

Plant Diversity Website

***Smilax herbacea* L.**

Common Names: Common carrion-flower, Jacob's-ladder, Smooth carrion-flower (1,3).

Etymology: The word "*Smilax*" was cited (1) as Greek for clasping, while "*herbacea*" signifies herbaceous, not woody (1).

Botanical synonyms:

Nemexia herbacea (L.) Small (2)

FAMILY: Smilacaceae (the Catbrier family)

Quick Notable Features:

- Carrion (rotten meat) scented flowers
- Unarmed stems
- Leaves glabrous and glaucous beneath

Plant Height: *S. herbacea* is reported to grow to be as high as 2.1m tall (1).

Subspecies/varieties recognized (5,7):

Smilax herbacea var. *herbacea*

Smilax herbacea var. *lasioneuron*

Smilax herbacea var. *pulverulenta*

Most Likely Confused with: Any of the other local species of *Smilax*: *Smilax ecirrata*, *Smilax glauca*, *Smilax hispida*, *Smilax lasioneura*, *Smilax pulverulenta*, *Smilax rotundifolia*, *Smilax walteri*, as well as *Dioscorea* spp., *Menispermum* spp..

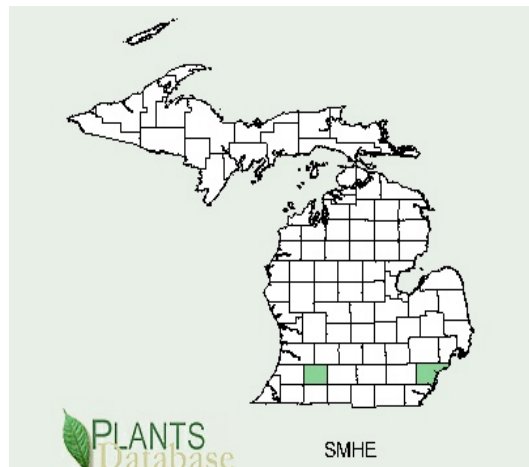
Habitat Preference: *S. herbacea* is found in rich or alluvial thickets, meadows and low woods, as well as along fencerows and roadsides. It is found in moist deciduous to coniferous-deciduous woods and thickets (1,4,5,6,7,8).

Geographic Distribution in Michigan: *S. herbacea* has only been confirmed in two counties of the southern lower peninsula of Michigan (3).

Known Elevational Distribution: 100-800m (11).

Complete Geographic Distribution: Native to North America. Found as far north as Ontario and as far south as Georgia. Also found from the eastern coast of N. America as far west as Kansas (3).

Vegetative Plant Description: *S. herbacea* is an herbaceous vine that climbs as high as 2.1m tall, is completely unarmed, and is often freely branched. The branches are either round or



many ridged. It has bladeless bracts on the lower portions of the stem that are appressed-ascending. The leaves, which generally number 25 or more, are glaucous and glabrous beneath and they have entire margins. The petioles are 1-4.5 cm long. *S. herbacea* has a wide range of leaf forms including narrowly oblong-ovate to nearly round, acute or broadly obtuse, tapering, truncate, or cordate. At the apex, the leaf is acuminate to cuspidate or broadly rounded and the apices always have convex lateral margins. *Smilax* leaves lack an abscission layer, but the petiole goes through a slight disintegration and the leaf falls off, leaving a rough end on the stem (1,4,5,6,7,8,11).

Climbing Mechanism: *S. herbacea* climbs using tendrils that are borne from the petioles.

Flower Description: *S. herbacea* is dioecious. The flowers are green to yellowish and 6 parted. The tepals are 3-6 mm long. They bear 3-4 mm long filaments that are longer than the anthers, which are only 1-2 mm long. There are 6 stamens. On the female flowers, the styles are ligulate. The ovary is superior with 1-3 locules. The inflorescence bears 20-100 flowers in a 3.8cm globose umbel arising the leaf axil. The peduncles can be up to twice as long as the subtending leaves and they become strongly divergent when fruiting. The flowers are carrion scented (1,4,5,7).

Flowering Time: Flowers of *S. herbacea* bloom between May and June (1,5).

Pollinator: The carrion smell of the flowers attracts flies, which are the main pollinators (12).

Fruit Type and Description: The fruit of *S. herbacea* are dark blue, smooth glaucous berries that are borne in umbellate clusters. The fruit is 8-10mm in diameter (1,5,7).

Seed Description: There are 3-6 seeds in a *S. herbacea* berry. They are brown red and about 4 mm long (5,7).

Dispersal Syndrome: *Smilax lasioneura*, which is very closely related to *S. herbacea* and is even referred to as a variety of *S. herbacea*, has bird-dispersed seeds. It is highly probable that *S. herbacea* seeds are also bird dispersed (14).





