

LESSON 37

The Great Race for Survival

OBJECTIVES

Students will understand that invasive plants compete with native plants for resources, and can often spread aggressively and negatively impact native plant populations.

METHOD

Students participate in a game in which each person represents a noxious weed or a native plant. Environmental factors are introduced, illustrating how invasive plants can outcompete native plants in a new environment.

MATERIALS

- ✏ 10 yellow cards with the names/pictures of noxious weeds
- ✏ 10 green cards with the names/pictures of native plants.
(All plants listed in **Procedure** except for Cheatgrass can be found in *Coloring Pages* in the back of this guide)
- ✏ Tape measure

BACKGROUND

Plant competition for limited resources can be likened to a race for survival. Invasive plants, in the absence of the limiting factors they evolved with in their place of origin (i.e. disease, insect predation and interspecific competition), can increase in population size rapidly and negatively impact native plant populations. Invasive plants are listed as *Noxious Weeds* in Montana if when established they become destructive and difficult to control by ordinary means of farm practices. It is the legal responsibility of the landowner to control these invasive plants per the Montana County Noxious Weed Control Act.

In this lesson, noxious weeds and native plants compete under a range of conditions and herbicide treatments. The results illustrate to students that invasive species can be aggressive competitors against our state's native plant populations. Weed management is important for protecting Montana's natural heritage and reducing the impact of invasive plant species.

PROCEDURE

Students are going to become plants in a "race for survival." Give each student a plant species card. There are 20 cards. You may have to double-up students assigned to one card or give more than one card to some students, depending on the number of students in the class.

Line up students at a starting line, indicating they will move towards a designated "finish line." Read the following out loud:

Grade level: 3-8

Subject Areas: Biology, ecology

Duration: 30 minutes

Setting: Outdoors

Season: Fall or Spring

Conceptual Framework Topics:

Plant ecology, invasive species ecology, and weed management

Extensions

Students identify local native plants and invasive plants of local concern and gather detailed information on their growth, reproduction, ideal growing conditions, method(s) of spread, and for the weeds, suggested approaches to their control and how those methods will affect other plants in close proximity. The class will then use what they have learned to create a more extensive version of this game, which will include weed control treatments.

1. It is early spring. Rain, snowmelt, warm temperatures, and long days result in rapid plant growth. Plants send up new shoots from the soil, and seeds have started to grow. **Everyone step forward five steps.**
2. The soil along this road bed contains many more seeds from some types of plants than others. **Cheatgrass and spotted knapweed step forward two steps. houndstongue step forward eight steps.**
3. The growing season continues to be favorable. **All plants step forward ten steps.** Cheatgrass completes its life cycle the fastest, and it produces seeds long before the other species. **Cheatgrass step forward five steps.**
4. A few species are capable of producing chemicals that they release into the soil. These chemicals inhibit the growth of nearby plants. Spotted knapweed plants raise your hand. **Any plant within arms length of this plant step backward three steps.**
5. As the growing season continues, drought hits this area and plant growth slows. Deep-rooted plants do best. **Leafy spurge and Dalmatian toadflax step forward two steps.**
6. Summer storms and slightly cooler temperatures improve growing conditions for all plants. **All plants step forward six steps.**
7. Leafy spurge, raise your hand. This plant pops its seeds up to 15 feet from the base of the plant, like popcorn. This allows this plant to spread its seeds downstream for hundreds of miles! **All plants within 15 feet of leafy spurge step backward three steps.**
8. Plants continue to grow, but shorter days slow their growth. **All plants step forward four steps.**
9. Much energy is now devoted to food storage and seed production. **All plants step forward two steps.**
10. Some plants release seeds. Those that are able to produce a lot of seeds help ensure their success. Dalmatian toadflax produces 500,000 seeds per plant. **Dalmatian toadflax step forward five steps.**
11. **End the game and see which plant(s) have won the race!**

Discuss the following with the students:

Who won the race?

Why were some species more successful than others?

Which plants were most successful, the invasive species or native species?

What are some of the characteristics that enabled invasive species to succeed?

When weeds “win” or survive, what happens to other plants?

What are the consequences to other plants, animals and humans?

When invasive plants win or survive, who loses?