

Brush Management

Control of Barberry (*Berberis spp.*)

Conservation Practice Specification Guide **MA-314**



Japanese Barberry (*Berberis thunbergii*)



Common Barberry (*Berberis vulgaris*)

General Specifications

A conservation plan shall be prepared in accordance with the criteria and general specifications of the Brush Management (314) conservation practice standard. The conservation plan also will describe the requirements for applying the practice to achieve its intended purpose(s).

Specifications for applying this practice shall be prepared for each site and recorded and filed using approved jobsheets.

General Criteria

- An *invasive* species is one that displays rapid growth and spread, establishes over large areas, and persists. Invasiveness is characterized by robust vegetative growth, high reproductive rate, abundant seed production, high seed germination rate, and longevity. Some native plants exhibit invasive tendencies in certain situations.
- Early detection and eradication of invasive plants, before they become well established, is an important component of any invasive plant control plan.

- Follow the attached brush management component of the overall conservation plan.
- Methods of herbaceous weed control must comply with Federal, State, and local regulations. This includes reading and following pesticide labels.
- All necessary pesticide applicator licenses/permits shall be obtained.
- Control methods will be designed to protect and encourage the growth of desirable native plant species.
- The control methods will be used in a manner that does not degrade aquatic resources. Where pesticides are planned, a risk analysis (Win-PST) and appropriate mitigation will be completed.
- The control method(s) used will be designed to protect the soil from erosion and to avoid the degradation of soil quality.
- Disposal of noxious or invasive plant species from the site treated will be by appropriate methods (e.g., burned, piled, contained) to lessen the potential for the plants or their propagules (seed, shoots, stems, etc.) to repopulate the site or spread to new areas.

- Be prepared to control seedlings that may establish following removal of larger plants and near brush piles.

Considerations

Consider choosing methods of control that cause no or limited soil disturbance. Disturbed soil may lead to increased germination of invasive plant seeds.

Barberries

Japanese and common barberries are native to Eurasia. Japanese barberry, the more common species, poses a significant threat to natural areas due to its popularity as a landscape shrub, ability to tolerate full shade, and the dispersal of its prolific seeds by birds. Common barberry is found sporadically in New England, usually establishing in pastures, open-canopied forests, and sometimes along roads.

Japanese barberry forms dense stands in natural habitats including woodlands, wetlands, and pastures, and alters soil pH, nitrogen levels, and biological activity in the soil. Reproduction is primarily through prolific seeds (high germination rate) although there are also reports of sprouting from roots as well as vegetative layering. Seeds are spread by birds and mammals.

The barberries are compact, spiny shrubs that commonly grow from two to three feet tall but may reach eight feet with yellow-colored inner bark. Japanese barberry has alternate and entire (smooth margins) leaves with small (<1/2" wide, 6 petals) yellow flowers growing alone or in umbels (flower stems growing from single point) with single spines. Common barberry has alternate leaves with bristle-toothed margins and spines are typically in groups of three. It has small yellow flowers in a raceme (branching off a main flower stalk). See pictures. The bright red berries persist after leaf off into winter.

Barberries generally leaf-out earlier and retain their leaves longer than many native shrubs. This trait, shared by many invasive shrubs, gives them a competitive advantage over native plants but also allows landowners to easily locate the invasive shrubs and determine their extent on a property.

Similar Natives

There are no native barberries in New England.

Control

As with all invasive species, barberry is most effectively controlled by recognizing their appearance early and removing isolated plants before they begin to produce seed.

Manual, mechanical and chemical methods are all useful to varying degrees in controlling barberry. Removing or killing plants will provide increased light at the site which may lead to a surge of seedlings in the following year. Prepare to monitor and control these outbreaks.

Biological Control

There are no known biological controls of barberry.

Mechanical Control

Mechanical controls include grubbing or pulling seedlings and mature shrubs, and repeated clipping of shrubs. Repeated mowing or cutting will control the spread of Japanese barberry but will not eradicate it. Stems should be cut at least once per growing season as close to ground level as possible. Hand-cutting of established clumps is difficult and time consuming due to the long arching stems and prolific thorns. Grubbing or pulling by hand (using a Weed Wrench or a similar tool) is appropriate for small populations or where herbicides cannot be used. Barberry has shallow roots so small plants may be pulled relatively easily when the soil is moist. Because barberry can re-sprout from root fragments remaining in soil, thorough removal of root portions is important. Manual control works well but may need to be combined with chemical in large or persistent infestations.

Because disturbed, open soil can support rapid re-invasion, managers must monitor their efforts at least once per year and repeat control measures as needed. Limit soil disturbance whenever possible. Winter clipping should be avoided as it encourages vigorous re-sprouting.

