

Plant Diversity Website

Vicia tetrasperma (L.) Schreb.

Common Names: Sparrow vetch, lentil vetch, four-seed vetch, slender vetch, smooth tare (3,8,10,14).

Etymology: *Vicia* is Latin for “vetch”, and *tetrasperma*, from the Greek words *tetra* and *sperma*, means “four-seeded” (4).

Botanical synonyms: *Vicia gemella* Crantz, *Ervum tenuissimum* Pers., *E. tetraspermum* L. (2).

FAMILY: Fabaceae, the pea family

Quick Notable Features (5,7):

- Herbaceous vine with compound leaves (4-10 leaflets)
- Leaflets oblong, apically rounded with a small point
- Lilac flowers with darker veins, single or paired on peduncles longer than the leaflets
- The hilum covers 20% of the seed circumference



Plant Height: The stems can grow up to 60cm long (6).

Subspecies/varieties recognized (2):

- V. tetrasperma* var. *tenuissima* Druce
- V. tetrasperma* subsp. *gracilis* (DC.) Hook. f.
- V. tetrasperma* subsp. *pubescens* (DC.) Ponert
- V. tetrasperma* subsp. *tetrasperma*

Most Likely Confused with: *Vicia hirsuta*, *V. caroliniana*, *V. villosa*, *V. cracca*, or species of *Lathyrus*.

Habitat Preference: The plant grows in open sites and woods, abandoned fields, and on roadsides (5,7).

Geographic Distribution in Michigan: *V. tetrasperma* is scattered in 13 counties in the lower peninsula and Chippewa Co. in the upper peninsula (3).

Known Elevational Distribution: The species was collected at 1900m above sea level in Taiwan and up to 2900m above sea level in China (9, 16).

Complete Geographic Distribution: Native to Europe, *V. tetrasperma* is found throughout the United States, except for most of the Great Plains states, as well as AZ, UT, NV, PR, VI, HI, and AK. In Canada, it is found in BC, NB, NF, NS, ON, PE, QC. This species is native to most of

Europe, especially abundant in western countries. It is also found in Algeria, Australia, Azerbaijan, Chile, China, Georgia, India, Israel, Japan, Korea, Morocco, Nepal, New Zealand, Russia, St. Pierre and Miquelon, St. Helena, South Africa, Syrian Arab Republic, Tajikistan, Tunisia, Turkey, and Turkmenistan (8,9).

Vegetative Plant Description: *V. tetrasperma* is an annual, herbaceous, decumbent or climbing plant with branching stems that are slender, and smooth to lightly pubescent. The stipules are entire, sagittate or nearly deltoid, 2-3mm long. The alternately arranged leaves are 2-4cm long, pinnately compound, with 4-10 mostly glabrous leaflets 0.6-2cm long and at least 3mm wide. The leaflets are oblong to narrow elliptic and apically rounded with a small point. The terminal leaflet is modified as a tendril that is entire or branched (5,6,7,16).

Climbing Mechanism: The plant uses its foliar tendrils to climb (7).



Flower Description: The flowers of *V. tetrasperma* (4-8mm long) are perfect, zygomorphic, and borne in racemes with 1-3cm long pedicels, bearing usually 1-2 flowers, less often 3-4. The calyx tube (1-1.5mm long) has minute appressed pubescence, or it may be glabrous, and the five lobes are irregular, with the upper lobes clearly shorter than the lower. The five petals are lilac to whitish with conspicuously darker veins. The standard overlaps the wings, which are adherent to the keel petals. The 10 stamens are fused as 9+1. The oblong, unicarpellate ovary is sessile, or nearly so, 3-4mm long, with a filiform, apically pubescent style (5,6,7,16).



Flowering Time: *V. tetrasperma* flowers in spring (April-June) (7).

Pollinator: The species is autogamous, self-pollinating (13).

Fruit Type and Description: *V. tetrasperma* bears a flattened, glabrous legume, light brown in color when mature in May-July. The legumes are usually 1-1.3cm long, 0.3-0.5cm wide, blunt tipped, and each contains 3-5 seeds (5,7).

Seed Description: The subglobose seeds are 1.5-2.5mm broad, with an attachment scar (hilum) that covers 20% of the seed circumference (5).

