Lesson 2
Collecting and Preserving Insects

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,
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

CROSSCUTTING 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/conserveogram/11-08.pdf

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