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# Managing Your Restoration

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## Activity Overview

Students learn about plant and garden care while managing a new restoration.

## Objectives

Students will:

- Understand plant needs for growth and survival
- Learn basic land care principles
- Participate in a service learning project

## Subjects Covered

Science and Physical Education

## Grades

3 through 12

## Season

Spring, Summer, Fall

## Activity Time

50 minutes

## Materials

- Gardening gloves, trowels
- Water source, recycled milk jugs or equivalent
- Optional: Buckets, wheelbarrow, or plastic garbage bags

## State Standards

### Science:

Find connections among living and non-living things (F.4.4)

Understand an organism's behavioral adaptations (F.8.7)

Explain survival and population growth of species (F.8.9)

Investigate cooperation & competition (F.12.7)

Infer changes in ecosystems (F.12.8)

Understand how sensory & nervous systems react to environment (F.12.12)

## Background

An ecological restoration planting will regularly need some maintenance to remove weeds and dead plant material. Native plant restorations do not need fertilizers, winter protection, or irrigation. Native plants are adapted to the climate and soils and can tolerate excessive heat, bitter cold, drought, and flooding.

The first several years require the most care while the plants are establishing themselves in the garden. As they are maturing the first year, they need regular watering to encourage good root development. Make sure that the water soaks deeply into the ground. A short sprinkle of water encourages the roots to grow along the surface, which makes them less hardy during droughts and freezing temperatures.

Pull weeds to reduce competition for space, soil nutrients, light, and water. Most weeds are pioneer species, which means they grow very quickly. They fill in the open spaces and often can crowd out new plants. Spreading a three inch layer of wood chips or leaf mulch around the new plantings helps control some of these weeds.

Instead of burning the site, which may be very difficult to do in an urban setting or if the site is close to buildings, you can mow the site to cut back the weeds and stimulate growth of the native plants. Mow the site in early spring when the weedy plants are taller than the natives. Another option is to mow the site in the fall, when the native plants have gone dormant and the weeds, like buckthorn, honeysuckle, garlic mustard and dames rocket, are still green. You can mow at these times for the first several years or as long as it takes until the native plants dominate over the weeds.

Much of the maintenance occurs during the summer months. Therefore, before summer vacation, enlist volunteers to monitor, water, weed, and possibly mow the site during summer vacation. Local garden clubs, summer school students, scout groups, families, Wild Ones members, and Master Gardeners may be willing to volunteer during the summer.

The basic elements of a management plan are:

- Where to work: this could be along edges or paths, or the whole site
- What and when to work: take note of when specific weeds appear and when they flower, so you can remove them before they set seed and spread in the garden
- Other activities in a management plan might include watering, spreading mulch, mowing the site, or collecting seeds

## Managing Your Restoration (cont.)

- How to work: for most weeds, pulling the plant is enough. In general, control recommendations are:
  - Cultural: monitor plants before they become a problem; make sure your mulch doesn't contain weed seeds
  - Biological: sometimes land care managers introduce a plant's natural enemies, such as specific insects or bacteria, to control a weed species
  - Mechanical: prescribed burning, mowing, cutting, girdling, and pulling are ways to physically remove a plant. These methods imitate natural processes, so they are preferred. Because of soil disturbance, sometimes it is helpful to replant or reseed areas of bare soil so that weed seeds don't re-grow. Another option is to mulch bare patches of soil after it is weeded.
  - Chemical: on particularly persistent invasive plants, sometimes herbicides are used, such as Round-up, Kleenup, Ranger, and Rodeo (for wet areas). Follow the manufacturer's instructions carefully.

Here is an example of a management plan chart. This chart can be modified to be more general or detailed so that it includes specific dates when activities occurred.

Restoration Management Plan for Year 1				
Management Activity	Spring	Summer	Fall	Winter
Planting and Seeds	Plant native plants, mulch around plants		Collect seeds	Watch for birds on seed heads
Watering	Water site once a week for first 3 weeks	Water site every 3-4 weeks, if needed	Only water if in drought	
Weed control	Pull garlic mustard, dame's rocket, etc., Girdle aspen trees	Pull bindweed, burdock, thistle, clover, spurge, wild parsnip, ragweed, etc.	Cut down or remove honeysuckle and buckthorn before they set fruit. Dig up oriental bittersweet	
Mowing	Cut back old growth. Mow weeds when they are taller than native plants – use a clipper or string trimmer so that new plants don't get smothered	Clip every 6 weeks. First clip to a height of 4", then 6", then 8"	Mow site when native plants are dormant and invasive species are still green	
Trail maintenance	Chip paths with wood chips, etc.	Weed along paths. Cut back plants that have fallen over path		
Compost	Start compost pile	Turn compost pile		Cover compost pile for winter

## Managing Your Restoration (cont.)

Restoration Management Plan for Year 2				
Management Activity	Spring	Summer	Fall	Winter
Planting and Seeds	Mulch around plants. Reseed and plant bare patches.	Collect seeds. Reseed areas if there are bare patches of soil after weeding.		Watch for birds on seed heads
Watering	Water new plants or newly seeded areas.	Only water if in drought.	Only water if in drought.	
Weed control	Pull garlic mustard, dame's rocket, etc. Girdle aspen trees.	Pull bindweed, burdock, thistle, clover, spurge, wild parsnip, ragweed, etc.	Cut down or remove honeysuckle & buckthorn before they set fruit.	Dig up oriental bittersweet
Mowing	Cut back old growth. Mow weeds when taller than native plants.		Mow site when native plants are dormant and invasive species are still green.	
Prescribed burn				
Trail maintenance	Pick up trash. Re-chip paths with wood chips, etc.	Weed along paths. Cut back plants that have fallen over path.		
Compost	Turn compost pile.	Turn compost pile.	Turn compost pile.	Cover compost pile for winter.

