NRCS Natural Resources Conservation Service

Brush Management

Oriental Bittersweet

Conservation Practice Specification Guide MA-314

Oriental bittersweet foliage

Oriental bittersweet fruit

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.

Oriental Bittersweet

Oriental bittersweet (*Celastrus orbiculatus*) is native to temperate East Asia and has been considered weedy in all of New England and most of the Atlantic Coast States since 1971, Oriental bittersweet is a vigorously growing vine that climbs and smothers vegetation which may die from excessive shading or breakage. When bittersweet climbs high up on trees the increased weight can lead to uprooting and blow-over during high winds and heavy snowfalls.

In addition, oriental bittersweet is displacing our native American bittersweet through competition and hybridization. Upland meadows, thickets, and young forests are most vulnerable to Oriental bittersweet invasion and dominance. Similar to most invasive plants, Oriental bittersweet has a high reproductive rate, long range dispersal, ability to root sucker, and rapid growth rates.

Description

Oriental bittersweet is a deciduous, twining, climbing, woody perennial vine with many alternate drooping branches. The branches are round, light to dark brown in color and usually have noticeable lenticels. The leaves are extremely variable, ranging from oblong to rounded in shape. They are glossy, finely blunt toothed and arranged alternately along the stem. The outer surface of the roots of Oriental bittersweet are bright orange and can serve as a good field indicator.

There are separate female (fruiting) and male (non-fruiting) plants. Female plants produce clusters of small greenish flowers, and each plant can produce large numbers of fruits and seeds. The fruits are three-valved, yellow, globular capsules that at maturity split open to reveal three red-orange fleshy arils each containing one or two seeds.

Similar Natives

American bittersweet (*Celastrus scandens*) is a very similar native that may be distinguished from *C. orbiculatus* by the location of its fruit . In Oriental bittersweet, they are located in the leaf axils, while in the native bittersweet, they are located at the branch tips. The two species may be capable of hybridizing and since the native is relatively rare it is possible that its distinct genetic identity is threatened.

Control

Manual, mechanical and chemical control methods are all effective in removing and killing Oriental bittersweet. Employing a combination of methods often yields the best results and may reduce potential impacts to native plants, animals and people. The method you select depends on the extent and type of infestation, the amount of native vegetation on the site, and the time, labor and other resources available to you. Whenever possible and especially for vines climbing up trees or buildings, a combination of cutting followed by application of concentrated systemic herbicide to rooted, living cut surfaces is likely to be the most effective approach. For large infestations spanning extensive areas of ground, a foliar herbicide may be the best choice rather than manual or mechanical means which could result in soil disturbance.

Biological Control

Currently, there are no known biological controls of *Celastrus orbiculatus.*

Mechanical Control

Small infestations can be hand-pulled but the entire plant should be removed including all the root portions. For climbing vines, first cut the vines near the ground at a comfortable height to kill upper portions and relieve the tree canopy. Try to minimize damage to bark of the host tree. Rooted portions will remain alive and should be pulled, repeatedly cut to the ground or treated with herbicide. Cutting without herbicide treatment will require vigilance and repeated cutting because plants will resprout from the base.

Prescribed Burning

Prescribed fire for Oriental bittersweet is not a viable option for control. It is likely that Oriental bittersweet is actually favored by fire due to rapid growth in response to opening the canopy and the large nutrient flushes that usually occur after fires.

Chemical Control

Chemical control is most effective if the stems are first cut by hand or mowed and herbicide is applied immediately to cut stem tissue. Fall and winter applications will avoid or minimize impacts to native plants. Repeated treatments are likely to be needed.

For dense, low growing stands, cut the vegetation early in the growing season and allow the bittersweet to re-grow. Approximately one month later, apply a foliar application of triclopyr mixed at 1% to 2% in water with a backpack sprayer.

In locations where large vines climb high into trees, cut the vine and immediately apply glyphosate or triclopyr to the cut. Add dye or food coloring to the mixture to track treated stumps. This treatment is best applied in late summer when the plant is transporting nutrients to its root system.

Glyphosate is a nonselective herbicide which kills both grasses and broad-leaved plants while triclopyr is a selective herbicide that kills broad-leaved plants but does little or no harm to grasses.

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

There are few general rules of thumb that will ensure proper disposal. Be sure the plant is dead before placing in a mulch or compost pile. Either dry it out in the sun or bag it in a heavy duty black plastic bag. If you have flowers and/or seeds on the plant, put the flowers and seed heads into the bag head first sot aht there is minimal risk in dispersing seed.

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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References

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

Mehrhoff, L. J., J. A. Silander, Jr., S. A. Leicht, E. S. Mosher and N. M. Tabak. 2003. IPANE: Invasive Plant Atlas of New England. Department of Ecology & Evolutionary Biology, University of Connecticut, Storrs, CT, USA. URL: http://nbii-nin.ciesin.columbia.edu/ipane/

Patterson, William A., III. 2003. "Using Fire to Control Invasive Plants: What's New, What Works in the Northeast? Overview and Synthesis." *In* 2003 Workshop Proceedings: Using Fire to Control Invasive Plants: What's New, What Works in the Northeast. http://extension.unh.edu/pubs/ForPubs/WPUFCI03.pdf#search=%22prescribed%20burning%20to%20control%20invasive%20plants%22

Tennessee Exotic Pest Plant Council. Tennessee Exotic Pest Plant Management Manual. 1997. http://www.tneppc.org/invasive_plants

The Nature Conservancy - Element Stewardship Abstract (and references therein) http://www.imapinvasives.org/GIST/ESA/index.html

Weeds Gone Wild: Alien Plant Invaders of Natural Areas. Alien Plant Working Group of the Plant Conservation Alliance (National Park Service) http://www.nps.gov/plants/alien/index.htm