

# Plant Diversity Website

## *Lathyrus japonicus* Willd.

**Common Names:** Beach pea, Sea pea, Sand pea (1,13)

**Etymology:** The original name *Lathyrus* comes from a leguminous plant named by Theophrastus, from the prefix *la*, meaning “very” and *thuros*, meaning “passionate”. *Japonicus* simply means “of Japan” (3,5).

**Botanical synonyms:** *Lathyrus maritimus* Bigelow (3,4), *Pisum maritimum* L. (3)

**FAMILY:** Fabaceae (the pea family)

**Quick Notable Features:**

- Stipules with 2 basal lobes
- Mostly 4-12 leaflets
- Stems angled but not winged
- Tendrils are borne from the leaf tips

**Plant Height:** *L. japonicus* can grow to 1.5 meters in length (5).

**Subspecies/varieties recognized:** According to ITIS (2) there are 5 recognized varieties

*Lathyrus japonicus* var. *japonicus*

*Lathyrus japonicus* var. *maritimus*

*Lathyrus japonicus* var. *parviflorus*

*Lathyrus japonicus* var. *pellitus*

*Lathyrus japonicus* var. *pubescens*

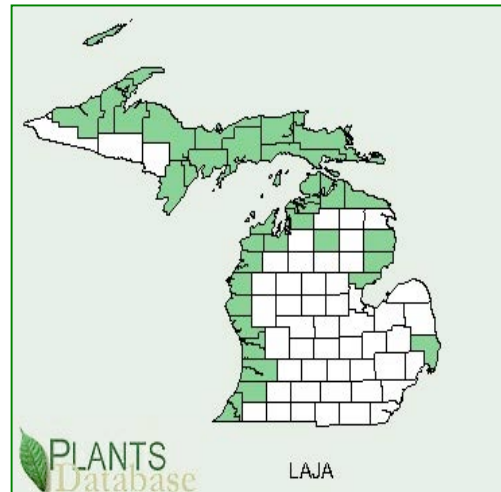
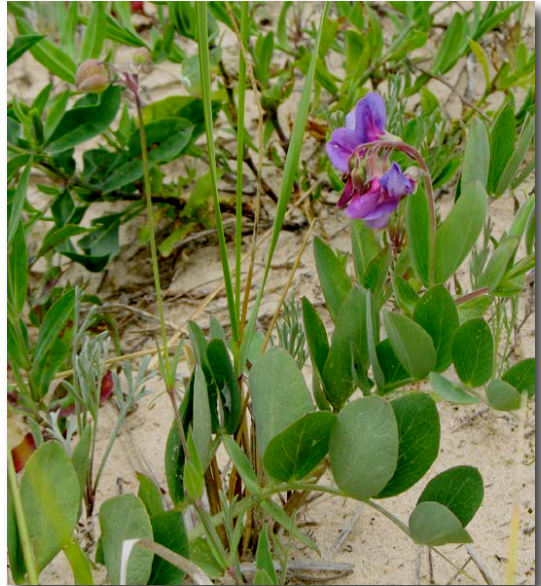
**Most Likely Confused with:** Other species of *Lathyrus*, including *L. ochroleucus*, *L. venosus*, and *L. palustris* as well as *Wisteria floribunda*, *W. frutescens*, and *W. sinensis*.

**Habitat Preference:** *L. japonicus* can be found on dunes, sandy to gravelly beaches, and adjacent to disturbed ground along large bodies of water (4).

**Geographic Distribution in Michigan:** *L. japonicus* has been witnessed in both the upper and lower peninsulas of Michigan, all of which border the Great Lakes with the exception of Crawford County (1).

**Known Elevational Distribution:** *L. japonicus* grows to 300m above sea level (9).

**Complete Geographic Distribution:** *L. japonicus* is native to North America. It is found in all of the Great Lakes States, as well as in every state from New Jersey north to Maine, and every state on the West Coast. It is found in every Canadian province and territory except Alberta and Saskatchewan. It is also found in Chile (1,6).



**Vegetative Plant Description:** *L. japonicus* has a compound leaf with between 4 and 12 firm leaflets but has been seen with as few as 2. The leaflets are approximately 1.5-3 cm wide and 1-7 cm long. The stipules are between 10-25 mm wide and have hastate lobes. The petioles are slightly bristly above. The stems are erect, semi-woody, and angled, sprawling, or flanged. The tendrils can be found coiled, branched, or neither and are borne from the leaf tips. This species is highly variable (4,5,6,14).

**Climbing Mechanism:** Tendrils are borne on the leaf tips (13).

**Flower Description:** *L. japonicus* has 3-10 fragrant purple to bluish flowers that are occasionally white. The flowers are borne in a raceme and are 1.2-3.0 cm long. The flowers are “papilionate” (14) or butterfly like, meaning that there is a banner petal, two wing petals, and a keel petal. The corolla is 1.8-2.2 cm. The peduncles are filiform and 0.7-2.5 cm wide. There are 10 stamens that are separated into 2 bundles of 1 and 9. The styles are bent nearly at a right angle to the ovary. The ovary is puberulent (4,5,14).



