







# The Garden: An Ecosystem Where Organisms are Interdependent

## Overview:




Students will explore the garden ecosystem (interaction of plants, animals, microorganisms [FBI: fungi, bacteria, invertebrates]) and the connection between living and non-living components. They will learn that even in a small area there can be a wide biodiversity in plants, animals, and microorganisms that are dependent on each other.

## Objectives:




At the end of the lesson students will be able to:

-  **List** the three main components of a garden ecosystem (plants, animals, and microorganisms [fungi/bacteria/invertebrates]).
-  **Explain** the interrelationships among plants and animals in different environments (producers: plants [make their own food using energy from the sun]; (consumers: animals [not able to make their own food; herbivores eat only plants, carnivores eat only other animals, and omnivores eat both plants and other animals], and decomposers: microorganisms [fungi/bacteria/invertebrates]).
-  **Create** a “connection circle” among *living* (plants, animals, and microorganisms) and *non-living* (soil, water, air/wind, sunlight) components in their garden ecosystem.
-  **Write** questions they still have about the garden ecosystem.


## Materials:

-  Handout: “An Ecosystem”
-  Clipboards for each student
-  Pencils for each student

## On the Board:

-  Poster(s) of ecosystems
-  Vocabulary
-  Student Reflection Questions

## Suggested Snack:

-  Local, organic honey on a cracker

## Other Resources:

-  Three posters on ecosystems to order from:
  - [www.newpathlearning.com](http://www.newpathlearning.com)
  - <http://ferncreekdesign.org/backyardecosystem.html>

## Preparation:



Review the Handout.

## Vocabulary:



ecosystem  
biodiversity  
species



herbivore  
carnivore



omnivore  
habitat  
interdependent

## Learning Activities:

### 1. Warm-Up (5 min.)

#### A. Ask students:

- What do you think an 'ecosystem' in the garden is?
- What are some living and non-living things that are part of your garden's ecosystem? (e.g., plants, trees, soil, sun)
- Why do we call the garden an ecosystem? (An *ecosystem* is a community of organisms and non-living components that function as a unit.)

#### B. Define the vocabulary words:

- *biodiversity*: the biological range of different species of plants and animals
- *species*: a group of animals, plants, or microorganisms [FBIs] of the same kind that can breed with each other
- *habitat*: the place/environment where animals, plants, or FBIs naturally live or grow

### 2. Learning Activity (15 min.)

#### A. Divide the students into pairs.

#### B. Instruct students to go into the garden and find where a plant and an animal are supporting each other. For example, you might see a bee getting nectar from a plant and inadvertently moving pollen from that plant to another plant or you might see a worm (invertebrate) in the soil defecating nutrients into the soil.

#### C. Students will draw a picture documenting plants, animals, or FBIs supporting each other in the garden. They should be sure to label the items in their drawings.

### 3. Classroom Activity (15 min.)

#### A. After 15 minutes, bring the pairs of students back to the classroom with their drawings and have them describe what part of the garden's ecosystem they observed.

#### B. Put their drawings on the wall in a way that may show similarities among their findings.

4. Snack: Serve local, organic honey on a cracker. (5 min.)
5. Have students answer the Reflection Questions in their garden journals. (5 min.)

### Student Reflection Questions:

1. Was it easy for you to find a supportive relationship between a plant and an animal, and possibly also a non-living component (e.g., sun, water, etc.)?
2. What might happen if one of these were no longer part of the garden? What might cause this absence?

### Assessment Questions:

1. What is the **most** important thing to have for a healthy ecosystem in the garden?
  - A. **healthy soil**
  - B. a lot of dried grass
  - C. a nearby creek
2. Insects/invertebrates in the garden...
  - A. are to be eliminated in the garden.
  - B. **are important pollinators.**
  - C. are not a good food source for birds.

### Standards:

#### Next Generation Science Standards

- MS-LS2-1 Ecosystems: Interactions, Energy, and Dynamics  
Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-4 Ecosystems: Interactions, Energy, and Dynamics  
Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

# An Ecosystem



**Carnivore**  
eats other animals



**Herbivore**  
eats plants



**Consumers**



fish add nutrients to marine ecosystems



**Producers**  
Make their own food



**Omnivore**  
eats plants & animals



bees spread pollen & get nectar

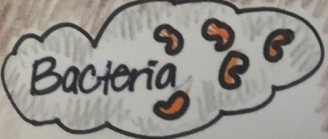
ants

worm



fungi

**Decomposers**  
Break down dead animals & waste, which adds nutrients to soil



Bacteria