

LESSON 44

The Restoration Cycle

OBJECTIVES

Students will be able to describe the seasonal cycle of plant restoration and explain the importance of long-term, continuous restoration planning.

METHOD

Students will develop posters representing the cyclical (seasonal) nature of restoration work. The poster can serve as a timeline and display of the restoration project process. *This lesson could be used for planning a weed removal/restoration project as part of **Lesson 41: Pulling Together** in this guide, or other class restoration project.*

MATERIALS

- ✏ Glue
- ✏ Tape
- ✏ Markers, crayons and other art supplies
- ✏ Scissors
- ✏ Poster paper
- ✏ Previously pressed weeds & native plants
- ✏ Props or pictures that represent seasonal weather, restoration work, tools, and plants.

BACKGROUND

In order to restore a natural area, it is important to develop a restoration plan, which includes specifying what the goals are, including what the desirable plant population is for the site. For example, if the goal is to restore a natural area to a similar plant diversity it had before weeds invaded the area, you will need to identify which plants occurred naturally on site and in what relative proportions, what needs to be done before these plants can be re-established (such as weed removal, soil amendment, erosion control), and how the plants will be re-established.

In Montana, restoration work is often planned around the following activities and seasons:

- Propagation (the production of more plants by seeds, cuttings, grafting or other methods. Greenhouses are often used): Fall, Winter
- Planting: Fall, Spring
- Flowering: Spring, Summer
- Seed Collecting: mid-Summer to late Summer

Grade level: 2-5

Subject Areas: Life science, ecology

Duration: 1 class session with follow-up

Setting: Outdoors/Indoors

Season: Any

Conceptual Framework

Topics: Integrated weed management, weed control, habitat restoration, plant biology

PROCEDURE

1. Collect the necessary poster supplies from the materials section.
2. Identify a local natural area that is invaded by weeds to use as the example for this lesson. Find out what native plants are desirable for the site, and what weeds should be removed from the site. Ask students to find out the following about these plants:
 - What is the best way to propagate this native plant?
 - When is the best time to plant this native plant outdoors?
 - At what time of the year does this plant flower?
 - When is the best time to collect this native plant's seeds?
 - What are the best ways and best times of the year to remove this weed?
 - How can we control this weed long-term?

*(See the **Resources** section of this guide for sources of information)*

3. Explain to students that we will look at how we can help restore lands year-round, and then create a Restoration Cycle Calendar for display, which can be used to plan a restoration project for our selected site or for an imaginary one.

4. Ask Students: What is a *restoration cycle*?

*Teacher Help: Start by dividing the term up and defining. **Restoration:** To return and improve the ecological health of an area or habitat. **Cycle:** A series of events that repeat themselves so that they are never ending.*

5. Ask students to list the four seasons. For each season have students imagine/ list what the weather is like and what is happening in the life cycle of the plants in our local ecosystems. Have students also list what types of restoration work can be done during each season.

*Teacher Help: **Montana Seasons***

***Late Fall, early Winter** – snowy, windy, wet, cold*

Move trays/pots of planted seeds outdoors to overwinter or plant seeds that need cold treatment in ground before it is too frozen to plant.

Continue to care for indoor plantings.

***Spring** - rainy, windy, sunny, cool*

The natives are germinating and growing, some natives flower. Make plant pressings of flowers. Take pictures.

Make room for native plants - Clear out invasive plants before they can flower and go to seed and increase the seed bank.

Summer - dry, sunny, warm

Seeds are produced.

Collect native seeds to plant later.

Remove the weed plants and seeds to prevent future weeds.

Fall – sunny to rainy, warm to cold

Sow the native seeds in flats/pots. If they need cold treatment, move outdoors; if not, grow in greenhouse or other suitable location.

Prepare soil at site for planting and propagation.

6. Explain to students that we are going to construct and decorate a cyclical calendar of restoration for a local site we would like to restore (one that has been invaded by weeds, is suitable for native plant restoration, and can be watered and cared for regularly by the class). Distribute poster-making materials. Have students:

- Design and decorate a central poster labeled “The Restoration Cycle.”
- Label the cycle goals (i.e. weed removal, propagation, planting, etc.) that correspond with each season on separate sheets of poster paper.
- Feature certain species of weeds and natives that are significant to a particular season in the posters.
- Focus on the times that are best for collecting seed and propagating particular native plants.
- Focus on the times and methods that are best for removing unwanted plants.

7. Divide the class into four teams (1 team for each season) and have students create a poster to depict what the site looks like before restoration, during the restoration, and once the project is complete- this is a depiction of the restoration cycle for their chosen site. They can decorate their own posters using various media. Students could include plant pressings and photographs. Encourage students to be creative.

8. *Note:* Remind students that we will continue to add to the posters in the future. If students have an idea or contribution that may take more time to work on, use it as a platform for returning to the cycle.

9. Have students present their poster to others. In their description ask students to explain what a restoration cycle is and what needs to be done during their season. Have students explain why it is important to plan ahead for their season.

Extensions

1. Have students explain what might happen if the restoration cycle is broken. How could it be broken? What would be lost?

2. Using the Restoration Cycle posters developed for this lesson, embark on a class restoration project. You may want to follow the steps in **Lesson 41: Pulling Together** in this guide if you plan to use weed pulls for weed removal on your selected site.