

Lesson 2

Collecting and Preserving Insects

Timeframe

1 Fifty minute class period

Target Audience

Middle School (6-8) Life Science but easily adapted to Grades 4-12

Materials

- Trail mix & container for each group
- Collection containers
- Labels
- 70% ethanol alcohol (rubbing alcohol Isopropyl may be substituted)
- Coffee filters, or fine strainer or fine aquarium nets
- Forceps (Tweezers)

Description

In this activity students will collect the organisms from their traps and preserve them based on whether they are wet or dry. Each group of students will choose their best specimen to send to Oregon State University. To request a specimen box for submission contact smileprogram@oregonstate.edu

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Objectives

- Understand that specimen curation involves preserving field collected specimens, storing them and cataloging them so that scientists can use them as a record of what species exist in a certain area and have reference specimens to back up their observations and compare with future specimens.

Guiding Question

- How does collecting and preserving organisms help scientists understand biodiversity?

Teacher Background

Insect specimens are prepared and preserved in a variety of formats depending on a number of factors such as life stage, collecting method, species group, and research objectives. Storage options will also depend on the extent and diversity of your collection. In general, insects are collected and preserved as either dried specimens or in fluids (e.g., ethanol).

Dried specimens may be preserved on pins, mounted on points,

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<http://smile.oregonstate.edu/>

Background Continued:

through their bodies and smaller insects are mounted on points. Instead of being pinned, dragonflies (Odonata) and butterflies/moths (Lepidoptera) may be stored in glassine envelopes - which better preserves them and to saves space.

Activity Introduction

Tell students that they are going to go back out to the traps that they deployed and collect any organisms that were caught. Ideally students will have been checking traps and collecting organisms over the course of the week. Once students have their collection, sorting and preserving insects is the next step.

Activity:

1. Have students return to their habitats to collect organisms from their traps. Wet insects found in their yellow pan traps can be strained into a jar with alcohol using a small strainer or coffee filter. Dry specimens should go into a jar (with a lid) and placed in a freezer.
2. After the students have emptied specimens from their traps have them take 5 minutes to do an inventory of the area immediately surrounding their trap. They should collect all of the living and dead insects that they find. Dead insects in reasonable condition can often be found on windowsills, roadsides and walking paths.
3. Once students have done their final collection, have them return to the classroom, wash their hands, and introduce them to the concept of classification by giving them a bowl of trail mix to sort. Pass out trail mix to student groups and ask them to separate and group the items based on shared characteristics, such as shape, color, size, etc. To increase the challenge give them changing parameters such as classifying them into 5 groups, 4 groups, 3 groups, etc.

Ask:

- How many different ways can you classify the trail mix?
- What characteristic is the most common? Least common?

Next Generation Science Standards

DISCIPLINARY CORE IDEAS:

LS2.A: Interdependent Relationships in Ecosystems

PERFORMANCE EXPECTATIONS:

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

PRACTICES:

Practice 1: Asking questions and defining problems

Practice 2: Developing and using models

Practice 6: Constructing explanations and designing solutions

CROSCUTTING CONCEPTS:

- Patterns
- Structure and function



- Do the characteristics indicate that there is only one “true” way to sort them? (Are there different, but equally possible/feasible, ways to sort them? Are certain characteristics “better” than others?)
4. Explain to students that we can group many things based on characteristics and that organisms with uniquely shared characteristics can be grouped into category. Let them know that they are going to sort their organisms and group them into specimen jars based on similarities. Note: Dry specimens should not be placed in alcohol but rather should be stored in jars or envelopes.
 5. Provide students with specimen containers and have them separate organisms. Let students know that they do not need to spend a significant amount of time examining their specimens as they will have a chance to do this in the next lesson. Remind them that specimen containers should ALWAYS contain a label that includes:
 - Location of collection
 - Date specimen was collected
 - Name of the collectors

Discuss:

- How did the traps that you used impact what you found? Were there any “failure points” that you might consider and improve on?
- Why do you think scientists collect and preserve organisms?
- What was difficult about grouping the organisms?

Resources:

<https://www.nps.gov/museum/publications/conservoogram/11-08.pdf>

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