

Plant Diversity Website

Smilax illinoensis Mangaly

Common Names: Carrion-flower, Illinois carrion-flower, Illinois greenbrier (1,3,5).

Etymology: *Smilax* is the Greek word for “clasping”, and *illinoensis* means “from Illinois” (5).

Botanical synonyms: None found.

FAMILY: Smilacaceae, the Greenbrier Family

Quick Notable Features (5,7):

- Erect herb with unarmed stems; tendrils near the apex of the plant
- Alternate leaves with parallel veins
- Petioles as long as the leaves or longer
- Axillary umbellate inflorescences of only pistillate or staminate flowers on each plant
- Flowers with 6 green to yellowish tepals

Plant Height: Usually 0.5-1 meter tall (2).

Subspecies/varieties recognized: None found.

Most Likely Confused with: *Smilax ecirrhata*, *S. herbacea*, *S. rotundifolia*, *S. hispida*, *S. lasioneura*, *Dioscorea villosa*, *Menispermum canadense*.

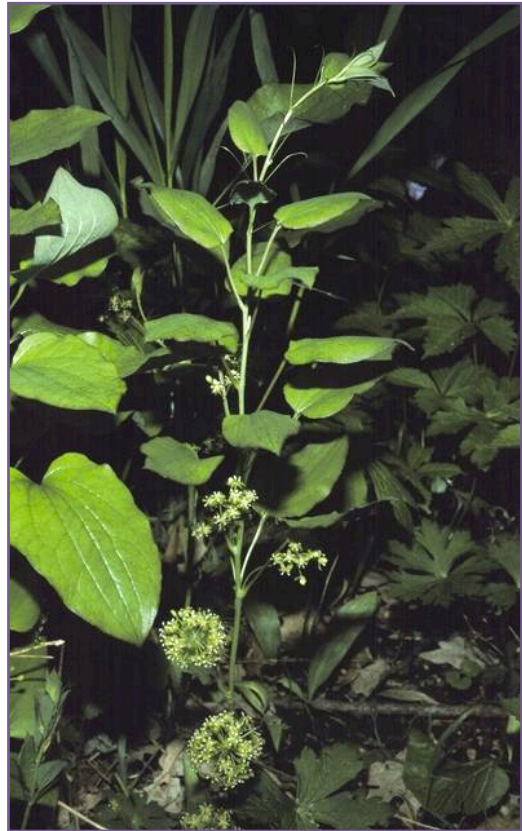
Habitat Preference: The Illinois greenbrier is usually found near roads, in forests, thickets, and in proximity to rivers (1,5,7).

Geographic Distribution in Michigan: *S. illinoensis* occurs in most counties of the southern half of the Lower Peninsula, and in Antrim, Delta, Marquette, Ontonagon, and Gogebic counties in the north (1).

Known Elevational Distribution: The species occurs between 150-600m above sea level (2).

Complete Geographic Distribution: Native to North America, the Illinois greenbrier is found in AR, IA, IL, IN, MI, MN, MO, NE, OH, WI, and ON (Canada) (3).

Vegetative Plant Description: *S. illinoensis* is an erect herbaceous monocotyledon with perennial rhizomes, and unarmed, unbranched stems. The paired stipules are 0.4-0.9 cm long and adnate to the petiole about half its length. The petioles



are as long as the leaf blades or longer, and the petioles of the upper leaves bear a pair of poorly developed tendrils near the petiole base. Leaf axils with tendrils rarely develop inflorescences. The leaves (rarely more than 25 per plant) are alternate and spirally arranged, simple, ovate with round, truncate, or subcordate bases, acute to acuminate apices, pubescent below, 2.3-20 cm long and 1.1-8.5 cm broad. The 3-5 parallel veins emerging from the top of the petiole arch smoothly to the apex where they unite again, and are covered in minute white hairs. Finer veins have a slightly reticulate pattern (1,2,5,7,10,11,14,15, C.V. Santanna pers. obs. of herbarium specimens from the University of Michigan Herbarium).



Climbing Mechanism: The species climbs using the paired tendrils near the petiole base of the plant's upper leaves (10,11).

Flower Description: *S. illinoensis* is dioecious. The round umbels (3-10 per plant) usually bear 25-60 flowers each, but occasionally as few as 10 flowers per umbel. The inflorescence peduncles are longer than the petioles by at least 2cm, and are borne on the lower nodes of the plant, axillary to a bract (2.5-7 cm long) or leaf. The greenish yellow flowers are unisexual, radially symmetrical, with 6 tepals in 2 whorls, each imbricate tepal 3.5-4.5 mm long, free and deciduous. Staminate flowers on 1.1-1.2 cm long pedicels bear 6 stamens with filaments longer than the anthers, inserted at the base of the tepals. Pistillate flowers on 1-1.4 cm long pedicels have 6 staminodes, a 3-carpellate superior ovary topped by a very short style and 3 spreading stigmas; each locule bears 2 ovules (1,2,5,10,11, C.V. Santanna pers. obs. of herbarium specimens from the University of Michigan Herbarium).



Flowering Time: May-June (2,7).

Pollinator: *Smilax lasioneura*, a closely related species to *S. illinoensis*, is pollinated by flies attracted to the carrion smell of the flowers (13). The pollen morphology of these two species is very similar (12). Also known as the Illinois carrion-flower, it is likely that *S. illinoensis* is also pollinated by flies or other insects, although no mention of the carrion odor was found in literature.

