



Creatures in the Garden

Total time ~45 minutes

Overview

Students will learn about the garden creature: worms, and pill bugs.

Objectives:

After this lesson students will be able to:

- **Identify** worms, pill bugs, and ladybugs
- **Identify** the habitats of worms, pill bugs and ladybugs
- **Understand** the role of worms, pill bugs, and ladybugs in the garden

Preparation:

- Buy ladybugs (can be done through Amazon)
- Write vocabulary on the board
- Print out anatomy pdf for students
- Write out student reflection questions
- Set up stations in the garden to observe each garden creature

Vocabulary:

- **Scavengers / Decomposer** : an animal that feeds on decaying material
- **Gills**: respiratory organ for aquatic animals
- **Crustaceans**: mostly aquatic class of animals with an outside hard shell, appendages, and two pairs of antennae (ex. Lobsters, shrimps, crabs)
- **Beneficial insects**: animals that help grow plants in the garden
- **Pests**: animals that harm the garden

Materials:

Microscope
Paper tissue or newspaper
Ladybugs

On the Board:

Vocabulary
Student Reflection
Question: From the creatures we learned about today... Which are **beneficial insects** and which are **pests**?

Suggested Snack:

Additional Resources:

Anatomy Worksheet:

<https://docs.google.com/document/d/e/2PACX-1vQ2mz07oUOMbkqOv2M4ghuCNNFQj03Le3wpNuuxb1yyqZmMEvewLfTEUpgGner8QgcXGmR8mo2uvzdi/pub>

Powerpoint:

https://docs.google.com/presentation/d/16P2eHcYgwUO_y2UHQe3wW0yDghVNqF7gyMf7G4zsKE/edit?usp=sharing

1.Introduction

- a. Ask students: what are some creatures you see in the garden?
- b. Hand out anatomy pdf with drawings
 - i. Ask students to look for these structures in the lesson

- c. Explain that in today's lesson students will learn about garden creatures: worms, pill bugs (live underground), ladybugs (live in the sky), and spiders
- d. Review vocabulary words and ask students to listen for vocabulary words in the lesson

2. Lesson Part 1: Ground garden creatures

Worms

- a. Screen the five-minute YouTube video "Worms are Wonderful"
https://www.youtube.com/watch?v=l-zc_1vjLnI
- b. Ask students after the video: What did you learn that was new about earthworms?
- c. Review the vocabulary words: **scavenger / decomposer**
 - i. Worms are scavengers and they eat decaying material
- d. **Summary:**
 - i. Although the video shows earthworms with eyes, they actually don't have eyes or ears.
 - ii. Earthworms are not insects
 - iii. Earthworms use their muscles to move,
 - iv. Earthworms breath and absorb oxygen through their skin
 - v. Earthworms use light receptors to tell when they are in the dark and use vibrations to sense if animals are nearby
 - vi. Worms help the garden by mixing soil by making tunnels in it
 - vii. Worm castings (poop) enable decomposition and help grow plants
 - viii. Worms are invertebrates - do not have a backbone, ask students to feel their own backbones for reference
 - ix. Earthworms have little hairs (as seen in video) making it difficult for birds to catch them

Pill Bugs

- a. Review the vocabulary words: scavenger / decomposer, gills, and crustaceans
- b. Screen the four-minute YouTube video "Roly Polies Came From the Sea to Conquer the Earth" <https://www.youtube.com/watch?v=sj8pFX9SOXE>
- c. Ask the students after the video: What new things about pill bugs also known as roly pollies did you learn? Did you hear any vocabulary words that we learned today?
- d. **Summary:**
 - i. Pillbugs are not insects, they're **crustaceans** and more related to lobsters or shrimps
 - ii. Pillbugs are also known as "wood shrimp" and some adventurous foragers cook them

- iii. Pillbugs roll up into ball for protection
- iv. Pillbugs use **gills** to breathe (ancestors from ocean) modified to work in air
- v. Gills need to be kept moist to work which is why you can find pill bugs in moist places
- vi. Pillbugs are **scavengers** that eat dead material

3. Activity 1:

- a. Break off students into two groups and send to station: one for pill bugs and one for worms
- b. Bring required material: microscope, anatomy pdf, newspaper
- c. Use magnifying lens when to look for garden creatures
- d. Ask questions about creatures while looking
- e. When looking for the underground garden creatures ask the students to look at the creature's anatomy (worksheet), review what the creatures eat (decomposers / scavengers), whether they are beneficial insects or pests, and the habitat these creatures occupy
- f. Look for worms in worm compost bin as well as station
 - i. When looking in the worm bin remind students of the conditions that worms like to be in (moist) and why they are helpful in the garden (make the soil better).
 - ii. Ask the students: how come we don't have roly poly bins? It's because they aren't specifically good or bad, they don't help fertilize in the same way as worms do.

