

Ecology Escapade: Pre-/Post-Visit Activities



TEACHER GUIDE

Thank you for registering for the *Ecology Escapade* Workshop at the Everett Children's Adventure Garden. During this workshop, your students will learn how living things are connected as they investigate the different links and relationships in the food webs of the Adventure Garden habitats. The following selection of pre- and post-visit activity ideas and recommended resources is designed to support 4th-5th grade classroom integration of the concepts addressed in *Ecology Escapade*.

The activities address New York State Science Standard 1 and New York City Science Performance Standards S2a, S2b, S2c, S2d, S5b, S5f, S7a, and S7b. Please see the downloadable supplementary vocabulary sheets.

PRE-VISIT ACTIVITY IDEAS

Relationship Hunt

Students gain an understanding of parasitic relationships and mutualistic relationships via an indoor/outdoor relationship hunt.

Materials:

- "Relationship Hunt" printouts (one per child)
- pencils

Have a discussion with your students about the different ways that creatures interact with each other in ecosystems.

- *What is an ecosystem?*
- *How do the organisms in an ecosystem help each other? Give some examples.*
- *How do the organisms in an ecosystem hurt each other? Give some examples.*

Explain that on their trip to The New York Botanical Garden they will explore different plant-animal relationships. Two examples

of relationships that exist are parasitic relationships and mutualistic relationships.

In mutualistic relationships, both partners benefit – for example, with a bumble bee and a flower, the bumblebee gets nectar while the flower gets pollinated.

In parasitic relationships, one partner depends too heavily on its host and hurts the host – for example, with mistletoe and oak trees, the mistletoe digs its haustoria (similar to roots) into the tree to absorb nutrients that the tree needs to stay healthy and strong. Also, because the mistletoe can be heavy, it makes the branches of the tree more likely to break in bad weather.

Take students outdoors and encourage them to look for plant-animal relationships. Give students approximately 15-20 minutes to complete their printouts. You may want to allow them to further their search on the Internet.

Make a Classification Chart

Students classify plants and animals by their roles in a food web.

Materials:

- large paper pad
- marker

Have a discussion with your students about classification and the different players in a food web.

- *What is classification? Give some examples of things we classify in our daily lives.*
- *Has anyone ever heard of a producer?*

Continue this question and answer discussion with children to cover herbivores, omnivores, carnivores, and decomposers.

Producers (plants) make their own food through photosynthesis. Herbivores are plant-eating animals. Omnivores are animals that eat plants and animals. Carnivores are animals that only eat other animals. Decomposers are small animals,

bacteria, and fungi that help break down dead plant and animal matter.

Create a chart on the board with the main heading, “Food Web Classification Chart.” Underneath create five columns with the headings: Producers; Herbivores; Omnivores; Carnivores; Decomposers.

Fill in each column as the students respond to the discussion questions.

POST-VISIT ACTIVITY IDEAS

Make a Food Web

Students use their knowledge of producers, herbivores, omnivores, carnivores, and decomposers to complete a food web.

Materials:

- magazines
- scissors
- glue
- “Food Web” printouts (one per child)

Ask students to share their knowledge of how producers, herbivores, omnivores, carnivores, and decomposers interact with each other in a food web.

Distribute the “Food Web” printouts, magazines, scissors and glue to your students. Explain that they are to find and cut out pictures to match to each of the indicated areas on the worksheet. Once they have their cut-outs, direct your students to glue them to the appropriate areas on the sheet.

When everyone has completed this task, have them work in groups to discuss and write out the definitions for each of the food web roles on the worksheet.

Classroom Food Web Challenge

Students work in teams to take on the roles of various organisms and create life-size food webs. This activity should be broken up over a couple of days.

Materials:

- paper plates (one per child)
- hole punchers
- yarn or elastic string
- scissors
- glue
- markers
- various craft materials (i.e., feathers, sequins, felt, etc.)

Have a discussion with your students about food webs and how they play a role in ecosystems.

- *Describe a food web.*
- *Who eats what in a food web?*
- *How do food webs help keep ecosystems healthy and in balance?*
- *What would happen to the food web if one of its components went extinct?*

Break your students up into small teams and tell them that each team is going to act as an ecosystem (i.e., wetland and forest). Assign each child a role for their team ecosystem and direct them to use the paper plates and craft materials to make a mask that represents their organism. Direct them to use the hole puncher and yarn to create the ties for the masks.

