Ecology in Classrooms & Outdoors

WINTER SCAVENGER HUNT
TEACHER GUIDE

Introduction

Winter is a fascinating time to observe nature! Yet, much of what is happening outdoors during winter is overlooked or missed as we spend more time indoors. In this lesson, students are given a virtual scavenger hunt and are encouraged to go outdoors in their yards, neighborhoods, or nearby parks to make observations of nature. Students will be introduced to a variety of natural objects that can be found and studied during the winter, such as evergreen plants, deciduous tree and shrub twigs, different types of lichen, and animal tracks.

Materials

- Virtual Scavenger Hunt Presentation
- Activity Sheet (printed or digital)
- Pencil
- Colored pencils, markers, crayons (optional)

Lesson Length

30-60 minutes, asynchronous

Standards

NGSS

2-LS4-1 Biological Evolution: Unity and Diversity
Make observations of plants and animals to compare the diversity of life in different habitats.

Lesson Procedure

1. BACKGROUND AND PREP

In this activity, students are invited to go on a scavenger hunt to practice nature observation and taking field notes. Winter is a fascinating time to observe nature, and oftentimes much of what is happening outdoors during winter is overlooked or missed as we spend more time indoors.

Spend some time preparing students for their winter scavenger hunt by defining a few of the key ecology vocabulary terms they will be seeing throughout the Activity Sheet:

Observation: the act of noticing something using your senses. Invite students to list their five senses (touch, sight, sound, smell, taste). Remind students they should never taste something in nature without knowing exactly what it is.

Evergreen: plants that keep their leaves year-round. Evergreen plants can be either coniferous trees or broadleaf trees and shrubs.

Deciduous: plants that lose their leaves in the fall and remain dormant throughout the winter months. The majority of deciduous plants have broad leaves, with some exceptions.

Conifer: trees that produce seeds inside a woody, cone-shaped pod, as opposed to inside fruits. The majority of coniferous trees are evergreen, with some exceptions.

Broadleaf: plants that have “typical” leaves that are flat and broad, as opposed to needle-like or scale-like. Broadleaf plants can be evergreen or deciduous.

Lichen: a symbiotic relationship between algae and fungi. Lichen can be found in many colors and grows from tree trunks, tree branches, the surface of rocks, or is found along the ground.

Terminal bud: the very tip of a plant’s twig or stem, containing the main growth of the plant.

Lesson Procedure, cont.

2. ACTIVITY SHEET AND PRESENTATION

Ensure each student has a printed copy of the Activity Sheet and something to write with. Students may also choose to download the sheet to use as a guide on a phone or tablet, accompanied by a blank piece of paper and something to write with.

Remind students the scavenger hunt can be done either virtually (via the presentation), outdoors, or both. The Activity Sheet has red boxes for each "item" to be collected on the hunt.

EVERGREEN PLANT STUDY

The presentation shows a few examples of common evergreen plants (coniferous and broadleaf) that students may find in the Pacific Northwest. Students may notice that evergreen leaves or needles will feel waxy or leathery, in order to retain moisture. The Activity Sheet has space for students to sketch and label what they observe, either from the photos or in person.

DECIDUOUS TWIG STUDY

The presentation shows a useful diagram labeling the parts of deciduous plant twigs. Even though a plant doesn't have its leaves, flowers, or other more obvious traits showing in the winter, scientists can still identify a plant based on observations of the twig. Students may even notice outdoors that some trees and shrubs are beginning to bloom for the spring. The Activity Sheet has space for students to sketch and label what they find, either outdoors or using the photo on the slide.

LICHEN STUDY

The presentation invites students to take a closer look at lichen examples. Lichens are easy to observe during the winter as they are often found laying on the ground after falling off trees, or on the surfaces of rocks. The Activity Sheet has space for students to sketch and label four different kinds of lichen (foliose, fruticose, crustose, squamulose), found either outdoors or using the photos on the slides.

ANIMAL TRACK STUDY

Winter is an excellent time to find animal tracks, either in mud or snow. Students will likely be able to find animal tracks of domesticated dogs and cats outdoors. Canine tracks (dog, coyote, fox), show imprints from claws, and the pad of the foot will have two lobes on the base. Feline tracks (house cat, mountain lion, bobcat), do not show claw imprints and the base of the foot pad has three lobes. Common urban wildlife include animals such as deer, rabbits, coyote, squirrels, raccoons, and possums. Invite students to sketch or take photos of tracks they find and compare them with the tracks in the presentation, or conduct further research on tracks online.

3. GO OUTDOORS

Invite students to spend time outdoors in a neighborhood, nearby park, or on a trail with a trusted adult and try to find each item on the Activity Sheet.

For students who are going outdoors to complete their scavenger hunt, encourage them to view the virtual presentation beforehand *without* checking items off, saving the Activity Sheet for use outdoors. In this case, the presentation is a way for students to go over key terms and background information before heading outdoors.

Otherwise, if students do not have time or access to a safe location outdoors, they may check off items and complete their sketches on their Activity Sheet using the virtual presentation only.

Lesson Procedure, cont.

BONUS

Invite students to come up with an inquiry question that they will try to answer during their time outdoors. Inquiry questions should be something students can develop a hypothesis for, then test or make observations to answer.

Examples of inquiry questions may be:

- Which is more common (in this park/neighborhood/trail): evergreen conifers or evergreen broadleaf plants?
- Do similar types of trees or shrubs grow together?
- Looking at the growth from the last concentric scar to the tip of the terminal bud, on average, how many inches have deciduous twigs grown in the last year?
- On average, how many centimeters are terminal buds on deciduous shrubs?
- What kind of lichen is most common on trees? On rocks?
- How many colors of lichen can I find (in this park/neighborhood/trail)? What color is most common?
- How many different animal tracks can I find (in this park/neighborhood/trail)?
- Which animal tracks are the most common (in this park/neighborhood/trail): canine (dog, coyote, fox) or feline (house cat, mountain lion, bobcat)?
- Are there any noticeable patterns to the animal tracks you find (clustered, following a trail, etc.)?

4. SHARE

Have students share their Activity Sheet and reflection on the activity with the class, either through an online platform or as a short presentation.

Encourage students to share their experiences, stories, observations, or discoveries.