**Flowering Time:** In the Pacific Northwest, *L. japonicus* flowers from May to September and from June to late August in Britain (9,13).

**Pollinator:** Bees pollinate the flowers, as evidenced by their color and scent (9).

**Fruit Type and Description:** The fruit is a legume about 3-7 cm long that is firm and has a paper like texture. It is also puberulent (5,6,7).



**Seed Description:** The seeds are 1 to 8 mm in length and when fresh are pale green. The seeds have a hard seed coat that prevents germination until scarification – this usually occurs as the seeds scrape on gravel and sand when washed on to the shore (10).

**Dispersal Syndrome:** *L. japonicus* seeds are dispersed primarily by water and they have been found to be viable even after floating for as much as 5 years in seawater. They have also been found in the crops of birds, which suggests that its breadth of distribution may be due to long-distance dispersal by birds (8,10).



**Distinguished by:** *L. japonicus* can be distinguished from *L. ochroleucus* by the cream flowers of *L. ochroleucus*. The stipules only have 1 basal lobe

whereas *L. japonicus* has 2 lobes. Additionally, *L. ochroleucus* is often found in thickets and woodlands as opposed to beaches. *L. japonicus* can be distinguished from both *L. venosus* and *L. palustris* via its broad stipules: those of *L. japonicus* are 10-20 mm broad as opposed to only 7 mm wide for *L. venosus* and *L. palustris*. The calyx of *L. venosus* is densely pubescent and *L. japonicus* is not, and the stems of *L. palustris* are often winged while *L. japonicus* has angled stems. *L. japonicus* can be distinguished from any *Wisteria* species by its tendrils borne on the ends of the leaves (4,5).

**Other members of the family in Michigan:** There are 9 species of *Lathyrus* in Michigan and a total of 36 different varieties between those 9 species. Other genera found in Michigan are *Amorpha*, *Amphicarpaea*, *Anthyllis*, *Apios*, *Astragalus*, *Baptisia*, *Caragana*, *Cercis*, *Chamaecrista*, *Cladrastis*, *Colutea*, *Crotalaria*, *Cytisus*, *Dalea*, *Desmodium*, *Genista*, *Gleditsia*, *Glycine*, *Gymnocladus*, *Hedysarum*, *Kummerowia*, *Lespedeza*, *Lotus*, *Lupinus*, *Melilotus*, *Mimosa*, *Orbexilum*, *Phaseolus*, *Pisum*, *Pueraria*, *Robinia*, *Securigera*, *Senna*, *Strophostyles*, *Tephrosia*, *Trifolium*, *Vicia*, *Vigna*, and *Wisteria* (1).

**Ethnobotanical Uses:** The seeds and the leaves both are edible. However, the seeds contain a toxin that is the source of lathyrism, a disease affecting the nervous system. Lathyrism arises when the seed is consumed in very large quantities (approximately 30% of daily caloric intake). If it is consumed in smaller quantities it is both safe and nutritious (8).

**Phylogenetic Information:** *Lathyrus*, within the Fabaceae, belongs to the subfamily Papilionoideae (Faboideae). The Fabaceae is a member of the order Fabales. Fabales are a member of the Eurosids I clade. They form a monophyletic group with Zygophyllales, Celastrales, Malpighiales, Oxalidales, Rosales (including Urticales), Cucurbitales, Fagales. Fabales are dicots (11,12).

**Interesting Quotation or Other Interesting Factoid not inserted above:** The plant was rumored to be an aphrodisiac, hence the original name (5).

**Literature and websites used:**

- 1) USDA, NRCS. 2008. The PLANTS Database, Version 3.1, National Plant Data Center, Baton Rouge, LA 70874-4490 USA. <http://plants.usda.gov/> (10-17-08)
- 2) ITIS: Integrated Taxonomic Information System Last Modified: 1-8-08 <http://www.itis.gov/index.html> (10-17-08)
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- 4) Voss, E.G. 1985. Michigan Flora Part II: Dicots. Ann Arbor, Michigan, USA: Cranbrook Institute of Science.
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- 10) Chinnasamy, G. & A.K. Bal 2003. The pattern of seed development and maturation in beach pea (*Lathyrus maritimus*). NRC Research Press.

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- 14) Brightmore, D. & P.H.F. White. 1963. *Lathyrus japonicus* Willd. *Journal of Ecology* 51(3): 795-801.

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- 4) Image of *L. japonicus* seeds taken by Steve Hurst and retrieved from the U. S. Department of Agriculture via the USDA PLANTS Website
- 5) Image of the legume fruits taken by Janet Novak of the Connecticut Botanical Society.

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