On the day of the challenge, have each of the students wear their masks and stand with their team ecosystem. Explain that the teams are going to compete in a friendly challenge to see who can complete their ecosystem’s food web first (by holding hands). When a team feels confident that they have completed their food web, have the members of the team explain the rationale for

each organism’s position. The first team to correctly complete their food web wins.

Take a photograph of each team in their completed food web and display and label the roles of each organism accordingly.

RECOMMENDED TEACHER RESOURCES

Needham, Bobbe. Ecology Crafts for Kids: 50 Great Ways to Make Friends with Planet Earth. New York: Sterling Publishing Co., Inc., 1998.

Winnett, David A. et al. Animals and Their Homes. USA: Dale Seymour Publications, 2000.

RECOMMENDED BOOKS FOR CHILDREN

Pollock, Steven. Eyewitness Ecology. New York: Dorling Kindersley Limited, 2005.

For more information, call the Coordinator of Family and School Programs in the Everett Children’s Adventure Garden at 718.817.8901.

Relationship Hunt

Name _____

Plants and animals have different types of relationships with each other. Fill in the blanks as you go on a relationship hunt.

Describe a *parasitic relationship*?

Describe a *mutualistic relationship*?

I found a/an _____ and a/an _____ that have a *parasitic relationship* with each other.

The _____ was hurting the _____ by

I found a/an _____ and a/an _____ that have a *mutualistic relationship* with each other.