### Activity Description

#### Year 1

#### Watering

1. For the first three weeks after planting, water the restoration once per week. It is not necessary to water during a given week if one-inch of rain accumulates.
2. Water the garden during droughty periods in mid-summer, if needed.

#### Weeding

1. Identify if the plant is a weed or a native plant. Once weeds are identified, assign a specific weed for each student or group of students to hand pull. This ensures that only the weeds are removed. Have students look closely at the weed to become familiar with the leaf shape and arrangement, flower structure, height, and other noteworthy features.
2. Remove the plants carefully in order not to disturb the native species. Pull from the base of the plant. It is easier to pull the plants when the weeds are young and small or the day after a rainfall.
3. Keep track of how many different weeds are pulled and how many of each kind. Take notes in a journal that records the date, weeds, and how many pulled.
4. Take the pulled weeds to a compost pile.

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## Managing Your Restoration (cont.)

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5. Return to the classroom, and make a chart of the weeds pulled. Save the charts to compare with future weeding sessions. Take note of how numbers and weeds change over time. This will also help track which weeds to look for at what time next year.

Check status of weeds and pull them, if necessary, once every three weeks during the summer. A layer of mulch helps to reduce weed growth and therefore weeding time.

Keep stems and seed heads on during winter for visual interest, wildlife cover, food for birds, and winter lessons.

### Year 2

#### General Maintenance

In spring when new growth begins, cut off dead plant material and compost it.

#### Watering

Only water if in a drought.

#### Weeding

Continue weeding as needed. Native plants will fill in the spaces and form a dense root mass, which will significantly reduce weeding over time.

Continue to weed the garden every three weeks or so during the summer.

### Beyond Year 2

#### General maintenance

Each spring when new growth appears, cut back dead plant material and compost it.

#### Burning

If permitted in your community, burn the restoration in the spring. Write a prescribed burn plan and prepare the site for a burn. Check with your fire department about burning regulations, and obtain a burn permit before you conduct a prescribed burn.

Conduct the burn.

#### Litter Removal

### Extensions

- Modify the Management Plan chart based on Year 1 and Year 2 data that was collected.
- Create a map of the restoration and mark where the invasive plants grew and when they were weeded. Also, mark trail maintenance or replanting activities on the map.
- Create a field guide of the native plants and weeds.
- Identify and research the native and weed species. Find out if the weeds are native or non-native. Learn about their history and life cycles.

### Additional Resources

- The Seeds and Weeds section of the RESTORE Leadership Institute resource binder.

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## Managing Your Restoration (cont.)

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- Check your state Department of Natural Resources for images of non-native plants.
- Czarapata, Elizabeth J. (2005). *Invasions of the Upper Midwest: An illustrated guide to their identification and control*. Madison, WI: University of Wisconsin Press.
- Kurtz, Carl (2001). *A Practical Guide to Prairie Reconstruction*. Iowa City, IA: Iowa University Press.
- Packard, Stephen & Mutel, Cornelia (Ed.) (1997). *The Tallgrass Restoration Handbook for Prairie, Savannas, and Woodlands*. Washington, DC: Island Press.
- Royer, France, Dickinson, Richard (1999). *Weeds of the Northern U.S. and Canada: A guide for identification*. Edmonton: University of Alberta Press and Renton: Lone Pine Publishing.
- Shirley, Shirley. (1994). *Restoring the Tallgrass Prairie: An Illustrated Manual for Iowa and Upper Midwest*. Iowa City, IA: Iowa University Press.
- “Weeds of the North Central States.” (1981). University of Illinois at Urbana-Champaign, IL, (Available at County Extension Offices.)

### Websites

- National Gardening Association: <http://www.garden.org/home>
- Kids Gardening: <http://www.kidsgardening.com/>
- Department of Natural Resources websites
- Bureau of Land Management Learning Landscapes Invasive Species website  
<http://www.blm.gov/education/LearningLandscapes/explorers/lifetime/invasive.html>
- Midwest Invasive Plant Network Invasive Plant Education Materials  
<http://mipn.org/EducationMaterials.pdf>
- National Park Service - Alien Plant Invaders of Natural Areas Fact Sheets  
<http://www.nps.gov/plants/alien/fact.htm>
- Wisconsin Department of Natural Resources - Invasive Species Fact Sheets  
<http://www.dnr.state.wi.us/invasives/plants.asp>
- Wisconsin Department of Natural Resources -- Non-Native Plant Species photo gallery  
<http://www.dnr.state.wi.us/invasives/photos/index.asp?SF=Common>
- National Invasive Species Information Center: <http://www.invasivespeciesinfo.gov>
- Weed Science Society of America: <http://www.wssa.net/weeds/ID/index.htm>

### Assessments

- Develop a poster describing the importance of weeding.
- Identify one weed in your restoration project, and describe techniques for removing it from your restoration project. Recommend a preferred option for your site and why.
- Write a persuasive speech to convince your friends to care for the restoration plot.
- Describe three actions needed to implement a management plan.