Distinguished by: *S. herbacea* is best identified by the carrion scent of its flowers and glaucous undersides of its leaves. This sets it apart from *S. illinoensis*, which does not have a glaucous underside. It can be distinguished from its closest relative, *S. lasioneura*, by the appressed-ascending bladeless bracts on the lower stem, which differ from *S. lasioneura* with its spreading-ascending bladeless bracts. Also, *S. herbacea* leaves are smooth above and below, whereas *S. lasioneura* is minutely pubescent. *S. herbacea* is completely unarmed which sets it apart from *S. hispida*. It can be distinguished from *Dioscorea villosa* by the presence of petiole tendrils, which are absent in *Dioscorea villosa*. *D. villosa* also bears at least 7 arching veins, which reunite at the apex of the leaf, but in *Smilax* the number of veins that converge on the apex is only 3 or 5 at most.

Menispermum is another alternate-leaved vine that does not bear petiole tendrils and it does bear a thickened petiole base (pulvinus), which is not seen in *Smilax*.

Other members of the family in Michigan (number species): Often *S. herbacea* is confused with *S. lasioneura*. There are 6 other species of *Smilax* in Michigan: *Smilax ecirrhata*, *Smilax hispida*, *Smilax illinoensis*, *Smilax lasioneura*, *Smilax pulverulenta*, and *Smilax rotundifolia*. *Smilax* is the sole genus in the Smilacaceae.

Ethnobotanical Uses: *S. herbacea* has multiple medicinal and edible uses. The young shoots, berries, and root can all be eaten. Only the root must be cooked. It has been said that *S. herbacea* can be used to treat hoarseness, as a dressing for burns and boils, and that the root is an analgesic. Further, the root has been used to treat back pains, stomach aches, lung disorders, and kidney problems (10).

Phylogenetic Information: The Smilacaceae is a family of the order Liliales. Liliales belong in the monocot clade. They form a monophyletic group with Asparagales, Dioscoreales, Pandanales, Arecales, Poales, Commelinales, Zingiberales, Petrosaviales, Alismatales, and Acorales. Liliales are angiosperms (9).

Interesting Quotation or Other Interesting Factoid not inserted above: Species of *Smilax* were found in 75% of the plots established for testing whether the local vegetation of Louisiana was suitable for sustaining a population of Chimpanzees as an alternative for the Chimps living in laboratory housing. The *Smilax* species were considered an abundant edible plant, but some were seen as potentially hazardous because of the common *Smilax* thorns. (13).

Literature and websites used:

- 1) Robert W. Freckmann Herbarium University of Wisconsin-Stevens Point. Last modified: March 19, 2008 (<http://wisplants.uwsp.edu> 10 July 2008)
- 2) Kartesz, J. 2000. ITIS Standard Report Page. 1996-2008 (<http://www.itis.gov> 10 July 2008)
- 3) USDA, NRCS. 2008. The PLANTS Database, Version 3.1, National Plant Data Center, Baton Rouge, LA 70874-4490 USA. (<http://plants.usda.gov/> 10 July 2008)
- 4) Fernald, M.L. 1950. *Gray's Manual of Botany*, 8th ed. New York, USA: American Book Company.

- 5) Gleason, H.A. & A. Cronquist 1991. *Manual of Vascular Plants of the Northeastern United States and Adjacent Canada*. Bronx, New York, USA: New York Botanical Garden Press.
- 6) Voss, E.G. 1972. *Michigan Flora Part I: Gymnosperms and Monocots*. Bloomfield Hills, Michigan, USA: Cranbrook Institute of Science.
- 7) McGregor R.L. 1986. *Flora of the Great Plains*. Lawrence, Kansas, USA: The University Press of Kansas.
- 8) Braun, E. Lucy. 1967. *The Vascular Flora of Ohio*. Columbus, Ohio, USA; The Ohio State University Press.
- 9) Solomon, J. 2006. W3TROPICOS VAST nomenclatural database. Missouri Botanical Garden. (<http://mobot.mobot.org/W3T/Search/vast.html> 14 July 2008)
- 10) Plants For A Future, 1996-2003. Last modified: June 2004. (<http://www.pfaf.org> 14 July 2008).
- 11) Holmes, W.C. 2002. *Smilacaceae*. In: Flora of North America Editorial Committee, eds. 1993+. *Flora of North America North of Mexico. New York and Oxford*. Vol. 26
- 12) Connecticut Botanical Society. Last modified: November 13, 2005 (<http://ct-botanical-society.org/> 18 July 2008)
- 13) Horvath, J.L., M. Croswell, R.C. O'Malley, & W.C. McGrew 2005. Plant species with potential as food, nesting material, or tools at a Chimpanzee refuge site in Caddo parish, Louisiana. *International Journal of Primatology* 28: 135-158
- 14) Thompson, J.N. & M.F. Wilson 1979. Evolution of temperate fruit/bird interactions: phenological strategies. *Evolution*. 33: 973-982.

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