NRCS Natural Resources Conservation Service

Pest Management

Invasive Plant Control—Buckthorns

Conservation Practice Specification Guide MA-595

Common Buckthorn (***Rhamnus cathartica L.)***

Glossy Buckthorn ***(Frangula alnus Mill.)***

General Specifications

A conservation plan shall be prepared in accordance with the criteria and general specifications of the Pest Management (595) 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 pest management component of the overall conservation plan.
- Methods of pest management 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 used 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.

Buckthorns

The buckthorns are native to Eurasia. They were probably introduced to the US before 1800 but did not become widespread until the early 1900s. They are now found throughout much of the central and northern United States and into Canada.

Common and glossy buckthorns are shrubs or small trees that readily invade natural areas, establishing dense, even-aged thickets which crowd or shade out native plants. The buckthorns reproduce sexually by seed. Both buckthorns produce fruits that are readily eaten, and thus seeds are spread by wildlife. Both buckthorns have lenticels (raised corky areas) on the bark and the inner bark is yellow.

Common buckthorn has dull green, minutely toothed, oblong leaves that are opposite or nearly so on the stem. Leaves have 3-4 pairs of veins which curve upward toward the tip. Branch stems end in small thorns that appear between the last pair of buds. Fragrant flowers with four greenish-yellow petals develop into black fruit (3-4 seeds) that may persist well into winter.

Glossy buckthorn has thin, alternate glossy leaves which are oblong to elliptical with more than 5 pairs of veins and with smooth or wavy margins. Buds are rust-colored and naked. Five parted, yellowish-green flowers ripen from red to black (2-3 seeds).

Buckthorns 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

The native shrub Alderleaf Buckthorn (*Rhamnus alnifolia L'Her*) has alternate leaves with 8-9 pairs of veins and toothed margins. The leaf surface is puckered (like seer sucker fabric). The buds are scaly (not naked) but lack thorn tips of common buckthorn.

Alderleaf Buckthorn (*Rhamnus alnifolia L'Her*)

Chokecherry (*Prunus virginiana*) is a common native shrub of hedgerows which has egg-shaped, alternate leaves that are finely and sharply toothed. Five parted white flowers are borne on dense, cylindrical racemes.

Control

As with all invasive species, buckthorns in natural areas are most effectively controlled by recognizing their appearance early and removing isolated plants before they begin to produce seed. With large infestations, the largest seed-producing plants should be removed first.

Manual, mechanical and chemical methods are all useful to varying degrees in controlling buckthorns. 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 buckthorn.

Mechanical Control

Mechanical controls include grubbing or pulling seedlings and mature shrubs, and repeated clipping of shrubs. Mechanical management requires a commitment to cut or pull plants at least twice a year for a period of three to five years. Cutting alone has met with limited success and may lead to vigorous re-sprouting.

Grubbing or pulling by hand (using a Weed Wrench or a similar tool) is appropriate for small populations or where herbicides cannot be used.

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

Burning has met with mixed results and does not show great promise. Burns should only be used in fire-adapted plant communities of which there are very few in Massachusetts. It is generally difficult to burn in dense buckthorn stands as the understory is typically well-shaded, allowing little fuel build-up. Be aware of the effects on non-target vegetation.

Chemical Control

A materials list of chemicals registered for use within Sensitive Areas can be found at Massachusetts' Department of Agricultural Resources Pesticide Bureau. http://www.mass.gov/agr/pesticides/rightofway/Sensitive_Area_Materials.htm

Chemical control methods are best done during the fall when most native plants are dormant yet buckthorns are still actively growing. This lessens the risk of affecting non-target plants. The buckthorns' 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. Do not cut the stem at ground level. 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]. 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]. The treatment should be applied to the foliage late in the growing season. 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[3]. This mixture is also applicable to frill applications where herbicide is applied into the cambial layer of fresh cuts on the tree trunk[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]/ Weeds Gone Wild; 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 buckthorns 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/

References

Massachusetts Department of Agricultural Resources Pesticide Bureau—Rights of Way Management. http://www.mass.gov/agr/pesticides/rightofway/index.htm

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The Nature Conservancy - Element Stewardship Abstract (and references therein) http://tncweeds.ucdavis.edu/esadocs/franalnu.html

USDA. NRCS. Connecticut State Office. Invasive Species ID Sheets.

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