Prescribed Burning

Effective control of Japanese barberry can be achieved in a two-step process. An initial early-season to reduce the size of established barberry clumps (mechanical mowing) followed with a midseason treatment of directed heating

with a 100,000 BTU propane torch or targeted herbicide application has proven successful in controlling Barberry.

The initial treatment is done before or immediately after leaf-out. A follow-up treatment (directed heating with a propane torch or targeted herbicide application) in midsummer kills the small sprouts that develop from the root crown. When using directed heating, flame should be applied until individual ramets become carbonized and began to glow, typically from 10 to 40 seconds depending on initial clump size.

To reduce the risk of wildfire, directed flame treatments should be conducted when the leaves on the forest floor are damp or wet, including periods of light to moderate precipitation.

Japanese barberry quickly recovers from the initial treatment in the absence of a follow-up treatment; therefore, the scale of effective control is limited to the scale of the follow-up treatment that can be implemented in a given year. For plots where most barberry clumps are smaller than 150 cm, a single follow-up treatment can be effective.

Two follow-up treatments should be planned in stands where the average clump size is larger than 150 cm. For both follow-up treatment options, some clumps will survive and eradication will require additional treatments the following summer. There is a wide window of treatment opportunities when using directed flame as the follow-up treatment method; a first treatment period extending from March through June and another treatment period extending from July through October.

Chemical Control

Chemical control methods are best done during the fall when most native plants are dormant yet invasive plants are still actively growing. This lessens the risk of affecting non-target plants. The barberry's green leaves will provide easy recognition and allow for a thorough treatment at this time. Winter application of chemicals has proven to be successful as well, and further lessens the risk of damaging non-target species.

Glyphosate (brand names Roundup, and for use near waterbodies, Rodeo) is a nonselective

herbicide which kills both grasses and broad-leaved plants while triclopyr (brand names Garlon, Pathfinder, and others) is a selective herbicide that kills broad-leaved plants but does little or no harm to grasses.

Cut Stump Treatments: For 'cut stump' treatments, horizontally cut the stem near the ground. Leaving some stem will allow another cut and application if there is sprouting. Apply a 20-25% solution of glyphosate or triclopyr and water to the stump being sure to cover the outer, top 20% of the cut stem^{1,2,3}. Herbicide must be applied immediately following the cutting. Add dye or food coloring to the mixture to track treated stumps. This treatment is best applied late in the growing season when the plant is transporting nutrients to its root system (August-October).

Foliar Treatment: For foliar treatments a 2% solutions of glyphosate and water can be used^{1,3}. The treatment should be applied to the foliage late in the growing season but can be applied early in the season to minimize non-target impacts. Do not cut down treated plants for at least a full growing season.

Basal Bark Method: This method is effective throughout the year as long as snow cover does not prevent spraying to the ground level. Apply a mixture of 25% triclopyr and 75% horticultural oil to the basal parts of the shrub to a height of 12-15 inches from the ground^{1,3}. Be sure to treat entire circumference of the stem in a band at least 12 inches wide. Thorough wetting is necessary for good control; spray until run-off is noticeable at the ground line. Do not apply to bark that's wet from heavy dews and rain.

¹ – From TNC ESA – Buckthorns

² - Wisconsin DNR Control Manual

³ – Alien Plant Invaders Fact Sheets

Important Note

Mention of specific pesticide products in this document does not constitute an endorsement. These products are mentioned specifically in control literature used to create this document.

Disposal

Small, pulled shrubs should be hung in trees to prevent re-rooting. Larger, pulled shrubs may be piled or piled and burned, roots up, to prevent

re-establishment. Cut stems may be piled or piled and burned. If chipping, do not remove material from the site as barberry will spread by seeds.

Safety

Develop a safety plan for individuals exposed to chemicals including telephone numbers and addresses for emergency treatment centers and the telephone number for the nearest poison control center.

- For human exposure questions, contact the regional poison control center:
Regional Center for Poison Control & Prevention Serving Massachusetts & Rhode Island Children's Hospital Boston
300 Longwood Ave, IC Smith Building
Boston, MA 02115
1-800-222-1222

Or see the national website for the **American Association of Poison Control Centers** at <http://www.aapcc.org/>
- For advice and assistance with emergency spills that involve agrichemicals, contact:
Mass Department of Environmental Protection
24-Hour Emergency Response
1-888-304-1133
- National 24-hour assistance for emergency spills, contact:
CHEMTREC
1-800-262-8200
<http://www.chemtrec.org/Chemtrec/>
- For non-emergency information, contact the **National Pesticide Information Center (NPIC)**
1-800-858-7378
<http://www.npic.orst.edu/>

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<http://www.nps.gov/plants/alien/index.htm>