



EVERGREEN

Teacher's Corner Lesson Plans

*Helping Teachers and Students Make the Most of
their Outdoor Classroom*

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Insect Collecting: Berlese Funnel*

Teaching in the Outdoor Classroom Institute

Grade level: 4

Provincial curriculum links: Ontario

Subject: Science and Technology

Keywords: berlese funnel, insect collecting, observation, arthropod

Description

Many insects live in the soil or the leaf litter just above the soil. Although we usually do not see many of these insects because they hide below ground, they can easily be collected using a Berlese funnel. In this lesson, students investigate leaf litter to discover and observe various types of insects from their school ground.

Curriculum Framework

Topic: Life Systems

Strand: Habitats and Communities

Specific Lesson Goals:

- Classify plants and animals that they observed in local habitats according to similarities and differences
- Investigate the interrelationships of the plants and animals living in a specific habitat
- Compile data gathered through investigation in order to record and present results

* This exercise is adapted from *Teaching in the Outdoor Classroom*, Evergreen/TDSB Summer Institute, 2007, 82 pages.

Preparation

Preparation Time:

- 20 minutes

Length of lesson:

- 30 minutes
- Additional time later that day and the next for observing

Resources required:

- berlese funnel (Two 2-liter clear plastic bottles, ¼ inch wire mesh, scissors, wire cutters, pliers, marker, white tissue, long rubber band.)
- table lamp with 20–40 Watt bulb
- 5 Petri dishes
- 5 magnifying glasses
- leaf litter.

Procedure

1. *Teacher Preparation:* Cut one bottle just below the curved part of the top. Place the white tissue, folded, into the bottom of the bottle. Use the top part upside down as a funnel and place into the top of the bottle.
2. Trace the size of the bottom of the bottle onto the wire mesh with a marker. Using the wire cutters, cut out the circle and with pliers, bend up the sides just enough to make it fit snugly into the funnel.
3. Cut the top and bottom off of another 2-liter bottle and then cut it lengthwise. Place around the top part of the Berlese funnel and secure with a rubber band. Use this as a sleeve to keep the litter from falling out.
4. Take students outside to collect about 2 cups of leaf litter. Look under bushes or shady areas where dry leaves have collected. Remove the surface leaves to find those that are moist. Collect litter down to the soil but do not collect any soil.
5. Place the leaf litter in the Berlese funnel and direct the lamp over the litter. Leave it on for about 24 hours. The heat will dry out the litter, driving the moisture loving arthropods down until they fall through the wire mesh.
6. Remove the leaf litter, return it to where you collected it and check to see what arthropods have fallen into the bottom. Sort them by species into the Petri dishes. Observe with the magnifying glass and record/draw your observations.
7. Return the arthropods to where you collected the litter or keep them in a terrarium for future observation.

Discussion and Questions

- Discuss how many different arthropods and how many of each species live in the leaf litter found on the school ground.
- Discuss the possible reasons for finding many or few insects in that particular location on the school ground.
- What new questions do their findings inspire?

Student Assessment and Evaluation

Students can be assessed on the process of carrying out the investigation and following the instructions. Students can be evaluated on their ability to record their observations and depict their findings in a chart.

Enrichment and Extension Activities

Repeat this procedure, collecting the leaf litter from a different location or from the same location during different weather conditions.

References/Resources

Adapted from Earth's Birthday Project,
<http://www.earthsbirthday.org/butterflies/enrichment/leaf litter.asp>