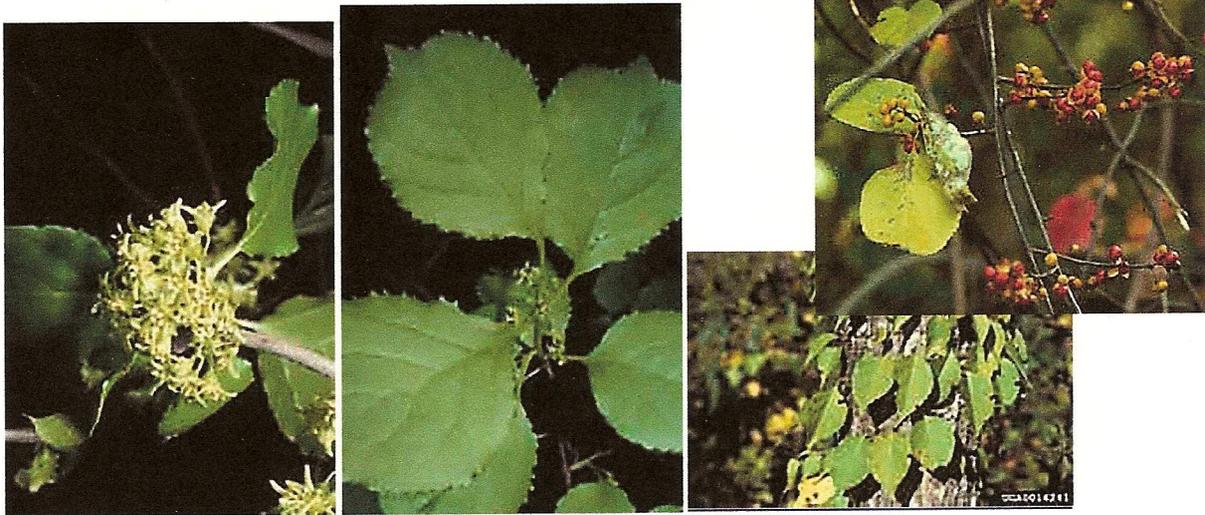


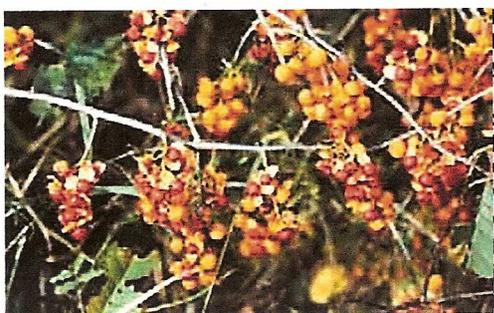
Celastrus orbiculatus - Oriental bittersweet New Hampshire Prohibited Invasive Species



Description: Oriental bittersweet is a deciduous, woody, perennial vine (to 60 feet in tree crowns) in the staff-tree family (Celastraceae), sometimes occurring as a trailing shrub. Also known as round-leaved and Asiatic bittersweet, stems of older plants sometimes grow to four inches in diameter. Stems of *Celastrus orbiculatus* have dark brown to brown striated bark. The twigs are dark brown, brown or light gray and are smooth and glabrous. The buds along the stem are axillary. The alternate, spiral leaves have only one per node. They are evenly placed around the stem. Leaves have a light green color and are widely elliptic or ovate to obovate or circular. The flowers, which bloom in May to early June, are axillary in their position on the stem. There are 3-4 small greenish flowers per inflorescence and they are 0.07-0.15 inches long 0.1-0.2 inches wide. The fruits of *Celastrus orbiculatus* are produced from July to October and are yellow in color. The yellow ovary walls will begin to fall from the fruit after frost. They are globose in shape 0.24-0.35 inches long and 0.28-0.4 inches wide. The fruit splits open at maturity revealing 3 red-orange axils that contain the seeds. The fruits of oriental bittersweet are very popular in floral arrangements.

Habitat: *Celastrus orbiculatus* infests roadsides, old homesites, thickets, alluvial woods, forest edges, open woodlands, fields, hedgerows, coastal areas, salt marsh edges and particularly disturbed lands. Oriental bittersweet is shade tolerant, readily germinating and growing under a closed forest canopy.

Distribution: Oriental bittersweet was introduced into the United States in the 1860s as an ornamental plant and it is still widely sold for landscaping despite its invasive qualities. It occurs from New York to North Carolina, westward to Illinois. Seed dispersal is by birds or small mammals. Seedling germination is generally high (up to 95%) and begins in mid to late spring. The highest rate of seed germination is in lower light intensities. Seedlings increase photosynthesis two-fold when exposed to direct sunlight. The plants develop and expand by layering stolons and rootsuckers (the ability to send shoots up from the roots). Annual growth rate is from 1-12 ft with little additional growth after about seven years. People also spread seed when using the plant for wreaths and ornamental arrangements.



Native Bittersweet
<http://www.bbg.org/sci/nymf/encyclopedia/cel/cel0030c.htm>

Similar Species: Since this plant is easily confused with our native climbing bittersweet vine (*Celastrus scandens*), which flowers at the tips rather than along the stems, it is imperative that correct identification be made.



