

# Escaped and Dangerous Invasive **ORIENTAL BITTERSWEET** Murders Forests, Strangles Trees, Smothers Understory



*Massive Oriental bittersweet vines, shown at left, have climbed high into the trees. They are more than 20 years old and their weight will soon topple the large, old trees they climb.*



*In this fall scene, the trees have dropped their leaves. All of the yellow-green foliage is from Oriental bittersweet vines that have climbed high into the trees or smothered understory shrubs.*

## The Culprit

This beautiful exotic vine is a real beast. First introduced to the U.S. from Asia in the 1860's as an ornamental garden plant, it quickly escaped from gardens. Oriental bittersweet (*Celastrus orbiculatus*) boasts golden fall color and brightly-colored berries that are showy from fall into winter. Looks can be deceiving, however, because this attractive vine has an aggressive agenda: growing as fast as it can into the tree tops, grabbing onto its neighbors, strangling and toppling anything in its path, and smothering shrubs, wildflowers and future tree generations on the ground. It scatters its seeds far and wide with the help of wildlife and people. Many forested areas of the Blue Ridge are threatened by this vigorous vine, and its range expands with each passing year. Bittersweet poses a hazard to foresters due to the unpredictability of where a vine-laden tree may fall when cut.



*Oriental bittersweet seeds are spread by birds and other wildlife and by people who use the vines as fall decorations.*

## Known Hangouts

Oriental bittersweet thrives in disturbed soil and tolerates full sun and dappled shade. It may occur abundantly around old home sites, in fields and fencerows, along road edges, and in forests throughout the Blue Ridge. This invasive vine now infests the eastern U.S. from Maine through Georgia and west to Wisconsin and Missouri. It has been a serious pest in New England since the 1970's.

## Modus Operandi

Because bittersweet seedlings tolerate shade, the vine can get a start in a young or mature forest and rapidly ascend into the tree canopy. The branching vines encircle trees and girdle their trunks as they grow skyward. The dense shade cast by the vines kills saplings and prevents tree seedling germination. The sheer weight of the vines can topple trees, especially during storms.

If the leafy vines have no tall tree to climb, they are quite willing to blanket shrubs and low vegetation. In either case, the culprit can kill both by strangling with its twining vines or by smothering with its stems and foliage. And often both methods spell the death of the plants it attacks. The brightly-colored fruits attract birds, which eat them in fall and winter, and people, who cut the berry-laden vines for decorations. This way, seeds spread from one location to another. Seeds germinate readily even in low light and usually germinate in spring within a few years of dropping. The vine also spreads underground by enthusiastic root suckers and its branches can root at their tips, forming a tangle of vegetation.



The bark of mature bittersweet has a characteristic raised netted pattern that makes it easy to identify.

### Positive Identification

Oriental bittersweet grows as a twining or sprawling, many-branched, deciduous vine with woody stems. It can scale trees up to 60 feet high. Stems of old vines may resemble small trees; 4-inch diameter trunks are common and even larger ones are reported. The bark on the vine's trunks is light to medium tan or gray with a distinctive pattern of irregular netting. Small branches have tan or gray bark marked with small, whitish-gray bumps (lenticels), while the youngest branches are very slender with green or dark brown bark. Bark on the roots is bright orange. The bark and dormant leaf buds, which are oddly recessed into the stems and covered with a thorn-like bud scale, are helpful for winter identification.



The twisting spiral of an Oriental bittersweet vine helps in identification.



Flowers and fruits occur in the leaf axils.

tricky for the uninitiated. Fruits begin as clusters of round, green, 1/2-inch "berries" that ripen to golden-yellow. In fall, the golden outer covering splits open to reveal several red, seed-containing arils nestled inside the split covering. Eventually, the golden covering

Leaves are 2 to 5 inches long, glossy green, and are arranged alternately around the stems. Fine blunt teeth line the leaf edges, and leaves vary from round to elliptical with or without an elongated tip. Yellow fall color develops late. New growth spirals upward, twisting in a corkscrew pattern that even from a distance screams "bittersweet" to plant detectives.

There are usually separate female (fruiting) and male (non-fruiting) plants. Clusters of small, pale green, 5-petaled flowers bloom in early summer in the leaf axils, but only female vines produce fruits. The fruits change in appearance from summer into winter, making positive identification

drops off, leaving clusters of round, red fruits, which remain on the vines well into winter.

### Mistaken Identity

Oriental bittersweet closely resembles American bitter-sweet (*Celastrus scandens*), a relatively rare native. You can tell them apart by examining the location of flowers and fruits; in American bittersweet, these occur as larger clusters only at the tips of the branches, not up and down the stems where the leaves attach as with Oriental bittersweet. Sometimes, male flowers of Oriental bittersweet occur only at the branch tips, so be certain of your I.D. before you kill a vine. The leaves of American bittersweet are twice as long as wide, while the leaves of the invasive are as wide as long, although they vary.

When combating Oriental bittersweet in winter, you may be confused by other vines. Comparing growth habit, bark, and buds helps distinguish them. Virginia creeper and wild grapes, both native vines, have tendrils that grasp onto the plants they climb. Their bark is dark brown and shredded. Bittersweet lacks tendrils and the bark is pale and netted. Bark of invasive Japanese honeysuckle is pale tan, smooth when young and becomes shredded with age. Bark on mature invasive porcelainberry is peeling.

### Search and Destroy

Look for bittersweet high up in the tree canopy and on the forest floor. Search along forest edges and roadsides, in clearings, on fences, and in fields and meadows. Bittersweet leaves stay green in fall after most native plants have changed color or dropped their leaves, then turn yellow when most plants are leafless. If you search for bittersweet in fall, infestations are easy to spot and can be treated then or tagged for later treatment.

**Manual & Mechanical:** You can destroy small bittersweet vines by hand pulling, but be sure to remove the crown and all large roots, or vigorous new growth will occur. Do not pull vines from trees; this is hazardous to people on the ground and can harm the trees.

**Cut Stump:** Cut small to large vines near ground level, using a clipper, hand-saw or chainsaw. *To prevent resprouting, immediately apply a concentrated herbicide to the cut stump or apply a foliar spray to the regrowth a month later.*

**Foliar Spray:** Low bushy vines or resprouted vines can be killed with a foliar herbicide spray from spring through fall. (It is best not to spray large vines, but to cut stump them.) To avoid harming desirable plants, apply foliar sprays when other plants are leafless in late fall, but while bittersweet leaves are still green. If your chosen herbicide product does not contain a surfactant, add one.

To ensure long-term control of Oriental bittersweet, monitor treated sites for several years for seedlings and regrowth from roots; treat these as soon as possible.

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the PRISM website.