LESSON 12

What's in a Name?

Grade level: K-8
Subject Areas: Biology
Duration: 30 minutes
Setting: Classroom
Season: Any
Conceptual Framework Topics: Plant ecology, habitats, invasive species

OBJECTIVES

Students will learn why some plants are considered weeds. They will understand the meanings of the terms *weed, native, non-native, invasive, and noxious*.

METHOD

Students examine plants and pictures of plants that illustrate examples of non-native ("out of place") species. These may be considered weeds, some of which are further categorized as invasive and/or noxious. They discuss how these terms are applied to different plant species.

MATERIALS

- ✎ Two small containers – Place grass in one and flowers (weeds such as oxeye daisy, toadflax, etc. if possible) in the other.
- ✎ Chalkboard or chart paper
- ✎ Photos of plants representing "out-of-place", non-native and invasive species (use samples provided or your own):
  1. a cactus in a rainforest and/or a lush plant in a desert ("doctored photos");
  2. a common Montana invasive plant, such as knapweed or leafy spurge, shown invading an area and changing the landscape;
  3. a scene of domestic flowers in a yard

BACKGROUND

There are many terms used to describe plants growing in ways and places that are undesirable to people. Some of these terms are used interchangeably by some people while others make very clear distinctions among how the words are used. This may create misunderstanding or confusion among those attempting to manage plants, let alone someone just beginning to learn about the subject!

Weed is a subjective word used to describe any plant growing where it is not wanted, for various reasons.

The term *native* (or *indigenous*) is applied to species that are growing in a region where they occur without having been transferred there through direct or indirect human actions. These species have adapted to the environmental conditions of their native range, including the influence of other species, over thousands or millions of years. (Species living in North America prior to European settlement are generally considered native.) *Non-native* species

(also referred to as *alien, exotic, foreign, introduced,* or *non-indigenous*) are those growing outside of their known native, natural or historic range. A non-native species may be from another continent, another part of the same continent, or even from a different part of the same region. For example, in Montana there are non-native species that are from other continents (e.g., Russian knapweed), other parts of North America, and different parts of the Rocky Mountains (e.g., Colorado blue spruce). Some plants are introduced intentionally, as ornamentals, livestock forage, windbreaks, or to improve wildlife habitat. Others are transported unknowingly by being mixed with other plants or seeds, or adhered to vehicles, shoes, clothing, livestock, pets, or other mobile items.

Many non-native species do not grow well in their new habitat because they have not adapted to the particular conditions present there. In Montana, for example, many species may not be able to survive the low moisture levels found in Montana soils throughout much of the growing season, or they may not tolerate the extreme cold temperatures during the winter. These species may not survive at all without assistance from humans, or they may grow only near water sources or in sheltered sites.

Other introduced species, however, come from similar habitats and are well-adapted to the growing conditions found in their new range. Some of these species are also "freed" from the predators, diseases, or close competitors of their native range, and may spread rapidly and displace other vegetation. These are considered *invasive*. The National Invasive Species Information Center (NISIC) defines invasive thus:

An 'invasive species' is defined as a species that is 1) non-native (or alien) to the ecosystem under consideration and 2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants, animals, and other organisms (e.g., microbes). Human actions are the primary means of invasive species introductions.

The application of the term invasive, like that of weed, is somewhat subjective and depends on variable human values.

Noxious weeds are invasive plants that have been given special designation through a state or federal law. These laws are designated to protect agricultural production and natural areas by mandating and regulating the control of invasive plants.

Why should we care about invasive plants?
Invasive plants can:

- Reduce agricultural production, including livestock forage
- Displace native vegetation, including rare plants
- Degrade or eliminate habitat for wildlife
- Increase soil erosion
- Alter the frequency and intensity of fires
- Alter hydrologic regimes and degrade water quality and fish habitat
- Decrease ecosystem stability by lowering biodiversity and interrupting natural processes and interactions among species

PROCEDURE

1. Begin by showing your students the two containers filled with grass and flowers. Ask them to describe what they see in each. How are the contents of the containers the same and how are they different?

2. Now ask the students if they have heard of weeds. Ask them what a weed is. If necessary, give them the definition above and discuss its subjective nature. Ask them if they think the plants in the containers are *weeds.* Explain that if you are trying to grow grass, a flower is considered a weed. If you are trying to grow flowers, grass is considered a weed. Ask them if they know of any weeds that can be found at their school, home, park, etc. How might two people have different ideas about whether a particular plant is a weed or not?

3. Now show the students the picture of the tropical plant in the desert (Photo 1). Ask them to describe what they see. What's wrong with this picture? Where do these plants usually grow? Explain the terms *native* and *non-native,* or *introduced* species.

4. Next show students the pictures of knapweed and leafy spurge (Photos 2 and 3) from **http://mtwow.org.**) Ask them what they notice about this picture. They may not notice anything unusual. Explain that these are also non-native species. They differ from the ones in the first picture because they are *well-adapted* to where they are growing, since they came from (evolved) in a similar place, or *habitat*. Are they considered weeds? Remind them of the definition. It depends on the perspective, although most people consider these species weeds in Montana. Would they be considered weeds in Eurasia where they are native?

5. Show the picture of cultivated flowers in a garden or a lawn (Photo 4) and discuss these questions again.

Extensions
Have students research and prepare a short report on one of the noxious weeds of Montana, using one of the resources listed in this guide or others. Students can share their reports with the class.

6. Now ask your students what differences they notice between the last two pictures. In one photo, the non-native plants are *invasive*—they are taking over, or invading, the other vegetation around them and they are identified as *invasive plant species* by land managers. In the garden photo, they are simply non-native or exotic species which, at least at this time, do not seem to pose any threat to the landscape and were actually planted in this location. Review again how the terms might apply. Are they native or non-native? Are they invasive? Are they weeds? Discuss until you feel your students understand the terms.

7. Ask students if they can think of any problems that might be caused by invasive plants. Help them come up with the items on the list above – and any others they can think of! Ask them to make a list of how invasive plants might affect their own lives.

8. Explain how the term *noxious* is used to designate certain invasive species and that there are laws that require the control of noxious species, because of the reasons above.

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

Photo: J. Carlson