

Plant Diversity Website

Cuscuta gronovii Willd. ex Schultes

Common Names: Swamp Dodder (1), Scaldweed (3), Common Dodder (4), Love Dodder (6)

Etymology: *Cuscuta* is derived from Arabic for the genus of all dodders; *gronovii* is in honor of Jan Fredrik Gronon (1690-1762) (6). The common name, dodder, may originate from Middle English “daderen” meaning to quake or tremble (1483), from the word dade, or a form similar to totter or patter (16).

Botanical synonyms:

Cuscuta umbrosa auct. non Beyr. ex Hook.

Grammica gronovii (Willd. ex Roem. & Schult)
Hadac & Chrtek

Grammica umbrosa auct. non (Beyr. ex Hook.)
W.A.Weber (6)

FAMILY: Convolvulaceae – the morning glory family (8) or Cuscutaceae – the dodder family (9)

Quick Notable Features (1,4,12,18):

- Flowers are glandular toward the apex of the ovary, occasionally with orange-yellow spots
- Orange-yellow stems, twining left to right
- Leaves are only scales
- Looks like a tangled mass of yellow netting on host plants



Plant Height: Normally to 2m long, but it has been reported to reach half a mile long (4, 6, 18).

Subspecies/varieties recognized (6, 7):

Cuscuta gronovii Willd. ex Schult. var. *calyptрата* Engelm.

Cuscuta gronovii Willd. ex Schult. var. *gronovii*

Cuscuta gronovii Willd. ex Roem. & Schult. var. *latiflora* Engelm.

Cuscuta gronovii Willd. ex Roem. & Schult. var. *saururi* (Engelm.) MacMill.

Most Likely Confused with: *C. gronovii* can be confused with other members of the genus *Cuscuta*, and possibly with members of the Polygonaceae that climb, such as *Persicaria* and *Fallopia*. *Cuscuta* may also be confused with Morning Glories, the genera *Ipomoea* and *Convolvulus*, which are other members of the Convolvulaceae (1).

Habitat Preference: *Cuscuta gronovii* is found in damp thickets, meadows, and roadsides (4).

Geographic Distribution in Michigan: The species is mainly found in mid- to southern Michigan (32 counties in the lower peninsula), but it is also found in Manistee and Benzie counties. *Cuscuta gronovii* is also found in Menominee county in the upper peninsula (1).

Known Elevational Distribution: The species is found in lowlands up to 200 m above sea level (11, 15).

Complete Geographic Distribution: *C. gronovii* is native to North America from Canada to the southern United States (7). It has been naturalized in many places in central Europe, such as France, Germany, Luxemburg, Italy, and the Netherlands (14, 20).

Parasitism: Parasitism is a type of symbiotic relationship in which plants obtain nutrients directly from another plant. Although parasitic plants are commonly known to lack chlorophyll, some species have green organs, making them partially autotrophic. The physical link between the parasite and the host is called a “haustorium”, and often occurs through xylem-to-xylem attachment. The host can vary, ranging from the mycorrhizae of trees, to grasses and hardwood trees. The parasite often maintains open or partially open stomata, allowing transpiration to aid in extracting nutrients from the host (23).



Vegetative Plant Description: The stem of *C. gronovii* is orange-yellow, smooth, and about 2mm thick (12). The scale-like leaves are alternate on the stem. Once *C. gronovii* attaches to a host, the parasitic plant no longer needs roots (17). Once the plant has established at least one haustorial contact with the host plant, the roots of the parasite wither (18). The haustoria of *C. gronovii* penetrate the tissue of the host plant, which allows for withdrawal of nutrients from the host. *Cuscuta* spp. thrives on the phloem of other species (19). These plants have the capability of both photosynthesizing and of relying solely on a host plant (17), as evidenced by the presence of some stomata on the stem of the plant (18). There are traces of chlorophyll in *C. gronovii*, but the photosynthetic activity is determined mainly by external factors such as sunlight (17), and the species shows photosynthetic activity when in high light (21). This parasitic plant has a large range of host preferences, although it shows a preference for taller plants. Main hosts include species of the genera *Euthamia*, *Cyperus*, *Aster*, *Rubus*, *Lysmachia*, *Panicum*, *Poa*, *Acer*, *Smilax*, and *Vaccinium* (21).



Climbing Mechanism: Upwardly twining only, from left to right (5,18).

