

Plant Diversity Website

Lathyrus hirsutus L.

Common Names: Caley pea, singletary peavine, singletary pea, hairy vetchling, Austrian winterpea, rough pea-vine, wild pea, *gesse velue* (French), *rauhhaarige platterbse* (German), *cicercia pelosa* (Italian), *guija velluda* (Spanish), *chícharo-verrugoso* (Portuguese) (1,4,5,8).

Etymology: *Lathyrus* comes from the Greek word *Lathyros*; the prefix *la-* meaning “very,” and suffix *-thyros* meaning “passionate.” The species name, *hirsutus*, is derived from Latin, meaning “hirsute, hairy” (7).

Botanical synonyms (5): *Pisum hirsutum* (L.) E.H.L. Krause

FAMILY: Fabaceae, the pea family

Quick Notable Features (1,5,8):

- Small (1-1.4cm) papilionaceous flowers, most often purple to blue, but also pink, red or white in color
- Branched tendrils at the apex of the 2-foliolate leaves
- Winged stems and semi-sagittate to linear stipules
- Hirsute, glandular pubescence on the ovary and legume

Plant Height: About 0.25 to 1 meter tall (8,9).

Subspecies/varieties recognized (5): None found.

Most Likely Confused with: *Lathyrus odoratus*, *L. latifolius*, *L. sylvestris* and *Vicia* spp.

Habitat Preference: Commonly found in thickets, disturbed waste grounds, roadsides, fields, savannahs, creekbeds, wet meadows, and along railroad tracks. This plant prefers to grow in full to partial sunlight and in soils of a loamy consistency with a moderate amount of moisture (3,7,8).



Geographic Distribution in Michigan: *L. hirsutus* is cultivated in Michigan, however there is only one recorded instance, in Ingham County, of this plant escaping cultivation (1).

Known Elevational Distribution: Found growing from 0 to 1000m above sea level (3,11).

Complete Geographic Distribution: Native to Mediterranean Europe, *L. hirsutus* is cultivated worldwide and has been collected in 42 countries across 6 continents (all except Antarctica) (8,10).

Vegetative Plant Description: *L. hirsutus* is an annual climbing vine with a glabrous, flattened, winged stem. The stems form dense mats and may be erect, ascending or prostrate. The compound leaves are arranged alternately. Each leaf is two-foliolate, with the leaf apex modified into a branched, coiling tendril; the petioles are short and flat, not winged. The leaflets are

narrowly elliptic to oblong-lanceolate, glabrous, and 3-6cm long by 0.3 to 1.1cm wide. Individual leaflets have entire margins and parallel primary venation, with the secondaries crossing the primary veins. Two semi-sagittate to linear stipules (1-1.8cm long) are attached at the base of each leaf (1,3,5,7,8).

Climbing Mechanism: *L. hirsutus* climbs using the tendrils at the leaf apex. The tendrils are sensitive to contact, allowing the pea to climb neighboring plants or fences (8).

Flower Description: Each inflorescence is an axillary raceme, with 1 - 3 flowers per peduncle, which exceeds the length of the leaf. The green calyx (4.5-5.5mm long) is pubescent, composed of 5 sepals, connate at the base, and about equal in length to the tube, or slightly longer, with teeth subequal and acute. The bilateral, papilionaceous corolla has 5 petals: a standard, 2 free wing petals, and 2 fused petals (the keel). The banner is sub orbicular, rounded, and darker in color. The wings are narrowly oblanceolate to oblong with basal auricles and obtuse to rounded apices. The keel petals have obtuse to rounded apices, and are not beaked. The corolla (1-1.4cm long) is found in various shades of red, purple, pink, blue and white. The stamens are diadelphous, with 9 of the 10 stamens united and one free, with glabrous filaments. The superior ovary is pustular pubescent and one carpellate, with a style that is pubescent on one side, appearing flattened, and persistent on the fruit (1,5,8,12).



Flowering Time: *L. hirsutus* flowers during spring, starting as early as March in California, and into May/June as its distribution moves north. The blooming period lasts 1-2 months (8,11).



Pollinator: *Lathyrus hirsutus* is mainly pollinated by long-tongued bees, such as bumblebees. Other insects, including butterflies and skippers, visit the flowers for nectar and may occasionally pollinate the flowers (8).

