

Species Dataform and Scoresheet for *Celastrus orbiculatus* Thunb. (Oriental bittersweet)

Species Dataform and Scoresheet		
<i>Celastrus orbiculatus</i> Thunb. (Oriental bittersweet)		
Native range: Eastern Asia		
Date evaluated: November 4, 2008		
	Answer Choices	Response
Introductory Questions		
1. Current federal and state regulations	Y/N	Y
Comments: "Class C" State Noxious Weed (NCDA).		
2. Occurrence in the horticultural trade	Y/N	Y
Comments: Grown and sold in Western North Carolina.		
3. North Carolina nativity	Y/N	N
Comments: Native to temperate eastern Asia (Dreyer 1987).		
4. Presence in natural areas	Y/N	Y
Comments: Oriental bittersweet is most prevalent in disturbed gap and edge environments, but may invade and colonize relatively undisturbed forests (Ellsworth 2004, Patterson 1973)		
5. Non-invasive cultivars	Y/N	N
Comments:		
	Maximum Point Value	Number of Points Assigned
Section 1. Ecological Impact		
1a. Impact on abiotic ecosystem processes	10	4
Comments: Light availability is the major abiotic condition impacted by oriental bittersweet. Overgrowth of vines may reduce light availability and shade young seedlings (McNab 1987). Dense stands of oriental bittersweet reduce light intensity, alter light quality, and may exclude other plants (Patterson 1973). Oriental bittersweet has little to no effect on soil moisture and soil minerals and does not produce toxic or inhibitory substances (Patterson 1973). It is possible that vines may act as a ladder fuel that may enhance canopy burn (USDA Forest Service 2006).		
1b. Impact on plant community structure	20	20
Comments: Dense uncontrolled infestations of oriental bittersweet could cause severe forest degradation (Ellsworth et al. 2004). Vines may overtop native vegetation, girdle and damage trees and stems, suppress the regeneration of native vegetation, shade existing vegetation, and add additional weight to trees, making them more susceptible to mechanical breakage and ice damage (Ellsworth 2004).		
1c. Impact on species of special concern	5	5
Comments: Oriental bittersweet has a wider range of ecological tolerances (Leicht-Young et al. 2007) than the native American bittersweet (<i>Celastrus scandens</i>). American bittersweet is not listed as a threatened or endangered species in North Carolina, but it is categorized in NC as a significantly rare species (NC Natural Heritage Program 2004).		
1d. Impact on higher trophic levels	5	0
Comments: Oriental bittersweet is not known to impact other animals.		

Section 1. Subrank	40	29
Section 2. Current Distribution and Potential for Expansion		
2a. Local range expansion	7	4
Comments: Oriental bittersweet is expanding its range across North Carolina, but at lower rate of expansion compared with other known invasive plants, such as Japanese honeysuckle (Merriam 2003). The rate of spread across the state is approximately a 3 percent increase in the number of counties reporting occurrences per year (Merriam 2003). Oriental bittersweet has been shown to be increasing in range in other parts of the United States as well, particularly in the Northeastern US, due to its ability to colonize a wide range of environments (Leicht-Young 2007).		
2b. Long-distance dispersal potential	13	13
Comments: Seeds are dispersed by birds and mammals throughout the fall, winter, and early spring (Ellsworth et al. 2004).		
2c. Reproductive characteristics	8	6
Comments: Seeds are able to germinate in a range of light conditions, including partial and dense shade (Patterson 1974). Orange arillate fruits are dispersed by birds (Patterson 1974). This species exhibits rapid growth rates in both full and partial sun (Dreyer 1987). Rootsuckers proliferate rapidly under a range of conditions (Dreyer 1987).		
2d. Range of communities	6	4
Comments: Thickets, roadsides, forests, alluvial woods (Weakley 2008). NC Primary Systems (Shafale and Weakley 1990) = Low elevation mesic forests, river floodplains		
2e. Similar habitats invaded elsewhere	6	4
Comments: Beaches are also susceptible to invasion (NatureServe Explorer), including coastal areas and salt marsh edges (Plant Conservation Alliance). Upland meadows and cove hardwood stands may also be susceptible to invasion (NatureServe Explorer).		
Section 2. Subrank	40	31
Section 3. Management Difficulty		
3a. Herbicidal control	5	0
Comments: Cut stem applications of glyphosate and triclopyr are effective (McNab 2002).		
3b. Nonchemical control methods	2	2
Comments: Hand pulling and clipping are effective, but hand-pulled sprouts often break and resprout later (McNab 2002).		
3c. Necessity of individual treatments	2	2
Comments: Cut-stem application of herbicide effective (Webster, 2007). Oriental bittersweet is often mistaken for American bittersweet (<i>C. scandens</i>), a rare native vine, and herbicides may affect nontarget vegetation (McNab 2002).		
3d. Average distribution	2	1
Comments: There is often variability in the distribution of this species.		
3e. Likelihood for reestablishment	2	2
Comments: Hand-pulled sprouts often break and resprout later. Great amount of seed produced, dispersed by birds, mammals, and humans (Dreyer 1987). Difficult to manage in forests that are subject to frequent natural or managed disturbance that may open the forest		

canopy and allow frequent growth of seedlings (McNab 2002). Persistent vegetative structures proliferate rapidly under wide variety of conditions (Dreyer 1987). Seeds remain viable for several years and management techniques must be continued for several years (SE-EPPC)		
3f. Accessibility of invaded areas	2	0
Comments: Invaded areas are primarily along forest margins.		
3g. Impact on native species and environment	5	5
Comments: Oriental bittersweet is often mistaken for <i>C. scandens</i> (American bittersweet), a rare native vine, and herbicides may affect nontarget vegetation (Mc Nab 2002, Dreyer 1987).		
Section 3. Subrank	20	12
Section 4. Benefits and Value		
4a. Estimated wholesale value	-7	0
Comments: The estimated wholesale value for the North Carolina nursery industry is approximately \$5,900 (Trueblood 2009).		
4b. Percentage of total sales	-5	0
Comments: Among producers that sell this species, the highest percentage of total sales attributed to this species from any one grower is estimated to be <1% (Trueblood 2009).		
4d. Ecosystem services	-1	0
Comments:		
4e. Wildlife habitat	-1	0
Comments:		
4f. Cultural and social benefits	-1	-1
Comments: Collected and sold in western NC crafts trade.		
Section 4. Subrank	-15	-1
Overall Score	100	71
Overall Recommendation: Highly invasive and not recommended for horticultural use – These species present relatively high ecological impact, distribution and invasive potential, and management difficulty in relation to economic value. (Overall Score: 67 – 100)		
Summary: <i>Celastrus orbiculatus</i> (Oriental bittersweet) is highly invasive in North Carolina and may not be recommended for horticultural use by the North Carolina Nursery and Landscape Association. Oriental bittersweet severely impacts plant community structure by displacing and outcompeting native vegetation. There is great potential for the additional invasion of oriental bittersweet within natural areas. The difficulty of managing Oriental bittersweet is moderate considering the availability of control methods, but management may be costly considering the time and labor required to effectively treat stands of oriental bittersweet. Oriental bittersweet has low economic value to the nursery industry, but it does have unique cultural and social benefits in western North Carolina.		

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