
Managing Your Restoration

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

Grades

3 through 12

Activity Time

50 minutes

Season

Spring, summer, fall

Materials

Gardening gloves, trowels, water source, recycled milk jugs or equivalent, buckets (optional), wheelbarrow (optional), or plastic garbage bags (optional)

Modified from Earth Partnership for Schools K-12 Curriculum Guide, University of Wisconsin Board of Regents.

Background

An ecological restoration planting will regularly need some maintenance to remove weeds and dead plant material.

Fortunately, time spent caring for the restoration decreases over time. Native plant restorations do not need fertilizers, winter protection, or irrigation. Native plants are adapted to the local 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 restoration. 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, which is equivalent to a one-inch rainfall. A short sprinkle of water encourages the roots to grow along the surface, which makes them less hardy during droughts and freezing temperatures.

It is important to 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 crowd out new plants. Additionally, they give the garden a messy, unkept appearance. Spreading a three inch layer of wood chips or leaf mulch around the new planting 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, and/or 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 restoration edges, paths or the whole site.
- **What to Work 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.

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- **How to Work.** For most weeds, pulling the plant is enough. However, further control recommendations are:
 - Cultural:** make sure your mulch does not contain weed seeds and monitor plants before they become a problem.
 - Biological:** sometimes land care managers introduce a plant’s natural enemies, such as specific insects or bacteria known to control a particular weed species.
 - Mechanical:** These methods imitate natural processes, so they are preferred. Prescribed burning, mowing, cutting, girdling, and pulling are ways to physically remove a plant. Because of soil disturbance, sometimes it is helpful to replant or reseed areas of bare soil so that weed seeds do not re-grow. Another option is to mulch bare patches of soil after it is weeded.
 - Chemical:** on particularly persistent invasive plants, sometimes herbicides such as Round-up, Kleenup, Ranger, and Rodeo (for wet areas) are used. Follow the manufacturer’s instructions carefully.
- Other activities in a management plan might include watering, spreading mulch, mowing the site, or collecting seeds.

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 do not 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. | |

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| | | | | |
|--------------------------|----------------------------------|---|--|--------------------------------|
| 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. |

| 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 and 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.

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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 - record the date, weed names, and how many of each were pulled.
4. Take the pulled weeds to a compost pile.
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.

Year 2

General Maintenance

In spring, when new growth begins, cut off dead plant material and compost it. Keep stems and seed heads on during winter for visual interest, wildlife cover, food for birds, and winter lessons.

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, clip back last years growth and compost it.




Litter Removal

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.

Extensions

- Modify the Management Plan chart based on Year 1 and Year 2 data that was collected.
-  Use GPS units and GIS mapping software to create a map of the restoration site and mark where the invasive plants grew and when they were weeded. Also, mark trail maintenance or replanting activities on the map.
-  Use photos taken on site to create a digital field guide of the native plants and weeds.
-  Use the internet to research different management strategies. Design and digitally record a restoration management plan.

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- 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

- Czarapata, Elizabeth J. 2005. *Invasions of the Upper Midwest: An illustrated guide to their identification and control*. Madison: University of Wisconsin Press.
- Kurtz, Carl. 2001. *A practical guide to prairie reconstruction*. Iowa City: Iowa University Press.
- Packard, Stephen and Cornelia Mutel Ed. 1997. *The tallgrass restoration handbook for prairie, savannas, and woodlands*. Washington, DC: Island Press.
- Royer, France, and Richard Dickinson. 1999. *Weeds of the Northern U.S. and Canada: A guide for identification*. Edmonton: University of Alberta Press and Renton: Lone Pine Publishing.
- “Weeds of the North Central States.” 1981. University of Illinois at Urbana-Champaign. (Available at County Extension Offices.)
- Yatskievych, Kay. 2000. *Field guide to Indiana wildflowers*. Bloomington: Indiana University Press.

Websites

- Indiana Native Plant and Wildflower Society (INPAWS) Invasive Plant Species: <http://www.inpaws.org/Invasive%20Plants%20in%20Indiana.html>
- INPAWS - Common Invasive Plant Species of Indiana Brochure: <http://www.inpaws.org/InvasivePlants.pdf>
- E Nature: http://www.enature.com/native_invasive/invasives.asp
- National Gardening Association: <http://www.garden.org/home>
- Kids Gardening: <http://www.kidsgardening.com/>
- Bureau of Land Management Learning Landscapes Invasive Species: <http://www.blm.gov/education/LearningLandscapes/explorers/lifetime/invasive.html>
- Midwest Invasive Plant Network (MIPN): <http://mipn.org/>
- National Park Service - Alien Plant Invaders of Natural Areas Fact Sheets: <http://www.nps.gov/plants/alien/fact.htm>
- 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 and describe proper techniques for its removal. 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.