

Plant Diversity Website

***Sicyos angulatus* L.**

Common Names: Bur-cucumber (1), One-seeded Bur-cucumber (4), Star-cucumber (10)

Etymology: The name *Sicyos angulatus* is Greek for “angular cucumber”, referring to its fruit (1).

Botanical synonyms: *Sicyos angulata* L. (13)

FAMILY: Cucurbitaceae (the gourd family)

Quick Notable Features:

- Staminate flowers formed in racemes; pistillate flowers in globose clusters (plants monoecious)
- Ovoid fruits clustered and densely covered in white prickles.
- Tendrils are 3 – 4 branched; coiling first in one direction, then in the opposite direction.



Plant Height: Typically climbs to 6m (4, 9).

Subspecies/varieties recognized:

Sicyos angulatus f. *ohtanus* Y. Asai (12)

Most Likely Confused with: *Echinocystis lobata* or *Menispermum canadense*

Habitat Preference: It is adapted to wet habitats: deciduous swamps, woodland floodplains, and river floodplains. It also colonizes open habitats along fencerows, roadsides, and woodland borders (2, 4). The plant has become a noxious weed for farmers in the Midwestern United States in cornfields where it can germinate from depths as much as 15 cm (15).



Geographic Distribution in Michigan: Concentrated mainly in southeast Michigan, the distribution extends along the southern border of the state to the western counties of Berrien, Cass, and St. Joseph (2, 3).

Known Elevational Distribution: none found.

Complete Geographic Distribution: *S. angulatus* is native to the United States, and is found in every state east of the Rocky Mountains (3). It is also found in Canada's eastern provinces, Mexico, the Caribbean, and Eastern Asia. It was first introduced to Europe as an ornamental, but has since escaped cultivation and become a weedy invasive species (6).

Vegetative Plant Description: This plant is an annual vine, drying entirely in the coldest months of the year. Leaves are simple, palmately veined, and alternately arranged. They have a denticulate margin (11) and 3-5 shallow lobes with acute tips. The leaf shape is orbicular-angular with a deep basal sinus, measuring about 8cm in length and width. The plant is pubescent on the stem and on the underside of the leaf along the petiole. The petiole is generally 5 cm long (1, 2, 4, pers. obs.). "The root system consists of a shallow branched taproot" (9).



Climbing Mechanism: *Sicyos angulatus* climbs with axillary tendrils bearing 3 or 4 branches. Branches of the tendril originate 2-5cm above the base of the tendril. When the tip of the tendril makes contact with a support, it wraps or hooks around the support, securing the tendril. Proximal to the contact point, the tendril then begins to twist forming spirals. It has an unusual ability, known as perversion, to form spirals first in one direction and then in the other direction (1, 14, pers. obs.).

Flower Description: Flowers are monoecious with both staminate and pistillate flowers generally arising from the same axis on pubescent peduncles. The peduncles of the pistillate flowers are generally the same length as the pedicels, whereas the peduncles of the staminate flowers are several times longer than the pedicels. The calyx is green, five-toothed, and pubescent (11). The corollas of both sexes are white with green striations, and consist of five petals fused at the base into an open bowl, and free and spread at the tips. Staminate flowers form on either paniculate or racemose inflorescences. The anthers unite to form a central column. Pistillate flowers are borne on a compact cyme, in a globose cluster of 8-20 flowers. The pistil consists of a superior ovary, a slender style, and 3 stigmas (1, 2, 8, 11, 14).



Flowering Time: In Ohio, *S. angulatus* blooms from mid-August to mid-September (10).

Pollinator: "The nectar of the flowers attracts long-tongued bees, such as honeybees & bumblebees, sphecid wasps, vespid wasps and various kinds of flies. Wasps are especially attracted by the accessible nectar of the staminate flowers. Some bees also collect pollen from the staminate flowers" (9).



Fruit Type and Description: Fruits are found clustered together, radiating from a central point, appearing as if it were one fruit with broad spikes.

These clusters measure 2.5-3.7 cm across. In reality, each 'spike' is a single fleshy fruit (a berry), that is dry and indehiscent at maturity, with one seed inside and a single style at the tip. Each fruit is covered in sharp, white prickles and measures 1.1-1.7 cm long (1, 2, 11).

Seed Description: Each fruit contains a single, large seed. The seed is brown, flat, and tapered at one end and is never fully released from the fruit. Thus what appears to be a seed at dispersal is a single mature ovary with one seed inside (pers. obs.).

Dispersal Syndrome: *S. angulatus* is an annual plant that spreads mainly by reseeding itself. Seeds are produced in large numbers and the enclosing fruit is disseminated by animals, which may catch the prickly fruit in their fur (6). Seeds germinate from May through September (16).

Distinguished by: Although superficially similar, *S. angulatus* is distinguishable from *Echinocystis lobata* in its seedlings, leaves, fruit, and flower. *E. lobata* has glabrous leaves with deep sinuses, whereas *S. angulatus* has pubescent leaves with shallow sinuses. Both species have a prickly fruit, but each fruit of *E. lobata* has four seeds, occurs singly, and resembles a small cucumber. Also, both species have white flowers, however the flower of *E. lobata* is minute, has six loosely splayed petals, whereas *S. angulatus* has five-petals cupped together (1,2,8).



The leaves of *S. angulatus* and *Menispermum canadense* are both orbicular-angulate and have 3-5 shallow lobes; however, the petiole of *M. canadense* is attached to the

underside of the leaf (peltate) and the leaf margin is entirely without teeth, whereas the petiole of *S. angulatus* is attached at the margin and there are subtle teeth at the margin.

Other members of the family in Michigan: Only *Echinocystis lobata*. Although *Cucumis melo* (melon), *Cucumis sativus* (cucumber), *Cucurbita pepo* (summer squash), and *Cucurbita maxima* (winter squash) have been found in 1-2 coastal counties in Michigan, the incidence of these species has been attributed to dispersal by picnickers at those sites, or by seeds surviving from garbage and sewage treatment wash-up (2).

Ethnobotanical Uses: The Iroquois used a decoction of the vine to treat venereal diseases. They would also mix the plant with cow feed to aid in difficult birth of calves (5).

Phylogenetic Information: Cucurbitaceae belongs to the order, Cucurbitales, which is closely related to Fagales, Fabales and Rosales within the clade Eurosids I. Cucurbitales is most closely related to Fagales; both are characterized as having 1-seeded, indehiscent fruit, and an inferior ovary (which are not universal in Cucurbitaceae). Within Cucurbitaceae, *Sicyos* belongs to the subfamily, Cucurbitaceae, which includes species with styles united into a single column. *Sicyos* belongs to the subtribe, Sicyinae, along with *Siyosperma*, *Parasicyos*, *Microsechium*, *Sechium*, and *Sechiopsis* (7,8).

Interesting Quotation or Other Interesting Factoid not inserted above: *S. angulatus* is invasive in maize and soybean fields where its seeds are scattered by farm machinery (6).

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