Only a state-certified herbicide specialist may apply chemicals in or near wetlands, and only after receiving a permit from the New Hampshire Department of Agriculture's Division of Pesticide Control. Property owners may apply herbicides away from wetlands on their own property. See Appendix for further information on chemicals, definitions and disposal methods. Please note: The mention of a herbicide's brand name does not constitute endorsement by the Nashua Conservation Commission.

Threats: Oriental bittersweet is an aggressive invader that threatens vegetation at all heights in forested and open areas by growing over other vegetation, completely covering and killing other plants by preventing photosynthesis, by girdling, and by uprooting trees through excessive weight.

Control: Since Oriental bittersweet produces numerous seeds, extensive seed reserves can become established in the soil within a year or two. These seeds remain viable for several years and control actions must continue until seed sources are eliminated. **Mechanical Control:** *Cutting:* Cut climbing or trailing vines as close to the root collar as possible. This technique is feasible on small populations; as a pretreatment on large impenetrable sites; in areas where herbicide cannot be used; or if labor resources are not sufficient to adequately implement herbicidal control. It prevents seed production and strangulation of surrounding woody vegetation. Oriental bittersweet will resprout unless cut so frequently that its root stores are exhausted. Treatment should begin early in the growing season and be repeated at two-week intervals until autumn. *Grubbing:* Use for small initial populations or environmentally sensitive areas where herbicides cannot be used. Remove the entire plant with a pulaski or similar digging tool, including all roots and runners. Juvenile plants can be hand pulled depending on soil conditions and root development. Any portions of the root system not removed will potentially resprout. All plant parts, including mature fruit, should be bagged and disposed of in a trash dumpster to prevent reestablishment. **Herbicidal Control:** *Stump Treatment:* Use this method in areas where vines are established within or around non-target plants, or where vines have grown into the canopy.

- Glyphosate: Cut the stem 2 inches above ground level. Immediately apply a 25% solution of glyphosate and water to the cross-section of the stem. This procedure is effective at temperatures (as low as 40°F) and may require a subsequent foliar application of glyphosate.
- Triclopyr: Cut the stem 2 inches above ground level. Immediately apply a 25% solution of triclopyr and water to the cross-section of the stem. This procedure remains effective at low temperatures (<60°F) as long as the ground is not frozen. A subsequent foliar application may be necessary to control new seedlings.

Foliar Spray Method: Use this method to control large populations. It may be necessary to precede foliar applications with stump treatments to reduce the risk of damaging non-target species.

- Glyphosate: Apply a 2% solution of glyphosate and water plus 0.5% non-ionic surfactant to thoroughly wet all foliage. Do not apply so heavily that herbicide will drip off leaves. Glyphosate is a non-selective systemic herbicide that may kill non-target partially sprayed plants. Ambient air temperature should be above 65°F.
- Triclopyr: Apply a 2% solution of triclopyr and water to thoroughly wet all foliage. Do not apply so heavily that herbicide will drip off leaves. The ideal time to spray is after surrounding native vegetation has become dormant (October-November) to avoid affecting non-target species. A 0.5% concentration of a non-ionic surfactant is recommended in order to penetrate leaf cuticle. Ambient air temperature should be above 65°F.

Alternatives: Although our native bittersweet (*Celastrus scandens*) is an excellent alternative plant to use, many nurseries confuse it with the exotic invasive Oriental bittersweet.

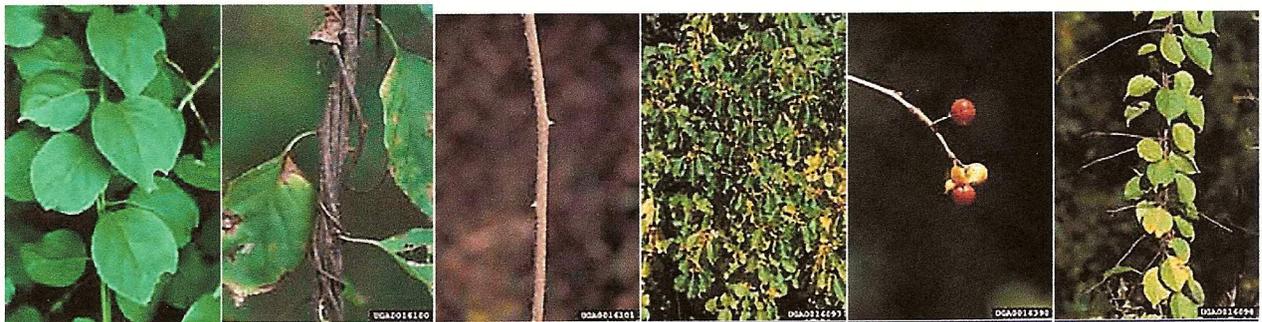
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<http://www.nps.gov/plants/alien/fact/ceor1.htm>

http://www.srs.fs.usda.gov/pubs/qtr/qtr_srs062/03_vines.pdf

http://www.chicagobotanic.org/research/conservation/invasive/celastrus_orbicuatus.html

<http://www.se-eppc.org/manual/bittersweet.html>



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