

LITTER CRITTERS



BACKGROUND

In the leaves under our feet is a world teeming with animals. As plants, animals, and insects die, or plants drop leaves and branches to the ground, they form a layer of decaying matter called ***natural litter***. This natural litter layer forms a constantly-changing habitat that is home to some creatures and a source of food for others.

Rain washes litter away, wind blows it around, and sun dries it out. Where the litter is thick, only the upper layers dry out. The layers next to the soil provide a continuously moist environment. In this moist area, tiny organisms, called ***decomposers***, such as slugs, worms, fungi, and bacteria feed on bark, leaves, and twigs and break that litter down (decompose) into smaller and smaller pieces. As these decomposers live and die, they release nutrients back into the soil. At the same time that the lower layers are being broken down, new natural litter is deposited on top of the existing layer, ensuring a continuous litter habitat.

Animals that live in litter are small. Their size allows them to crawl into tiny crevices between pieces of decomposing plant and animal matter. Their size also makes them easy to overlook. In this lesson students will investigate the variety of animals, or “litter critters,” living in leaf litter.

MATERIALS

Each Group Guide will have a kit containing:

- 1 guide card
- 7 pencils
- 7 hand lenses
- 7 plastic half-lids
- 7 clear plastic film canisters
- 3 plastic trays
- 1 plastic trowel
- 1 Helpful Bug Guide
- 1 Key to Animals in Leaf Litter
- 1 set of common bugs cards
- 1 bag of poker chips
- 1 blue graphing sheet

Key Learning Objectives

- Natural litter plays a vital role in an ecosystem
- Many critters live in the natural litter of a habitat; some of them are decomposers
- Decomposers play an important role in a habitat. They eat dead and decaying material and help return nutrients back to the soil.

Tip The students are to use the half-lids to gently move the critters. While most critters are benign, there may be stinging or biting insects present such as centipedes, large ants, and spiders. It is best practice to not handle any critters with bare hands.

Site Good places for finding litter critters on school grounds are in areas of moist litter and soil, such as piles of leaves (found along chain-link fences, curbs, or corners of stairs), under logs, in planting strips, and along edges where sidewalks meet gardens or grass.

Vocabulary Throughout the activity be sure to use and reinforce the vocabulary words:

- **decomposer** – an animal that eats dead and decaying material and returns the nutrients back to the environment
- **natural litter** – materials left by plants and animals, such as dead leaves, sticks and branches, scat, fur and feathers, etc.
- **predator** – an animal that hunts other animals for food
- **prey** – an animal that is hunted for food
- **entomologist** – a scientist who studies insects

INTRODUCTION by TEAM LEADER (5 minutes)

The Team Leader will introduce the lesson to the entire class before dividing the students into their small field groups.

Introduce the activity to students

- What do you know about litter? How would you define litter?
- Does nature create litter or is litter only created by people?
- How come everything on earth is not buried in natural litter? Where does it go?
- Today we are going to explore the natural litter in our schoolyard habitat.
- Where might you find leaf litter? What might you find living in it?

★ *Remind the students that all critters are to be handled with care. All critters will be returned to their habitat alive, uninjured, and minimally stressed.*

OUTDOOR ACTIVITY by VOLUNTEER GROUP GUIDE

The Group Guide will complete the activity with their small field group as described below.

TELL ME (5 minutes)

Gather the students into a circle and point out the study site boundaries

While not looking for any specific answers, facilitate the discussion by asking questions like:

- What do you think we will find in natural litter?
- If a large tree drops all its leaves year after year, why do we not see huge piles of natural litter? What happens to the natural litter?
- We call the animals that live in natural litter “litter critters.” What do you think the litter critters are doing there? (answer: living life – eating, pooping, reproducing – and preventing huge piles of natural litter from accumulating)
- Do you think all of the critters that live in the litter are decomposers? (answer: no. Some are predators that prey upon the decomposers)

Keep in mind...

- The litter critters are very small and easily injured. Avoid using hands while working with the critters for the safety of the animals as well as the students.
- Remind students not to pick up trash such as bottles, glass, etc., but to point it out to the Team Leader.

State the challenge: Today we will find litter critters and observe their characteristics.

ACTION (20 minutes)

1. Reiterate the boundaries of your study site.

2. Introduce the activity. Tell students that they will be looking for litter critters. As they find each litter critter, they will help the critter into a “bug box” to observe them. Show students how to make a “bug box” by placing a hand lens over the top of a film canister.

Ask the students:

- Have you ever seen litter critters? How would you describe them? (size, color, shape)
- As a group can you predict the characteristics of litter critters?