Fruit Type and Description: The fruit, a legume, is unilocular and covered in stiff pustular pubescence. It is elongate and oblong-linear in shape (2-5cm long by 5-8mm wide). After the fruit dehisces, the two valves coil. Each legume contains between 3-10 seeds (1,5,8,9).

Seed Description: The seeds are orbicular, slightly flattened, brown, olive or black in color, mottled, and have a wrinkled surface. There are approximately 40 seeds/g (4,8,9).

Dispersal Syndrome: The legumes are dehiscent, and forcibly expel the seeds from the fruit (8).

Distinguished by: Like *Lathyrus hirsutus*, 3 other members of *Lathyrus* (*L. latifolius*, *L. sylvestris*, and *L. odoratus*) have winged stems, 2 leaflets per leaf, and a terminal leaflet modified into a tendril, which may make them difficult to distinguish. *L. latifolius* has larger flowers (1.6-2.6cm long), and can be distinguished by the completely glabrous ovary and fruit. Sterile plants can be differentiated by the petioles, which are winged in *L. latifolius*, possibly longer leaflets (up to 9cm long), and leathery leaves and stipules. *L. sylvestris* is distinguished by the narrowly lanceolate leaflets (only up to 1.5cm long), which are shorter than *L. hirsutus* (3-6cm long), the glabrous ovary and fruit, which is longer (5-7cm long), and the winged petioles. *L. odoratus* is distinguished from *L. hirsutus* by its elliptic leaflets (linear-lanceolate in *L. hirsutus*), and the winged petiole (not winged in *L. hirsutus*). Like *Lathyrus hirsutus*, *L. odoratus* has a pubescent ovary and legume, but the flowers are much larger (>2cm long) and strongly aromatic.

Lathyrus spp. are generally very similar to *Vicia*. 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 exceptions 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. Additionally, no species in *Vicia* have 2-foliolate leaves; instead each leaf has at least 4 leaflets (1,7,8).

Other members of the family in Michigan (number species): *Amorpha* (2), *Amphicarpea* (1), *Anthyllis* (1), *Apios* (1), *Astragalus* (3), *Baptisia* (3), *Caragana* (1), *Cercis* (1), *Chamaecrista* (2), *Crotalaria* (1), *Cytisus* (1), *Dalea* (2), *Desmanthus* (1), *Desmodium* (12), *Galega* (1), *Gleditsia* (1), *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* (2), *Securigera* (1), *Senna* (2), *Strophostyles* (1), *Tephrosia* (1), *Trifolium* (10), *Vicia* (10), *Vigna* (1), and *Wisteria* (2) (source 1).

Ethnobotanical Uses: The leaves and stem of *Lathyrus hirsutus* are edible and nutritious, and not confirmed to contain the dangerous toxins found in some species of *Lathyrus*. The seeds however, are known to contain toxins that cause a degenerative neurological disease, lathyrism, and should not be consumed. Some species of *Lathyrus* are edible, but because this genus also includes species that may be toxic, always be sure to double check edibility before consuming any part of a *Lathyrus* plant (9).

Phylogenetic Information: The genus *Lathyrus* is a member of the subfamily Papilionoideae (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 (2).

Interesting Quotation or Other Interesting Factoid not inserted above: The wing petals of *L. hirsutus* are often notably much bluer than the banner. There are several hypotheses to explain this occurrence. First, is that it is linked to the flavanol concentration (relative to the anthocyanin content), which is higher in the wing petals than the banner. Second, is that the relative pH difference (higher pH in wing petals) causes the color difference (6). The vegetative parts of the plant serve as a food source for herbivorous insects and mammals, and the seeds are consumed by birds (8). *Lathyrus hirsutus* is cultivated as a cover crop, and as other members of the Fabaceae family, its roots form symbiotic relationships with nodule-forming bacteria that fix nitrogen, enriching the soil around it (8,9). Lathyrism, the disease caused by the ingestion of the seeds, affects many species of animals, and it is more aggravated in horses. "Chronic consumption of seeds of other *Lathyrus* species result in skeletal deformities in growing animals. Calves born to cows that have consumed seeds of singletary pea for several months during gestation may have crooked legs and a curved spine" (9).

Literature and websites used:

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