

LESSON 13

A Weed by Any Other Name ...

OBJECTIVES

Students will understand the meanings of the terms *weed*, *native*, *non-native*, *invasive*, and *noxious*. They will learn why invasive plants cause ecological damage and affect humans.

METHOD

Students watch a slideshow (PowerPoint) that challenges them to consider and discuss examples of non-native (“out of place”) species, some of which are considered weeds, some of which are invasive and noxious. They discuss how these terms are applied to different plant species, and how context and perspective influence how and when they are used.

MATERIALS

- ✎ Introductory PowerPoint from the *kNOweeds Guide* CD or at http://missoulaeduplace.org/weeds_curriculum.shtml
- ✎ White or chalk board for brainstorming

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, through 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

Grade level: 6-12

Subject Areas: Biology

Duration: 1-2 class periods

Setting: Classroom

Season: Any

Conceptual Framework Topics:

Plant ecology, habitats, invasive species

(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 especially 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 the ***Introduction to Weeds*** PowerPoint and encourage your students to consider and discuss the concepts and terms introduced. Use the following notes for each slide to encourage the discussion.

Slide No.	Notes
1.	Discuss that they are all growing in places most people would not want them to grow. They are “out of place.” If the term “weed” doesn’t come up, ask students if they consider them weeds. Ask for their definitions of a weed.
2.	Discuss the subjective nature of the word “weed” and how its meaning might vary from person to person, depending on perspective.
3.	Ask them to describe what they see. What’s funny about this picture? Why? Where would this plant usually grow? Have they heard of native species?
4.	Discuss the terms native and indigenous.
5.	Discuss non-native species and then ask students how non-native plants might be introduced to a new place. Brainstorm a list.
6.	Did they think of all of these modes of introduction? Have they thought of others not on this list?
7.	Ask them what they notice about this large picture. Explain that these are also non-native plants. They differ from the ones in the desert picture they just saw 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.
8.	Discuss the differences between non-native plants like knapweed and garden flowers. In one case, 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, introduced, or exotic species which, at least at this time, do not seem to pose any threat to the landscape.
9.	Ask what might make a plant invasive. Brainstorm ideas.
10.	Did they think of all of these points? Now ask what kinds of traits they think might make a plant successful at invading a new area. Make a list.
11.	Discuss.
12.	Discuss. Now ask if they have heard of the term “noxious weeds”. Can they deduce what it means?
13.	This is the only one of these terms that has any legal meaning.
14.	Noxious weeds have been spreading rapidly for the past 100 years. For example, spotted knapweed arrived on the west coast in 1893 on the San Juan Islands in Washington. By 1920, this weed had established in over 24 counties in three northwestern states, with several large infestations near Missoula. Now, spotted knapweed has been reported from every county in the western United States and has invaded about five million acres in Montana alone.
15.	How many Noxious Weeds of Montana can your students name?
16.	Can your students identify any of these plants? Why might it be important? Besides being legally responsible for controlling noxious weeds, why should they care about invasive plants? Can they think of problems invasive plants might cause? Brainstorm a list.
17.	Did you think of all these? Discuss these problems caused by invasive plants.
18.	Discuss these problems caused by invasive plants. Are there more?
19.	Can your students think of personal reasons to care about invasive plants? Are there places they like to go that have been invaded by noxious weeds? What can they do personally to help prevent the spread of invasive plants?

2. Next, discuss in small groups or as a class the following scenarios:

- You work for the U.S. Department of Agriculture, and a nursery company requests approval to bring a new species of plant into the U.S. for use as an ornamental plant. What kinds of questions would you want to ask about this plant to determine if it is likely to become invasive?
- You are conducting a survey to discover the distribution of an invasive plant species that colonizes disturbed areas and has just entered your county. Draw a diagram or map of where you would expect it to occur. Now, assume it is 15 years later and no one has tried to control this species. How has its distribution changed? Draw an updated map of its distribution. Would the distribution be different if control measures had been taken?

3. Have students research one of the noxious weeds of Montana, using resources listed in this guide or others. They can create an invasive species profile using the attached worksheet or their own ideas. You might want to expand it into a small poster requirement with class presentations.

Name _____

Invasive Plant Profile

Species:

Country or area of origin:

How was it introduced to the U.S.? To Montana?

When and where was it introduced?

What is its current distribution in the U.S. and in Montana?

What characteristics make it a successful invader?

What kind(s) of habitat does it live in?

Does it invade only disturbed areas or also undisturbed sites?

Does it seem to outcompete or displace other plants where it invades?

Does anything in Montana eat it? If so, what?

What problems does it cause where it invades?

Are there successful measures to control it? If so, what are they?

Is it being controlled locally?