LESSON 14

Noxious or Native?

Grade level: 2-8
Subject Areas: Biology, language arts
Duration: 45 minutes
Setting: Indoors
Season: Any
Conceptual Framework Topics: Plant biology, noxious weeds, invasive species ecology

OBJECTIVES

Students will be able to identify at least two Montana noxious weeds and two Montana native plants, and name several characteristics common to all plants.

METHOD

Students write descriptions of plants for others to read and then identify the plant from a selection of plant photos.

MATERIALS

- ✎ Copies of photos of two noxious weeds and two native plants (1 full set per small group of students)
- ✎ Pencils
- ✎ Blank cards (one per student)
- ✎ Journals or other paper

BACKGROUND

Which plants are considered to be weeds and which are considered to be desirable in a landscape depends on your view. For example, one person may encourage edible plants like dandelions on their property, while another may work hard to eliminate them. Regardless of their desirability in a landscape, all plants have certain characteristics in common. However, it is their distinguishing characteristics that allow us to identify different species and determine if it will be necessary to remove the plant or if it "belongs" in a certain location. Learning to identify plants is the first step in managing vegetation. To correctly identify a plant you must identify a number of its unique characteristics. A plant identification key, plant guide, or other resources may be necessary to determine the identity of a particular species. Once identified it is possible to locate information about the plant to find out if it is considered invasive and how it may impact the local environment if left unchecked, as well as recommendations for its control.

Identification starts with gathering information about a plant. Some typical questions you might want to ask to gather this information could include the following:

Microhabitat: Does the organism always occur in the same "zone"? Then, consider the conditions it is growing under, such as temperature, moisture level, sunlight/shade, soil type.

Distribution: Does it occur in clumps, or is it on its own, far from others of the same species? If in clumps, do they seem randomly distributed, or do you see

Common Tansy
Tanacetum vulgare

a pattern? Is it always associated with the same plant species, or do you find it with a variety of other plants?

Growth Form: How does the plant hold itself up when it doesn't have a skeleton? Is it woody or herbaceous (non-woody)? If it's woody, is there one main trunk (trees), or are there several (shrubs)? Does the plant stand up by itself, sprawl along the ground, or use something else for support (vines)?

Leaf Type: Does the leaf look like: a regular broad-leaf, with a little stem (petiole) and a flat, wide blade? a long strap? a needle or a tiny scale? If the leaf has a petiole and blade, what shape is the blade?

Leaf Arrangement: How are the leaves arranged on a stem? Are there two leaves attached to the stem at the same point (opposite)? Are there more than two leaves attached to the same part of the stem (whorled)? Do the leaves attach to the stem in a zigzag or spiral pattern (alternate)?

Reproduction: How does the plant produce offspring? Do you see flowers on the plant? Where are the male and female parts of the flower? How do you suppose the male parts meet the female parts? Do you see fruits or cones on the plant? If so, can you find the seeds? How do you think seeds get around to new locations?

Plant Defense: How do plants protect themselves from predators? Does the plant have any spines? Do the leaves look very hairy? Are certain parts of the plant very tough and hard to digest? Does the plant have a distinct smell? Do you see evidence of anything eating the plant, or signs that something has been eating it?

Once you have enough information about the plant you will be able to identify it.

In this activity, students gain practice describing characteristics of a plant from photos, which will then be used by other students as they try to match the descriptions with the correct plant photos.

PROCEDURE

Assign students into small groups that will share a complete set of plant pictures. Ask students to view selected pictures of noxious weeds and native plants. Examples of noxious weeds of Montana that are found in every county in the state of Montana include spotted knapweed (*Centaurea stoebe*) and Canada thistle (*Cirsium arvense*). Examples of common Montana native plants are arrowleaf balsamroot (*Balsamorhiza sagittata*) and our Montana state grass, bluebunch wheatgrass (*Pseudoroegnaria spicata*). However, you may want to provide pictures of other species of local interest or concern. For pictures, you can go to any of the following web sites:

- Smithsonian's United States National Herbarium, which contains a bank of 17,000 plant images, searchable by scientific and common name at: **http://persoon.si.edu/PlantImages/frmSearch.cfm**
- The USDA Plant Database also has 40,000 searchable images of plants at: **http://plants.usda.gov/**
- Montana Plant Life at: **http://montana.plant-life.org**

Color pictures are not necessary. Black-and-white images, in fact, are useful if you do not want the students to rely on the most obvious descriptions, such as yellow for the flower of the arrowleaf balsamroot.

1. From the photos of plants distributed, each student will choose one plant to describe. Each will brainstorm and make a list of whatever descriptions come to mind in their journal or on a piece of paper, and then edit those thoughts by writing a complete sentence or two describing the plant on a blank card. The goal is to give such telling details that a classmate will be able to identify the plant by the description. Students should ask themselves: *How can I say the most about this plant in two sentences or less?* The only stipulations are that they cannot give the name of the plant, if they know it, or describe any characteristic not found in the photograph (e.g., the place it is found in great numbers locally). Encourage them to use simile and other figurative language in their descriptions. Let them know that the common names for many plants can be descriptive. For example, the buttercup flower is cup-shaped and is butter yellow.

2. Allow a set time for the exercise—five to ten minutes. Ask students to write their names or initials in a corner of the card when they are done. Collect the cards and redistribute them at random, so that each student has another's card. Everyone will now try to deduce which plant the assigned card describes. Ask students to circle the words or phrases on the card that seem especially descriptive.

3. Go around the room and ask each student to read the description on the lined side of the assigned card and to announce his or her guess of the plant in question. In a discussion, have students confirm or correct the guesses of their classmates. Ask those who guessed correctly: *What were the words that best described the plant?* If a guess was incorrect: *What other words might have been helpful?*

4. Conduct a class brainstorming session in which students suggest words and phrases that describe all of the plants. Record the responses on the board. Use the brainstorming list to compose, as a class, a paragraph that answers the question *What is a plant?*

Extensions

Apply the lesson to native and non-native plants in the schoolyard, having students find the plants, then take photos or samples of the plants to repeat this activity.