

CELASTRUS ORBICULATIS

Common Names: Asiatic bittersweet, oriental bittersweet

Identification and Introduction

Oriental bittersweet is a deciduous twining woody vine with round, light to dark brown branches. Root outer layer is bright orange. Plants may reach 54 feet tall with stems 2 to as much as 5 inches diameter at breast height. Buds appear in between the leaf and stem with sometime spiny outer scales. Leaves vary in shape. Inflorescences are broad topped with 3 to 7 flowers the oldest in the center. The flowers become either male or female by abortion or reduction of the respective organs; some vines develop one sexed or perfect flowers (both male and female organs in the same flower), or both male and female flowers occurring on the same vine. Green-yellow flowers have 5 sepals (modified leaves) and 5 petals. Male flowers have 5 stamens at the edge of a disk around an undeveloped pistil and the female flowers have rudimentary stamens and an ovary that may be embedded in the disk. Fruits of oriental bittersweet are round capsules that split lengthwise along the cells of the compound ovary, turning bright yellow upon maturation. The three valved capsule contains one or two brown seeds in each valve (locule) covered in a fleshy aril or berry-like structure and when ripe the yellow layer splits to show the red aril. Oriental bittersweet can be differentiated from the native *Celastrus scandens* by the flower clusters in the leaf axils (angle between leaf and stem) whereas *Celastrus scandens* possesses flower clusters at stem tips.

Oriental bittersweet may cause damage to native vegetation by strangling or overtopping forming thick stands. Oriental bittersweet habitats that are most prone to invasion include beaches, thickets, young forests and upland meadows. Natural areas in New York State, Connecticut coastal regions and the southeastern Appalachians are particularly infested.

Natural History

Oriental bittersweet is indigenous to Korea, central and northern Japan, and China north of the Yangtze River. It is found in lowland slopes and in thickets from altitudes of 300 to 4200 feet. Habitat distributions in North America include thickets, alluvial woods, roadsides and fence rows. The westernmost distribution of oriental bittersweet includes some areas of the Midwest; the vine is found growing in Southern Illinois woodlands.

Introduction of oriental bittersweet appears to have happened before 1879. It had become widespread throughout central Maine and the rest of New England, New York, Ohio to Iowa and south to Louisiana and Georgia by the early 1970s.

Life Cycle and Ecology

Oriental bittersweet flowers bloom in Connecticut from late May to early June. The fruit ripens in September and remains attached during winter months. Bees are the main pollinators but wind pollination mechanisms exist as well. Birds such as Blue Jays,

Black-capped Chickadees, European Starlings and Northern Mockingbirds feed on the fruits and disperse them.

People collect stems for flower arrangements and eventually dispose of the plant material in brush piles and compost heaps. Oriental bittersweet is available at nurseries and still may be planted in highway landscapes.

One study resulted in a 30 to 95% germination rate at low light intensities. Oriental bittersweet adapts to many levels of irradiance which may be a factor in its invasive capabilities. The vine roots when cut or damaged resulting in large patches which spread from a few original colonizing plants.

Management and Control Methods

Oriental bittersweet threatens native plant communities by its rapid growth rate, high reproductive capacity, ability to root from damaged or cut stems, and the long range of seed dispersal. Some old growth forests that may lose 1 to 2% of canopy each year may provide oriental bittersweet the opportunity to invade these areas.

Many workers report that root kill of the vine is useless; seedlings grow in subsequent years and attribute this observation to an abundant soil seed bank. These seedlings can be pulled by hand but break and develop more shoots at a later time. Six years of hand pulling seedlings at one site seem to have exhausted the seed bank.

One suggestion for control of oriental bittersweet is to monitor for patches of growth about 2 weeks after autumn foliage colors peak, which is about middle November in the southeastern United States. Native plants would have shed their leaves at that time whereas oriental bittersweet leaves turn lemon to gold yellow for ease of identification. The seeds may disperse as far as 3000 feet from the original plants and this type of search is necessary to locate oriental bittersweet plants that may become established in previously untouched areas.

Weekly mowing will eliminate the vines. Cut vines near the root collar. This technique is used on small populations of oriental bittersweet in areas not recommended for herbicide treatment. Seed production and constriction of other woody plants will be prevented. This treatment should commence in the early growth season and repeated every two weeks until autumn begins. Another method is to remove the whole plant including roots and runners. All the vine parts should be bagged and disposed of in the trash.

Land managers may then devise appropriate control programs after scouting areas for infestations.

References

<http://tncweeds.ucdavis.edu/esadocs/celaorbi.html>
<http://www.invasive.org/eastern/eppc/bittersweet.html>