Flower Description: The inflorescence contains 6 – 18 flowers (12). Each flower is white, about 2.2 to 4.2 mm long, five-merous, with both calyx and corolla present (1, 5). The corolla tube is longer than the calyx. Five rounded, apically warty petals are present in each flower (1, 6). The five stamens bear scales positioned opposite the stamens and alternate with the petals. The function of these staminal scales is not known. The scales cover the ovary and shrink at

the time of fertilization (18). The withered corolla either encompasses the fruit or remains at the base of the fruit (1).

Flowering Time: *C. gronovii* flowers from July to October in Missouri and Connecticut (4,6).

Pollinator: *Cuscuta gronovii* is believed to be pollinated by wasps (18).

Fruit Type and Description: A tiny, rounded orange-yellow capsule about 3mm long (5).

Seed Description: The seeds are bright orange, globose, and about 1.5mm long. There are generally 4 seeds within each capsule (2,5).

Dispersal Syndrome: Seeds of *C. gronovii* are dispersed via water, gravity, and human activity (10).

Distinguished by: The most distinctive feature of *Cuscuta gronovii* is the color and thickness of the stem. The stem is coarse, about 2mm in width, and bright orange-yellow. Most other species of *Cuscuta* have finer stems that are only about 1mm wide. *C. gronovii* also is known for tiny yellow dots on any part of the plant, which are glandular secretions, in addition to warty flowers, unlike most other *Cuscuta* species (1, 12). *Polygonum cilinode* might be mistaken as *C. gronovii* because of the similar flowers (small and white) and flowering times, and the stem of *P. cilinode* is tinted red. However, the stem of *P. cilinode* is more red and not orange like *C. gronovii*, and the flowers are larger than in *Cuscuta*. The leaves of *Polygonum cilinode* are large and visible, whereas *Cuscuta gronovii* does not have noticeable leaves: they are just tiny scales.

Polygonum sagittatum and *Polygonum hydropiperoides* also are similar to *Cuscuta* in that the flowers are small and white, they have similar flowering times, and they live in swampy areas. *C. gronovii* can be distinguished because of the orange stem and the lack of obvious leaves. *Cuscuta gronovii* flowers are smaller than the flowers of *P. sagittatum* and *P. hydropiperoides*. *Polygonum amphibium* might also be confused with *C. gronovii* because it lives in swamps and also has a reddish-orange stem. The flowers of *P. amphibium* are dark pink and larger than the flowers of *C. gronovii*. The large leaves of *P. amphibium* also distinguish it from *C. gronovii*. (4). *Ipomoea* and *Convolvulus* may be confused with *Cuscuta* because they are all herbaceous vines with thin stems that twine left to right. Many species of *Ipomoea* and *Convolvulus* have white flowers, have similar flowering times, and reside in disturbed areas like roadsides and meadows, like *Cuscuta*. However, *Cuscuta* can be distinguished from Morning Glories by the lack of obvious leaves, orange stem, and small, rounded flowers. *Ipomoea* and *Convolvulus* tend to have large, showy flowers and large, heart-shaped leaves (1).

Other members of the family in Michigan (number species): *Cuscuta* (9), *Ipomoea* (4), *Convolvulus* (1), *Calystegia* (4) (sources: 1,7).

Ethnobotanical Uses: *Cuscuta gronovii* can be used as a dye (yellow, gold, green), or it can be used for medicinal purposes to treat muscle pain or rheumatism (6). The whole plant is used.



Phylogenetic Information: Convolvulaceae consists of 55 genera, while if treated as a separate family, Cuscutaceae consists of one genus – *Cuscuta*. Convolvulaceae and Cuscutaceae are both classified as part of Euasterids I and are part of the Solanales order. Solanales belong to the Asterid clade. Solanales contains 5-6 families. The major families included are the Solanaceae and Convolvulaceae, including Cuscutaceae (13).

Interesting Quotation or Other Interesting Factoid not inserted above:

C. gronovii is a parasitic plant that has a limited ability to photosynthesize (see vegetative description) (17). Cranberry plants are significant hosts to *Cuscuta*. *Cuscuta* is largely responsible for deterring healthy cranberry growth. This frustrates cranberry harvesters because there is no easy way to exterminate infestations of the parasitic plant. These infestations can reduce crop yield up to 50% (10).

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