

# Plant Diversity Website

## *Celastrus scandens* L.

**Common Names:** American bittersweet, climbing bittersweet, false bittersweet, climbing orange-root, fever-twig, fever-twitch, staff-vine, jacob's-ladder, waxwork.

**Etymology:** *Celastrus* comes from the ancient Greek word *kelastros*, a name for an evergreen tree. *Scandens* is Greek for trailing or climbing (2).

**Botanical synonyms:**  
*Celastrus bullata* L.  
*Euonymoides scandens* (L.) Medic.

**FAMILY:** Celastraceae (the staff-vine family)

**Quick Notable Features:**

- Twining woody brown stem with pale lenticels; no tendrils
- Yellow to orange fruits, often dehiscent to expose bright red to orange arils covering seeds.
- Terminal inflorescences

**Plant Height:** Up to 18m (13).

**Subspecies/varieties recognized:**

- 'Indian Brave' - Male plant.
- 'Indian Maiden' - Female Plant.
- 'Swtazam' (Sweet Tangerine TM): self-pollinating cultivar.

**Most Likely Confused with:** Oriental bittersweet *Celastrus orbiculatus*, an invasive plant (3). The genus is the only vining genus in Michigan with simple alternate crenate leaves.

**Habitat Preference:** Shade tolerant; prolific grower in many soil types. Grows in disturbed habitats: thickets, riverbanks, roadsides, fencerows, and rocky outcrops. Grows in dry and moist soils (6, 9).

**Geographic Distribution in Michigan:** Native to Michigan; found scattered throughout upper and lower peninsulas. Absent in the middle and eastern counties in the upper half of lower peninsula. (9)

**Known Elevational Distribution:** Up to 1500m (15).

**Complete Geographic Distribution:** Native to North America. Found in the United States and Canada east of the continental divide, with the exception of Florida; extends north to Quebec and south to Texas (1, 18).



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**Vegetative Plant Description:** Perennial liana climbing to 18m high. Leaves are 5-10cm long, simple alternate, ovate to obovate, serrate, having obtuse to rounded bases and apically bearing acuminate tips. Serrations are often rounded. Midvein is prominent with 3 to 4 pairs of ascending secondary veins per side. Petioles are light green. Twigs are brown with pale lenticels (6, 11, 12).

**Climbing Mechanism:** Plants climb by twining of stem apex; no tendrils or adventitious roots. Plant stems twine dextrally (left to right).

**Flower Description:** Flowers are white to green and inconspicuous, borne 6 or more in terminal panicles. Plants are typically dioecious, although perfect flowers sometimes are present. Flowers are functionally unisexual and 5-merous. Staminate flowers have 5 stamens the length of petals inserted on the margin of a cup-shaped disk, and a vestigial pistil. Pistillate flowers have vestigial stamens and a well-developed superior ovary. The style is stout and columnar; the stigma is 3-lobed. There are two ovules per locule (11, 12).

**Flowering Time:** Late spring (May and June) (11, 12) site not specified.

**Pollinator:** The flowers are bee pollinated (6).

**Fruit Type and Description:** The fruit is a globose orange capsule, 1cm diameter. When ripe, the capsule splits open to reveal an orange to red fleshy aril covering seeds. Capsules have three valves; each valve contains one or two seeds. Fruits ripen from late August to October and may persist through midwinter (11, 14).

**Seed Description:** Seeds are 6mm long, ellipsoid, and covered in a fleshy scarlet aril; seed color is unknown (16).

**Dispersal Syndrome (and evidence):** Seeds are bird dispersed. Fruits are toxic to humans. However, human dispersal is also prominent as the showy inflorescences are often used in the florist trade. Plants also reproduce by root-suckering (8).

**Distinguished by:** When distinguishing between *C. scandens* and *C. orbiculatus*, floral or reproductive characters are the most reliable. Inflorescences of *C. orbiculatus* are axillary cymes; those of *C. scandens* are terminal panicles. When fruiting, the valves of *C. scandens* are orange, whereas the valves of *C. orbiculatus* are generally yellow.

Due to the variability of leaf size and shape of *C. orbiculatus*, leaf morphology is not a reliable character according to Voss (9). However, a recent study (19) suggests differences in leaf morphology are sufficient for plant identification. The most reliable of these is leaf ptyxis (leaf folding in the bud): *C. orbiculatus* has a conduplicate fold, while that of *C. scandens* is involute (rolled margin).

The study also suggests that if the length-to-width ratio of the leaf "is greater than or equal to 2, there is a 90% chance of the plant being [*C. scandens*], while if the ratio is less than or equal to 1.4, there is a 90% chance of it being [*C. orbiculatus*]...Plants with leaf tips of 1.5 cm or greater have a 90% chance of being [*C. scandens*], while plants with leaf tips of 0.3 cm or less have a 90% chance of being [*C. orbiculatus*]" (19).

**Other members of the family in Michigan (number species):** *Celastrus orbiculatus* (1), *Euonymus* (6)

**Ethnobotanical Uses:** *Celastrus scandens* was used by native Americans for a wide variety of purposes. Leaves, bark, and roots were used as aids for rheumatism, childbirth pains, gastrointestinal discomfort, skin ulcers, coughs, tuberculosis, toothaches, and even cancer. Inner bark is sometimes cooked into a thick soup in times of starvation. The toxic fruits are used to make poisons (4).

**Phylogenetic Information:** Families Celastraceae and Lepidobotryaceae both are members of the order Celastrales. Celastrales belong in the taxa Eurosids I. They form a monophyletic group with the Malpighiales and Oxidales. They are part of the rosids within the eudicots. Celastrales are angiosperms (7).

**Interesting Quotation or Other Interesting Factoid not inserted above:**

Bittersweet can kill host trees by girdling if allowed to reach sufficient sizes (3).

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