

## Oriental bittersweet - *Celastrus orbiculatus*

### Identification

Oriental bittersweet is a deciduous, climbing, woody vine that can grow to lengths of 60 feet. Vines can grow to 4 inches in diameter and are gray to olive in color with whitish-gray, raised lenticels. The alternate, elliptical leaves are variable in shape, bluntly toothed, and light green in color, turning yellow in fall (Figure 45). Small, inconspicuous, axillary flowers give way to round green fruit which ripen and split to reveal showy scarlet berries that persist into winter (Figure 46). It closely resembles American bittersweet (*Celastrus scandens*) but can be distinguished from it because American bittersweet has flowers and fruits in terminals rather than axillary along the stem (Figure 47).

### Habitat and Distribution

Oriental bittersweet was introduced from China around 1860 as an ornamental. It can be dispersed widely and quickly due to the berries being eaten and spread by birds. It can invade a variety of habitats including open and young forests, meadows, glades, savannas, roadsides, fencerows, old home sites, and other disturbed areas (Figure 48). It is generally found in areas of hardwood forests but has been reported in coniferous forests as well (Figure 49). Oriental bittersweet is widely spread and problematic throughout the Northeastern United States as far west as Iowa and sporadically to Louisiana. It has not been widely reported in the lower Piedmont or Coastal Plain. It is a major pest in areas of the southern Appalachians, especially the Asheville, NC region.

### Impact

Prolific vine growth allows Oriental bittersweet to encircle trees and girdle them. It also can completely cover other vegetation and shade, out-compete and kill even large trees. The added weight to the trees increases susceptibility to ice storms and wind damage. Oriental bittersweet can shade and restrict growth of native understory species, shrubs, tree seedlings, and some native vines. It has also been shown to hybridize with American bittersweet, potentially leading to a loss of genetic identity.



Figure 45



Figure 46



Figure 47

### Response to Disturbance

Promoted by soil disturbance  
 Re-sprouts vigorously after being cut  
 Damage encourages sprouting  
 Establishes rapidly after disturbance  
 Colonizes gaps well

### Reproduction

Primary means – seed  
 Can produce seed in second year  
 Seed production (>350 fruits/plant and 3-6 seeds/fruit)  
 Fruit remain on vine well into winter  
 Seed bank less than 1 year  
 High germination rate (90%)  
 Dioecious - male and female flowers on separate plants  
 Insect (primarily bee) pollinated. Some wind pollination as well  
 Oak litter may inhibit establishment  
 Asexual reproduction – runners, root and root fragment sprouts, and root crown sprouting  
 Hybridizes

### Seed Dispersal

Seed primarily dispersed by birds but also by animals, humans and water movement



Figure 48

### Growth Habits

Vine  
 Rapid growth (greater than 10 feet/year)  
 Shade tolerant (20% full sun has no affect on seed germination)  
 Grows best in partial to full sun  
 Flood intolerant  
 Drought intolerant  
 Prefers open woods/disturbed areas  
 Cold hardy  
 Deciduous  
 Can climb supports of various sizes (does not require small diameter vertical structure to climb)

### Response to Prescribed Fire

Not a control option  
 Not a fire hazard  
 Post-fire regeneration very possible  
 Fire may only top-kill plants, with re-sprouting following shortly after  
 Post fire flush of growth possible (nutrient and light availability increased due to fire)



Figure 49

### Control Recommendations

Thoroughly wet all leaves with one of the following herbicides in water with a surfactant (July to October): Garlon 4, Garlon 3A, or a glyphosate herbicide as a 2-percent solution (8 ounces per 3-gallon mix).

For stems too tall for foliar sprays, apply Garlon 4 as a 20-percent solution in commercially available basal oil, vegetable oil, or crop oil (2.5 quarts per 3-gallon mix) with a penetrant (check with herbicide distributor) to the lower 16 inches of stems. Or, cut large stems and immediately treat the cut surfaces with one of the following herbicides in water with a surfactant: Garlon 4 or a glyphosate herbicide as a 25-percent solution (32 ounces per 1-gallon mix). (See Herbicide Quick Reference page 40-42)