Keep in mind...

- If it is difficult to find animals in the leaf litter, try another site with more moisture. Litter critters may burrow into the dirt when it is cold.
- You may pick up some dirt to find animals. Using the trowel, the Group Guide may collect the top layer of dirt (start shallow, up to 1 inch) and place it in the sample tray to observe.

3. Locate a place with leaf litter and collect the litter. Scoop up some litter, being careful not to dig into the soil, and place it into a tray. Make sure the tray is generously full of natural litter (see photo below).



4. With the group, try to find at least one litter critter while demonstrating careful techniques of moving the litter, then waiting and watching for movement. It is appropriate to remove some of the litter from the tray. Be sure to examine all sides of the litter as you remove it.

5. When you find a critter, demonstrate two ways of observing the critter without touching it. Use a hand lens to observe the critter in the tray. Then demonstrate the use of a bug box by carefully using the scraper to scoop or encourage the critter into the film canister. Then put a hand lens on top the film canister to observe the animal more closely.

Keep in mind... Only put one critter in a film canister at a time.

Multiple critters in one film canister may lead to predation, fights, and stress for all. Do not let this happen.

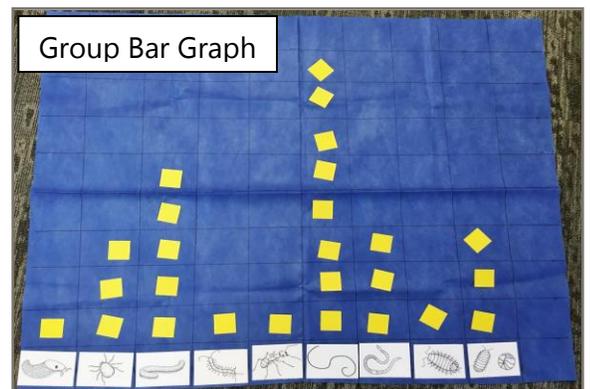
6. Pass out the materials and start the activity. Divide the group into pairs or trios and give each team a tray, and each student a film canister, hand lens, and half-lid. Remind the students to find as many different litter critters as they can, and to observe them carefully.

7. Have students identify what they are finding using the Keys to Animals in Leaf Litter guide. Have them focus on number of legs, body parts, and shape of bug to help them through the key.

8. When they have identified what they have found, they should mark a tally in their field notes data page. They should also identify what is a decomposer and what is a predator and mark that in their notes as well. Students are to tally only the critters they found in their tray.

9. Allow 10-15 minutes for the litter search. Circulate among the teams and offer assistance. Encourage the students to share their critters with the other student pairs. Discuss the similarities and differences between the critters.

10. Graph the data as a group. Once the critters have been counted, have the students look at their tally sheet and create a group bar graph. Use the provided critter cards to label each column; your students may not have found a specimen for all of the critters represented on the cards, and that is fine. Each yellow square counts as one individual critter. In the graph above, the students found one slug, three mites, etc. They will end up with a bar graph that shows the critter collection of the entire field group.



11. Transfer the data onto the bar graph in their field notes. Once the group graph is complete, have the students transcribe that information onto the bar graph in their field notes.

DISCUSSION (5-10 minutes)

Group Guides will find most of these questions on their guide cards in the activity kits.

Encourage the students to reflect on their observations.

- How many different critters were found? Was it hard or easy to find the critters?
- Where in the litter did you find the most critters? What was different about that part of the litter? (answer: moisture)
- Were all of the litter critters you found decomposers? Or were some predators? What is their relationship?
- Is your schoolyard a good habitat for litter critters? Why or why not?
- If you could choose another location to look for litter critters, where would you look? Why?

STUDENT JOURNAL (5-10 minutes)

Have the students complete the Litter Critters worksheets in their field journal.

CLEAN UP

The importance of clean-up is critical to the smooth operation of the program. Children are expected to help.

1. Collect and organize all materials. Put the activity materials back into the kit.
2. Wrap the strings around all hand lenses and return them to their plastic bag in the kit
3. Remember the goal is to leave no trace. Any small critters and litter should be returned to the locations where found. Observe what the animals do when they are released

CONCLUSION by TEAM LEADER (5 minutes)

After all the field groups have returned to the classroom, the Team Leader will do a brief wrap-up discussion at the end of the lesson.

Concluding questions

- Where did you find most of the litter critters?
- Which critters in the leaf litter were decomposers? Predators?
- Why are decomposers important to the habitat around your school?
- Why is it important to have natural litter in a habitat?

Talk briefly about the next activity.