Fruit Type and Description: The fleshy fruits are small, globose, blue to black berries 4-7 mm across, each bearing 1-6 seeds (2,8,10,14,14, C.V. Santanna pers. obs. of herbarium specimens from the University of Michigan Herbarium).

Seed Description: The seeds are brownish in color and contain a small, oblong embryo. There is a protuberance at the apex of each seed (8).

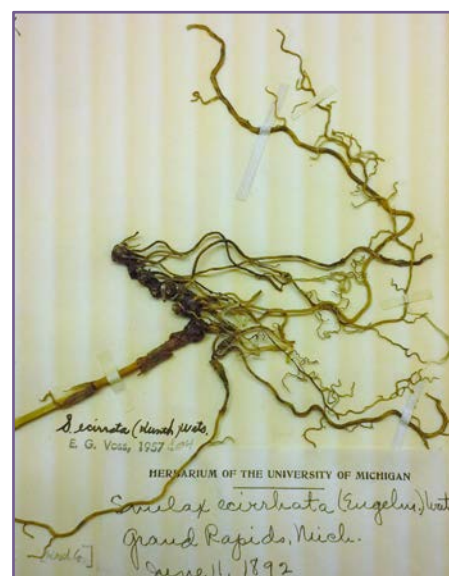
Dispersal Syndrome: Other species of *Smilax* in Michigan are dispersed by birds that consume the fruits (9). No specific information on seed dispersal was found for *S. illinoensis*, but it is likely dispersed by birds based on very similar fruit morphology to its congeners.

Distinguished by: *S. ecirrhata* has erect stems usually no taller than 50cm, tendrils are absent, leaves are basally cordate, petioles are usually longer than the peduncles, and there are fewer than 25 flowers per umbel. In contrast, *S. illinoensis* is usually taller than 50cm, tendrils are present, leaves are basally round, truncate, or subcordate, petioles are shorter than the peduncles, and there are usually more than 25 flowers per umbel. *S. herbacea*, *S. rotundifolia*, and *S. hispida* have abaxially glabrous leaves, stems longer than 1m, and tendrils are fully developed while the leaves of *S. illinoensis* are pubescent below, the stems are less than 1m long and erect, and the tendrils are poorly developed. *S. rotundifolia* and *S. hispida* stems become woody and armed with prickles while *S. illinoensis* is herbaceous and unarmed. Additionally, *S. rotundifolia* fruits are glaucous, distinguishing it from *S. illinoensis*. *S. lasioneura* has branched stems longer than 1m, with fully developed curling tendrils, also present at nodes with inflorescences, and the petioles are shorter than the leaves. *S. illinoensis* has unbranched stems, the tendrils are only present on the leaf axils of the uppermost leaves where inflorescences are absent, and the petioles are the same length or longer than the leaves. *Dioscorea villosa* is herbaceous and climbs by twining around other plants (tendrils are absent), the leaves are basally cordate, the inflorescence is paniculate, and the pistillate flowers have an inferior ovary that develops into a capsule with winged seeds. *S. illinoensis* inflorescences are umbellate and the pistillate flowers have a superior ovary that later develops into a berry. *Menispermum canadense* can become a woody vine with alternate slightly peltate leaves that are basally cordate and can be shallowly lobed. The unisexual flowers have a 4-8-parted calyx and a 6-8-parted corolla; staminate flowers bear 12-24 stamens, and pistillate flowers produce a dark glaucous drupe. *S. illinoensis* leaves are neither peltate nor lobed, its flowers have only 6 tepals, and the staminate only 6 stamens (1,2,10).

Other members of the family in Michigan (number species): *Smilax* (5) (source 1).

Ethnobotanical Uses: None found.

Phylogenetic Information: *Smilax illinoensis* is included here in the Smilacaceae family, which is in the Liliales order, part of the Monocotyledoneae clade of Angiosperms. The Smilacaceae is often classified as a subfamily in an expanded Liliaceae. The Liliales order includes 10 other families: Corsiaceae,



Campynemataceae, Melanthiaceae, Petermanniaceae, Colchicaceae, Luzuriagaceae, Alstroemeriaceae, Rhipogonaceae, Philesiaceae, and Liliaceae. Smilacaceae is a family of vines and lianas that often bear spiny stems; members of the family can be found in tropical and temperate regions in all continents but Antarctica (4).

Interesting Quotation or Other Interesting Factoid not inserted above: “*Smilax illinoensis* is intermediate between *S. ecirrhata* and *S. lasioneura*” (2) and it is many times erroneously identified as one of the latter in herbarium collections (12). *S. illinoensis* is placed within the *Smilax herbacea* complex, which was subdivided by Mangaly into the climber and the erect groups. *S. illinoensis* is part of the erect group together with *S. biltmoreana*, *S. ecirrhata*, and *S. hugeri* (6). The mean pollen size of *S. illinoensis* is 25.54 microns. The tendrils in *Smilax* originate from splitting petioles (12). “... it is concluded, on the grounds of anatomy and external morphology, that these tendrils are equivalent to the petiole in morphological value, and have arisen through chorisism or dédoublement of that organ” (16).

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1. Image of whole plant courtesy of Kay Yatskievych
2. Image of apex of the plant with tendrils taken at the University of Michigan Herbarium, courtesy of Cristine V. Santanna

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