Dispersal Syndrome: *V. tetrasperma* is a self-reseeding species. Hygroscopic movement (stress due to differential rates of drying in adjacent tissues) causes the legume fruits to dehisce explosively (12).

Distinguished by: Most similar to *Vicia tetrasperma* is *V. hirsuta*, which has more leaflets per leaf (12-16). While the calyx lobes are approximately the same size, the legumes of *V. hirsuta* are pubescent with only 2 seeds. The leaflets of *V. caroliniana* are also more numerous (10-18) than *V. tetrasperma*, and are covered in soft pubescence. Further, the inflorescence of *V. caroliniana* bears more (7-20) and larger (8-12mm long) flowers than *V. tetrasperma*, and has a calyx that is almost regular. The legumes of *V. caroliniana* are longer (1.5-3cm long), and bear more seeds per fruit (5-8). *V. villosa* and *V. cracca* both have 16-24 leaflets per leaf, the inflorescences are borne in dense racemes, and the legumes are longer (2-3cm long). *V. villosa*'s calyx tube is conspicuously swollen at the base, and the flowers are larger (~1.5cm long). *V. cracca*'s calyx tube is only slightly swollen at the base, and the flowers (9-13mm long) overlap one another. *Lathyrus* spp. are generally very similar to *Vicia* spp. The flowers can be differentiated by mostly free wings, which are adherent to the keel petals in *Vicia* spp., and the widened, flattened style with hairs along the inner side, in comparison to the filiform style with apical hairs found in *Vicia* flowers. Without flowers, *Lathyrus* can usually be distinguished from *Vicia* by the size and shape of the stipules. In *Lathyrus*, the stipules are hastate to semi-sagittate and more than 7mm broad, with the exception of *L. palustris* and *L. venosus*, which have smaller stipules. Species in the genus *Vicia* have semi-sagittate to lanceolate stipules that are less than 7mm broad (5,6,7).



Other members of the family in Michigan (number species): *Amorpha* (2), *Amphicarpaea* (1), *Anthyllis* (1), *Apios* (1), *Astragalus* (3), *Baptisia* (3), *Caragana* (1), *Cercis* (1), *Chamaecrista* (2), *Colutea* (1), *Crotalaria* (1), *Cytisus* (1), *Dalea* (2), *Desmanthus* (1), *Desmodium* (12), *Galega* (1), *Gleditsia* (2), *Glycine* (1), *Gymnocladus* (1), *Hedysarum* (1), *Hylodesmum* (2), *Kummerowia* (1), *Lathyrus* (9), *Lespedeza* (9), *Lotus* (1), *Lupinus* (3), *Medicago* (3), *Melilotus* (3), *Mimosa* (1), *Orbexilum* (1), *Phaseolus* (2), *Pisum* (1), *Pueraria* (1), *Robinia* (3), *Securigera* (1), *Senna* (2), *Strophostyles* (1), *Tephrosia* (1), *Trifolium* (10), *Vicia* (9), *Vigna* (1), and *Wisteria* (2) (source 3).

Ethnobotanical Uses: No medicinal uses for *V. tetrasperma* were found in the literature, but the leaves and stems can be consumed cooked (15). Although the plant is not listed as poisonous, there is a recorded case in which a 3-year-old child ingested the seeds of *V. tetrasperma*, resulting in gastrointestinal discomfort (11).

Phylogenetic Information: The genus *Vicia* is a member of the subfamily Faboideae in the Fabaceae family, which is in the order Fabales, part of the Rosids I, Core Eudicots. Members of the Fabaceae family are distributed worldwide, and the family contains approximately 9.4% of all eudicots and 16% of all known woody plants found in neotropical rainforests (1).

Interesting Quotation or Other Interesting Factoid not inserted above: In 2001, it was determined that *V. tetrasperma* populations have high genetic variation, which can be attributed to its wide geographical range, high fecundity rates (70-150 seeds per plant), and the persistence of wild populations (12). *V. tetrasperma*, like many members of the Fabaceae, has a symbiotic relationship with nodule forming bacteria that fixes atmospheric nitrogen in a form that is used by other plants, benefiting not only the host, but surrounding individuals as well (15).

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PRIMARY AUTHOR: Cristine V. Santanna with revisions and editing by Jenna Dorey and Robyn J. Burnham.

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For additional information on Michigan Plant Diversity web pages please contact Robyn J. Burnham via email: rburnham@at.umich.edu