

Plant Diversity Website

Persicaria sagittata (L.) H. Gross

Common Names: Arrow-leaved tearthumb, arrow-vine, scratch-grass, gratte-cul, false buckwheat, American tear-thumb (1,7,11,13).

Etymology: *Persicaria* comes from the Latin word *persica*, meaning “from Persia” or “peach-like”, and *sagittata* means “barbed, arrow-shaped” (1,8,15).

Botanical synonyms (2):

Polygonum sagittatum L. (accepted name under TROPICOS)

Polygonum sagittatum var. *gracilentum* Fernald

Tracaulon sagittatum (L.) Small

Truellum sagittatum (L.) Soják

Helxine sagittata (L.) Raf.

The following are synonyms of *Polygonum sagittatum*:

Persicaria sieboldii (Meisn.) Ohki

Polygonum belophyllum Litv.

Polygonum paludosum (Kom.) Kom.

Polygonum sieboldii Meisn.

Tracaulon sibiricum (Meisn.) Greene

Tracaulon sieboldii (Meisn.) Greene

Truellum sibiricum (Meisn.) Soják



FAMILY: Polygonaceae (the buckwheat family)

Quick Notable Features (1,6):

- ↪ Four-angled stems bearing recurved prickles
- ↪ Simple, alternate sagittate leaves armed along the petiole and midrib
- ↪ Sheathing stipule (ocrea)
- ↪ Panicles of white to pink capitate flowers that produce 3-angled achenes

Plant Height: Arrow-vine grows up to 2m tall (16).

Subspecies/varieties recognized (2):

Persicaria sagittata var. *sieboldii* (Meisn.) Nakai



Most Likely Confused with: *Persicaria arifolia*, *Fallopia convolvulus*, *Fallopia cilinodis*, *Fallopia scandens*, and *Convolvulus arvensis* (3).

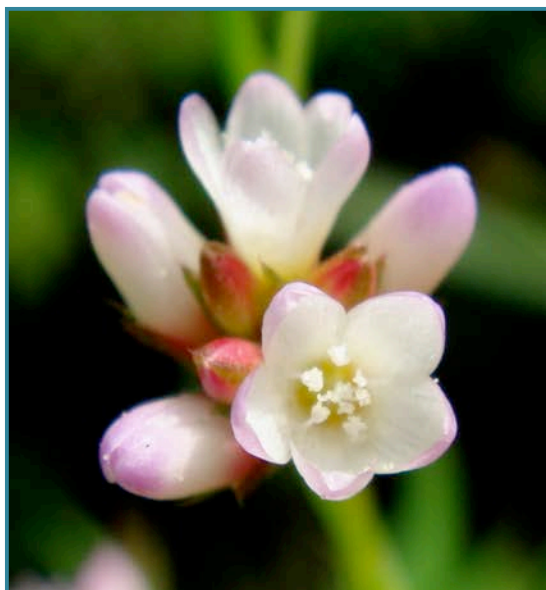
Habitat Preference: *P. sagittata* prefers wet to moist habitats: bogs, marshes, fens, swamps, meadows, and along rivers and lakeshores (3,6,14).

Geographic Distribution in Michigan: The arrow-vine is found mostly in the southern half of the Lower Peninsula, and almost all of the Upper Peninsula (except Mackinac, Luce, and Dickinson counties) (3).

Known Elevational Distribution: *P. sagittata* grows at 1036m above sea level in North Carolina and 2200m above sea level in China (5,17).

Complete Geographic Distribution: Native to North America and East Asia. In the United States, the species is found in Oregon, Colorado, and every state east of Colorado. In Canada, it is found in Manitoba and every state east of it. *P. sagittata* is also present in China, Japan, S. Korea, Mongolia, Russian Federation, Nepal, India, Ireland, and Venezuela (2,4,5,13).

Vegetative Plant Description: The climbing stems of the annual herbaceous *P. sagittata* are glabrous, ribbed, 4-angled, with recurved prickles (1-1.5mm long). Young stems are light green to green, and may become red to purple as they mature. The nodes are sheathed by a papery ocrea (0.5-1.3cm long) that is apically round, unarmed, and glabrous, although it may bear marginal cilia up to 1mm long. The petiole (0.5-4cm) is armed with recurved prickles that continue along the midrib abaxially. The simple, alternate leaves are oblong to broadly-lanceolate, sagittate, the apices of the basal lobes parallel, 2-10cm long and 0.7-3cm broad, entire, and apically round to acute. The leaf blades often bear marginal cilia, and are glabrous to appressed-pubescent (1,3,6,10,14,17).



