
What's Your Favorite Color?

Activity Overview

Centered around insect populations, students will use basic materials to design an experiment of their choice, conduct research and draw conclusions.

Objectives

Students will:

- Learn a simple experimental procedure
- Ask questions
- Collect, interpret and present data

Subjects Covered

Science, Math, Language Arts

Grades

5 through 12

Activity Time

Preparation: 60 minutes

Conduct experiment: 1-2 days

Collect/Interpret data: 40 minutes

Report on findings: 50 minutes

Season

Spring, summer, fall

Materials

For collecting: Plastic bowls (6 ounces or smaller) in a variety of colors, tap water, unscented dish soap

For sorting: Notebook, sorting tray, tweezers

Source

Dr. Charles Bomar, Director
UW Stout Applied Sciences Program

Modified from Earth Partnership for Schools K-12 Curriculum Guide, University of Wisconsin Board of Regents

Background

Inquiry in schoolyard restorations need not be “rocket science.” This activity attempts to demystify the process with materials available in any discount store or supermarket.

What animals are most abundant in your schoolyard habitat? On pristine grasslands or woodlands of thousands of acres, it is likely you could monitor large animals like buffalo, deer or fox. As your habitat gets smaller, larger animals are probably no longer present. It is guaranteed that insects will represent the most diverse fauna of your schoolyard habitat, and there are many ways to sample them.

Activity Description

One way to sample insect populations and diversity is to use colored bowls called “pan traps” which are easily constructed by filling plastic bowls with tap water and adding a few drops of unscented liquid soap to break the surface tension of the water. Plastic bowls come in a variety of colors and color and smell are both utilized by flowers to attract organisms for pollination and seed dispersal. Using a wide variety of plastic colored bowls allow for a multitude of questions to be asked by researchers of every age.

Things to sample: Types of insects, number of insects, color associations by insect families/orders, and phenology. There are many more, but let your students develop their own questions


1. Tell the students they are going to act as scientists. Discuss.
2. Outline the scientific method as described below.
 - Develop a hypothesis (ask a question)
 - Devise an experimental procedure for collecting data
 - Conduct the experiment
 - Collect the data
 - Interpret the data
 - Draw conclusions (find answers)
 - Report results
 - Suggest next steps for further research
3. Orient the students to the materials and how to use them.
4. Students will devise their own questions (hypotheses) and work through the steps in the scientific method.

Make it clear that *simplicity* is useful in this introductory learning process. Present the materials and basic idea, but let the *students do the thinking, ask the questions, and devise the procedure.*

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The materials help to limit the scope and complexity. Shorter time frames are useful - a few hours, overnight, two days. It is not necessary to identify individual species or know all of the names, just that the insects are different. However, it is student driven so if they want to know more, let them find out!

Extensions

-  Prior to this activity, visit <http://www.panpipes.net/edit6200/index.html> to conduct a virtual experiment following the scientific method. Website includes directions, purpose, objectives, introduction, steps, quizzes, help, a glossary and experiment simulation.
- Students present their results in a mini-research symposium.
- Repeat the experiments with different variables and questions.
- Design additional experiments using the process above.

Additional Resources

- Ecological Monitoring and Assessment Network—Protocols for Measuring Biodiversity, Arthropod Monitoring in Terrestrial Ecosystems:
<http://www.eman-rese.ca/eman/ecotools/protocols/terrestrial/arthropods/pan.html>
- Purdue University Department of Entomology—Educational Outreach:
<http://www.entm.purdue.edu/outreach/index.html>
- Iowa State Entomology Index of Internet Resources:
<http://www.ent.iastate.edu/list/directory/158/vid/5>
- Section 8 in the EPS Resource Binder: The Inquiry Process.
- Annenberg Media—Learning Science Through Inquiry:
<http://www.learner.org/workshops/inquiry/>
- Concept to Classroom—Inquiry-Based Learning:
<http://www.thirteen.org/edonline/concept2class/inquiry/>
- Scientific Method Tutorial: <http://www.panpipes.net/edit6200/index.html>
- Learning Science through Inquiry: <http://www.learner.org/workshops/inquiry/>

Assessments

- Students explain how colors affect the outcome of the experiment.
- Students correctly identify each step in the scientific method.
- Students describe their experiment setup and explain procedures from beginning to end.