Worms:

Ask students questions during the activity portion.

Q: Are Earthworms insects?

Earthworms are not insects because they don't have six legs, three main body parts, and a hard exoskeleton.

Q: Are Earthworms snakes?

Snakes have a skeleton and earthworms don't.

Q: How do earthworms move?

Earthworms move by squeezing themselves thinner using muscles and use tiny little hairs to pull itself forward in the dirt

Q: Where do earthworms spend most of their time?

Underground burrows

Q: How do earthworms breathe?

Earthworms use their skin to absorb oxygen which is why they can be found in damp soil or mud or even moving on a rainy day.

Q: Why are earthworms important for the garden?

As they munch through the soil they make the soil better, water and air through tunnels and breaking down of plant parts spreads nutrients for new things to grow

Q: What do earthworms eat?

Eat dead and decaying parts of plants (In fact earthworms are decomposers = vocabulary word that was learned)

Fun Facts About Worms:

- Worms in between have segments (setae)
- Worms move by retracting and expanding their muscles
- Worms have 150 segments (setae)
- Unlike other invertebrates, worms don't have eyes, tooth, pincers, or stingers

Pill Bugs:

Ask students questions during the activity portion.

Q: What fascinating feature do pill bugs have?

Gills that are evolved from ancestors in the ocean

Q: What family are pill bugs a part of?

Crustaceans

Q: What environment will you most likely find pill bugs in?

Moist environments because their gills need to be kept moist

Q: Why do pill bugs roll up into balls?

For protection

Q: Why are pill bugs helpful for the garden?

They eat debris such as dead plants, dead insects, dead animals, etc. also known as scavengers.

Q: Are pill bugs beneficial insects?

Yes and No! They are helpful because they feed on decaying matter and turn make it useful however they can also damage the roots of plants when feeding.

Fun Facts About Pill Bugs:

- The pillbug is the only crustacean that can spend its entire life on land.
- Most pill bugs live for up to two years.
- Pill bugs mostly eat rotting vegetation like vegetables.
- Pill bugs live in wet locations. They are found under damp objects or in organic garbage. If pill bugs enter a building, they will often dry out and die.

4. Lesson Part 2: Flying Garden Creatures

Bring students back into classroom for second part of lesson

Ladybugs:

- a. Screen four-minute YouTube Video "The Stunning Life Cycle of a Ladybug"
https://www.youtube.com/watch?v=ws_D5nXOAJg
- b. Ask students: What are some things we learned about ladybugs?
- c. **Summary:**

- i. Ladybugs start off as tiny yellow eggs
- ii. Ladybugs eat insects such as aphids
- iii. Ladybugs are a bright red to warn predators
- iv. They are over 5,00 different species of ladybugs
- v. When it is cold they hibernate

5. Activity 2:

- a. Bring required material: microscope, ladybugs, newspaper
- b. Use magnifying lens when looking at the ladybugs
 - i. Make sure to release ladybugs when students grouped all together
- c. Ask questions about creatures while looking at the ladybugs through microscope

Ladybugs:

Ask students questions during the activity portion.

Q: Why are ladybugs helpful for the garden?

They eat aphids and other small bugs that damage crops and other destructive pests.

Q: When can you typically find ladybugs?

Summer, Spring, and Fall because during the cold season they hibernate

Q: What family of insects are ladybugs a part of?

Beetles

Q: Why are the ladybugs bright colors?

They warn potential predators

Q: How do ladybugs fly?

They fly with hidden wings that are underneath their hardened armor

Fun Facts About Ladybugs:

- Ladybugs are protectors of plants they eat bugs that harm plants
- The ladybug commonly has seven spots
- Ladybugs belong to the beetle family
- Ladybugs come in many different colors, some with stripes, squiggles, or no patterns
- Ladybugs defend themselves with toxic chemicals to make them distasteful to birds and other predators
- The brighter the ladybug, the stronger the toxins
- Ladybugs lay extra eggs as snacks for their babies
- Baby ladybugs look like alligators

6. Snack

7. Student Reflection Questions:

From the creatures we learned about today what are beneficial insects and pests. Beneficial animals are helping the plants grow in the garden while pests sometimes destroy plants.

Worms: Worms are beneficial animals because they help the garden by mixing soil by making tunnels in it and their castings (poop) work as good soil for growing plants

Pill bugs: Pill bugs are neither good nor bad; they are helpful because they feed on decaying matter however they can also damage the roots of plants when feeding.

Ladybugs: Ladybugs are beneficial animals because they eat aphids and other small bugs that damage crops and other destructive pests.