Climbing Mechanism: The arrow-vine climbs by leaning or scrambling on adjacent vegetation (1), which may be aided by the recurved prickles along the stems and petioles.

Flower Description: The inflorescences (3-15cm long) are axillary or terminal glabrous panicles, often branched and bearing minute recurved prickles near the base. They can be subtended by an ocrea-like bract (1.5-3mm long). Each inflorescence branch ends in a dense capitate cluster of fascicles, each ocreate fascicle bears 2-3 flowers. The peduncles are glabrous and 1-8cm long, and pedicels up to 1.5mm long. The 5 tepals are greenish to white and often tinged with red or pink, connate about half their length. Each tepal is broad elliptic, apically round, glabrous, and 0.3-0.5cm long. The eight stamens are epipetalous in 2 whorls: the outer five are 1-1.5mm long and the inner three are about 2mm long. The ovary is unilocular, superior, and topped by a 3-cleft style about 0.5mm long (1,6,16,17).

Flowering Time: Jun-Oct in North America (6).

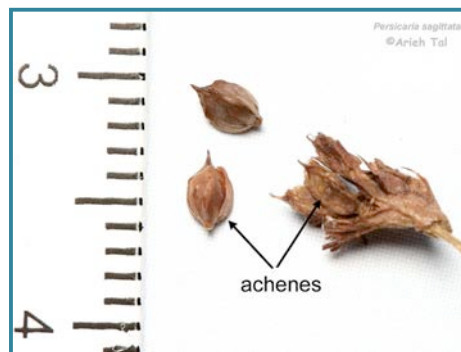
Pollinator: The species is pollinated by insects, although nothing more specific was found in the literature (11,18).

Fruit Type and Description: The achenes are strongly 3-angled, 2.5-4mm long and 1.8-2.5mm broad, brown to black. Each bears a persistent style at the apex, and a surface that is smooth or punctate (1,6).

Seed Description: The seed is ruminant and the embryo curved, both common characteristics of the family Polygonaceae and of the genus *Persicaria*, respectively. The seeds have a higher germination rate during their first year, and an average weight of 6.4mg (6,10,19).

Dispersal Syndrome: There is no specialized mechanism for dispersal in *P. sagittata*, suggesting that the achenes are probably dispersed by gravity (19).

Distinguished by: *Persicaria arifolia* is very similar to *P. sagittata*, but leaves of the former are hastate, not sagittate, the inflorescences are short racemes bearing flowers with 4 tepals and 2-cleft styles, while *P. sagittata* bears elongated panicles with flowers of 5 tepals and 3-cleft styles. Additionally, the achene in *P. arifolia* is lenticular, not 3-angled. The stems and petioles in *Fallopia convolvulus*, *F. cilinodis*, *F. scandens*, and *Convolvulus arvensis* are unarmed. The leaves of *F. convolvulus*, *F. cilinodis*, and *F. scandens* are ovate-cordate. The inflorescence in *F. convolvulus* bears 2-4 flowers, and *P. sagittata* bears 2-3 flowers per fascicle. The base of the ocrea in *F. cilinodis* is barbed and the styles are free. *F. scandens* leaves may be slightly hastate, and the achenes are winged. *C. arvensis* stems are pubescent to glabrate, the inflorescence is solitary and the corolla is much larger (1.5-2cm long) than the small *P. sagittata* tepals. The fruit of *C. arvensis* is a capsule (1,3,6).



Other members of the family in Michigan (number species): Bistorta (1), Fagopyrum (1), Fallopia (5), Persicaria (13), Polygonella (1), Polygonum (6), Rheum (1), Rumex (13) (source 3).

Ethnobotanical Uses: *P. sagittata* is used as diuretic and helps to alleviate renal colic (11).

Phylogenetic Information: The genus *Persicaria* is included in the tribe Persicarieae along with the genera *Aconogonon*, *Koenigia*, *Rubrivena*, and *Bistorta*, subfamily Polygonoideae in the Polygonaceae family. Recent molecular phylogenetic analysis has shown that the group Persicarieae is monophyletic, uniting most of the species formerly referred to as *Polygonum* with those in the genus *Persicaria* (20). The Polygonaceae is part of the order Caryophyllales, which contains approximately 6.3% of all known eudicots (9,10).

Interesting Quotation or Other Interesting Factoid not inserted above: A paleobotanical study suggested that *P. sagittata* (listed as *Polygonum sagittatum*) from Arcto-Tertiary forests in North America and Asia has evolved very little and is extremely similar to the species today, along with other herbaceous species such as *Cypripedium arietinum*, *Tovara virginica*, and *Brachyelytrum erectum* (12).

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