** Discuss the definition of a food chain. (Food Chain: Movement of energy and nutrients from one feeding group of organisms to another. Energy and nutrients move from producer to consumer to decomposer. Look for definitions of these terms in the "Circles of Life" activity.)

Give one piece of paper to each student. Have students cut pictures of plants and animals from wildlife and nature magazines. Explain that they will need to cut out lots of plants and insects so that their food chains can support the larger animals higher up in the food chain. The children should be divided into groups and the pictures sorted. Students should arrange the pictures carefully and then glue them to the sheet. Plants (producers) should be glued near the bottom with herbivores next, then carnivores, and finally decomposers. (Herbivores: A type of consumer that only eats plant matter. Carnivore: A type of consumer that only eats meat.) Students should draw arrows that link plants with the animals that are eating them. Make sure the students have an understanding of the foods that different types of animals eat.

## **A Schoolyard Food Web**

**Concept:** A food web can be constructed from any ecosystem, even your schoolyard. Students will investigate the variety of plants and animals in an area of the schoolyard and attempt to build a food web

**Suggested Timing:** Post-Trip

**Time:** 2 hours

**Location:** Outdoors and Indoors

**Materials:** clear plastic cups, spoons, clipboard and writing utensils, large sheets of butcher paper, markers

**Procedure:** Explain to the students that they will be taking a schoolyard tour. They will be making a list of all life forms found in the schoolyard and then will build a food web from the animals found. It is very important that as scientists, they try and list everything they find. It is also important that they determine what it is that each animal is eating.

Take the students outside for about 45 minutes to explore the schoolyard for life forms. At first look for signs of larger animals and plants (e.g. large trees, bushes, signs of larger animals, dogs, cats, squirrels, opossums, song birds, etc.) Next, take a closer look. Have your students sit down on the ground in several places and count the number of different kinds of plants they see. Dig in the ground with plastic spoons for worms and spiders. Place the animals in clear plastic cups for a good view. Remind the students that these are wild animals and that they must take care not to injure them. Explain that this is their home and that they must be put back when the students are done observing them. Make sure to list all life forms.

Return inside and post the list(s) of all animals found on the board. Students should work in groups to draw pictures on the butcher-block paper. These images will represent the animals and plants that were found. Make sure students include plants in their picture.

After they have drawn pictures of most of the life forms found, it is now time to connect these pictures to form a food web. Students will draw arrows from life forms that are eaten to those that eat them. Challenge your students to think about what different types of animals eat. Many animals may eat many different types of food. Worms may eat decaying leaves from all types of plants. Many birds eat insects, berries, or nuts from plants. Squirrels eat primarily nuts, but they also munch on berries, tree bark and insects. Some insects eat dead or living plant material while others prey on fellow insects.

Once students have built the food webs, you can use them to evaluate their understanding of how food webs work. Make sure everything in the web is connected with at least one arrow. Display the webs around the classroom. Then, challenge your students to make connections between the different food webs.

## **Resources**

Hogan, Kathleen. *Eco Inquiry: A Guide to Ecological Learning Experiences*. Millbrook, NY: Kendall/Hunt Publishing Company, 1994.

*This book has a 150-page unit on understanding food webs. It is designed for students in grades fourth through sixth but has many ideas about the food web that are applicable for younger grade levels.*

*Into the Forest: Nature's Food Chain Game*. Port Townsend, WA: Ampersand Press, 1998.

*This card game has colorful cards that represent forest animals and what they eat. This game will teach your students that animals eat a wider variety of foods than they imagined.*

Revised 01/22/04