

Plant Diversity Website

Vicia grandiflora Scop.

Common Names: Large-flowered vetch, large yellow vetch, bigflower vetch (3,8).

Etymology: *Vicia* is the Latin word for “vetch”, and *grandiflora* means “large-flowered” (4).

Botanical synonyms: none found.

FAMILY: Fabaceae, the pea family

Quick Notable Features (5,7):

- Herbaceous vine with compound leaves (6-14 leaflets) ending in a forked tendril
- Large yellowish flowers, usually paired in the upper leaf axils, with a calyx covered in fine hairs
- The hilum occasionally covers over 70% of the seed circumference

Plant Height: Stems can grow up to 60cm long (5,6,7).

Subspecies/variants recognized (2):

- V. grandiflora* var. *biebersteinii* Griseb.
- V. grandiflora* var. *dissecta* Boiss.
- V. grandiflora* var. *kitaibeliana* W.D.J. Koch
- V. grandiflora* var. *sordida* Griseb.
- V. grandiflora* subsp. *grandiflora*
- V. grandiflora* subsp. *sordida* Dostál



Most Likely Confused with: *Vicia lathyroides*, *V. sativa*, *V. villosa*, *V. americana*, *V. cracca*, *V. faba*, or species of *Lathyrus*.

Habitat Preference: Open sites and woods, abandoned fields, and on roadsides (5,7).

Geographic Distribution in Michigan: *V. grandiflora* is only found in Ingham and Oceana counties (3).

Known Elevational Distribution: The species was collected at 1,720m above sea level in Armenia (9).

Complete Geographic Distribution: Native to Europe, *V. grandiflora* is found mainly in the southeastern United States (AL, AR, DE, FL, GA, KY, LA, MA, MD, MI, MO, MS, NC, NJ, NY, SC, TN, VA, WV). It is also found in Armenia, Austria, Azerbaijan, Belgium, Bosnia & Herzegovina, Brazil, Bulgaria, Croatia, Czech Republic, France, Georgia, Germany, Greece, Hungary, Italy, Luxembourg, Netherlands, Norway, Poland, Slovakia, Slovenia, Sweden, Switzerland, Syrian Arab Republic, Tajikistan, Turkey, Ukraine, and the United Kingdom (8,9).

Vegetative Plant Description: *V. grandiflora* is an annual, herbaceous vine with branching stems that are finely pubescent to glabrous. The stipules of the upper and lower leaves are differentiable: the upper are entire, ovoid, and 2-3mm long, while the lower are lanceolate, longer, and have coarsely serrated margins (3-4mm long). The leaves are alternately arranged and pinnately compound, with 6-14 e-stipellate leaflets with glands beneath. The terminal leaflet is modified into a forked tendril. The leaflets are obovate, up to 2cm long with approximately 12 pairs of secondary veins (pinnately veined) (6,7,10).

Climbing Mechanism: Foliar tendrils allow climbing (7).

Flower Description: *V. grandiflora* flowers (2.6-3.5cm long) are perfect, zygomorphic, and are borne in nearly sessile (pedicels are 2-8mm long) clusters of usually two flowers, in the upper leaf axils. The calyx tube (0.6-1cm long) is short, pubescent to glabrous, and the pilose lobes (5) are nearly half as long as the tube. The petals (5) are yellowish or white; the standard and keel petals are sometimes tinged with purple. The standard is obovate and overlaps the wings. The wing petals are narrower than the standard, about the same length as the calyx tube, and adherent to the keel petals, which are shorter than the wings. The stamens are 10 (fused as 9+1). The ovary is sessile or nearly so; the style is filiform with trichomes at the apex (5,6,7).



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

Pollinator: *Vicia grandiflora* is insect pollinated, like other members of *Vicia*. Various bees are known to visit the plant for nectar including bumblebees, *Apis mellifera*, *Eucera*, *Anthophora*, *Andrena*, and *Halictus* species (13).



Fruit Type and Description: *V. grandiflora* bears a compressed legume that is hairless or slightly pubescent, and turns from green to black at maturity (May-July). The legumes are usually 3.5-5cm long, 0.6-0.8cm wide, and contain at least 2 seeds (5,7).

Seed Description: The seeds are reniform (kidney shaped), <4mm long and about 3mm broad, reddish brown with darker spots, or black. An attachment scar, the hilum, occasionally covers over 70% of the seed circumference (12).

Dispersal Syndrome: *Vicia grandiflora* is a self-reseeding species, demonstrated in experimental inter-seeding in farming and agriculture (16). Further, birds often eat the seeds (14), but there is no evidence confirming that the seeds are still viable after predation.

Distinguished by: *V. grandiflora* has more leaflets than *Vicia lathyroides* (only 4-8 leaflets). and *V. lathyroides* has unforked tendrils. The flowers of *V. lathyroides* are bluish in color, not paired or grouped, and they are much smaller (<1cm long) than the flowers of *V. grandiflora*. *V. lathyroides* also has quadrate seeds. *V. sativa* has about the same number of leaflets as *V. grandiflora*, occasionally a couple more, but the leaflets are longer (1.5-3.5cm long) and often pubescent. The flowers of *V. sativa* are roughly the same size as in *V. grandiflora*, also paired, but the corolla is purple with violet wings and the lobes of the sepals exceed the calyx tube in length. *V. villosa*, *V. americana*, *V. cracca*, and *V. faba*'s inflorescences are pedunculate and racemose, bearing 3 to many flowers. *V. villosa*, as suggested by its name, has visibly villous stems. Additionally, the leaflets can be more numerous (10-20), the calyx is irregular and swollen at the base, and the corolla is usually purple. *V. americana* has longer leaflets (1.5-3cm long), the base of the calyx is also swollen (not as much as *V. villosa*, but very similar to *V. cracca*), and the corolla is bluish-purple. *V. cracca* has the same number of leaflets as *V. villosa*, each leaflet the same length as *V. americana*, but all stipules are entire. The flowers are blue and densely clustered. *V. faba* only grows to 20cm tall, does not have tendrils (not a climber), and the leaflets are less numerous (4-6) and longer (5-10cm long). *Lathyrus* spp. are generally similar to *Vicia*. The flowers of *Lathyrus* spp. 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* (5,6,7,17).



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. grandiflora* were found in the literature, but the leaves are edible and can be used in salads (15). Some *Vicia* spp. are known to contain toxic substances in their seeds, thus the ingestion of *V. grandiflora* seeds is not recommended (18).

Phylogenetic Information: *Vicia* is a member of the subfamily Faboideae in the Fabaceae family, which is in the order Fabales, superorder Rosanae, subclass Magnoliidae. 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: A study to determine the best winter cover crop for no-till corn production compared the nitrogen that is biologically fixed by *V. grandiflora*, *V. villosa*, and *Trifolium incarnatum*, to the commonly used cover grass *Secale cereal* (rye). *V. villosa* was shown to be a better cover crop than *V. grandiflora* and the other species, in terms of dry matter and nitrogen production (11).

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