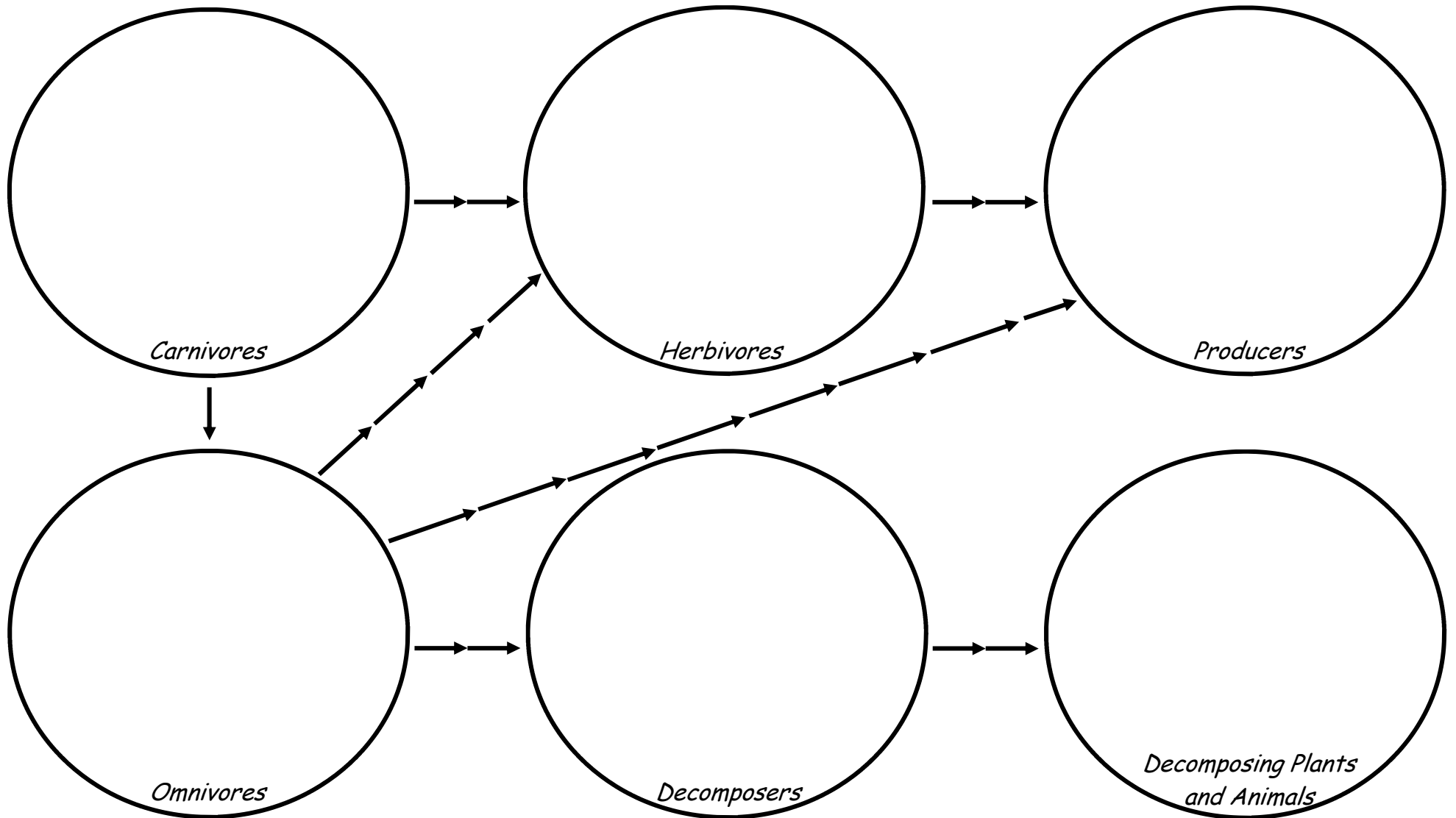
They were helping each other by _____

Can you think of any other types of relationships? Describe below.

Make a Food Web

Name _____

Place pictures of the different members of the food web in the correct circle.



THE NEW YORK BOTANICAL GARDEN

Ecology Escapade

VOCABULARY

Carnivores

Animals that feed on other animals.

Decomposers

Small animals such as worms, centipedes, pill bugs, and insects, as well as bacteria and fungi that help break down dead plant and animal matter, returning nutrients to the soil or water.

Decomposition

The process that breaks materials down into their basic elements. Rotting plants are examples of decomposition.

Ecosystem

A community of plants and animals which depend on each other and the natural environment. —including rocks, land, water, and weather – to survive.

Exoskeleton

A hard, protective covering on the outside of the body. Exoskeletons cover arthropods such as insects, spiders, and crustaceans.

Extinction

When all members of a certain species of plant or animal no longer exists.

Food chain

A community of organisms in which each member is eaten in turn by another member.
For example: Seeds are eaten by mice that, in turn, are eaten by hawks.

Food web

A model that shows all the possible feeding relationships in a community.

Fungus (Fungi)

This group includes molds, mildews, yeasts, and mushrooms that obtain their nutrients from decaying organic matter. Fungi do not make their own food, like plants do.

Habitat

A place where a plant or animal naturally lives or grows.

Herbivore

An animal that eats plants

Micro-habitat

A small, specialized habitat, such as a clump of grass, the space between rocks, or a fallen, rotting log. The conditions of a micro-habitat are often different from the main habitat.

Mutualistic relationship

A relationship in which both partners benefit.
For example: a bumble bee and a flower.

Parasitic relationship

A relationship in which one partner (the parasite) benefits and the other (the host) is harmed.
For example: mistletoe and oak trees.

Photosynthesis

The process by which plants create their own food—a form of sugar—by combining sunlight, carbon dioxide, and water. During photosynthesis, plants give off oxygen as a waste product, adding to the air we breathe. The leaf is the primary site of photosynthesis in plants.

Primary consumer

Animals that eat producers (plants).

Producers

Organisms that make their own food (by performing photosynthesis). Producers provide food for other living things.

Recycling in nature

The process that occurs when leaves and other organic matter, such as fallen trees, break down and decay into nutrient-rich soil that allows new plants to grow.

Secondary consumer

Animals that obtain their food by preying on other (usually smaller) animals.

Succession

The gradual process of change in an ecosystem, where one community replaces another. For example, a marshy area filled with wetland plants and animals may gradually fill in and become a forest inhabited by the plants (trees) and animals found in a forest community.

Symbiotic relationship

A close relationship between two or more species. Mutualistic and parasitic relationships are both types of symbiotic relationships.

Wetland

An area with significant soil moisture. A wetland is neither land nor water, but a world in between. Bogs, marshes, ponds, swamps, rivers, and streams are different kinds of wetlands. In addition to supporting diverse wildlife and plants, wetlands can break down and remove pesticides from water.