

TOP CANADIAN ORNAMENTAL PLANTS. 27. Primroses

ERNEST SMALL^{1,2}

Primroses are among the most gorgeous of flowering plants, exhibiting an astonishing range of floral colours and shapes. They are easy to grow, with numerous very hardy cultivars ideal for Canadian conditions. Their small size makes primroses particularly suited to limited spaces, both indoors and outside. They are also excellent houseplants, widely grown as short-term disposables, but they can be maintained indefinitely indoors if provided with appropriate care.

Names

Scientific name: The genus *Primula* is based on the Latin *primus*, meaning first, reflecting the early spring flowering.

English names: Primrose, primula. The “evening primroses” are species of *Oenothera*. “Water primroses” are *Ludwigia* species. “Cape primroses” are *Streptocarpus* species. As noted later, some groups of primroses are known by their own names (such as the polyanthus and the auriculas) and there are some classes of primroses (such as drumsticks and candelabras).

French name: Primevère.



Figure 1: A display of colourful flowering primrose cultivars. © Yewchan (CC BY SA 2.0).

Symbolism

Cowslip (*P. veris*) is well known in the U.K., and is the “county flower” of Northamptonshire, Surrey and Worcestershire. The primrose (likely *P. vulgaris*, the English primrose) was the favourite flower of Benjamin Disraeli (1804–1881), Tory (Conservative) prime minister of England. This led to the founding in 1883 of the Primrose League, an organisation for spreading Conservative principles in Great Britain, which was in-

fluential until its disbandment in 2004. “Primrose Day” (April 19) in the U.K. marks the anniversary of Disraeli’s death. The much-repeated phrase “Primrose path,” referring (often pejoratively) to a hedonistic route through life, was coined by Shakespeare, in *Hamlet* (in the very early 17th century).

Wild *Primula* species

Primulas are mostly herbs, usually perennial but sometimes short-lived or rarely annual. They are native to the temperate northern hemisphere, extending southward to tropical Asian mountains and temperate southern South America. The Himalayas and western China are major centres of distribution, where hundreds of species occur in a wide variety of habitats, including damp alpine meadows, forests, valleys, mountain sides, and stream sides. In Canada, there are about 12 indigenous species of *Primula* as traditionally defined, and an additional eight species transferred from *Dodecatheon* to *Primula*.

Most primroses are small stemless herbs, less than 30 cm tall and wide. The leaves are stalked (petiolate), oval or roundish, and in a basal rosette. The foliage in the rosette is sometimes deciduous, but is typically evergreen or persistent, although often deteriorated in cold, snowy environments. A stout peduncle arises from the rosette, bearing a solitary flower, or more usually a spherical cluster of flowers. The corolla tube opens into five spreading petals, which may be red, pink, purple, blue, white, or yellow. The five stamens are attached to the wall of the corolla tube. The pistil arises from a superior ovary, and has a single slender style topped by a broad stigma. The flowers are typically 2–5 cm in diameter, and often have an eye in the centre that is a different colour than the petals. In the Primulaceae, only species of *Cyclamen* and a few *Primula* species (in-

1 Science and Technology Branch, Agriculture and Agri-Food Canada, Saunders Bldg., Central Experimental Farm, Ottawa ON, K1A 0C6

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cluding those formerly in *Dodecatheon*) share the characteristic of the corolla reflexing backwards, making it appear as if the flower has been turned inside-out. The fruit capsule, if produced, has numerous small seeds. Many of the alpine species are small plants which are ideal for rock gardens and containers.

Heterostyly is the presence in a species of floral classes (“morphs”) differing in relative position of stamens and styles. There are two classes of heterostyly: disty-

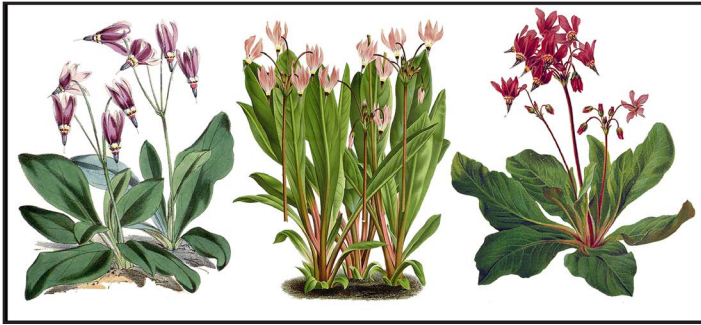


Figure 2. Paintings (public domain) of *Dodecatheon* species, all in Canada. The genus has been transferred to *Primula*. Left: *Dodecatheon frigidum* (*Primula frigida*). Source: Curtis, W. 1870. Curtis’s botanical magazine vol. 96, t. 5871. Centre: *Dodecatheon jeffreyi* (*Primula jeffreyi*). Source: Van Houtte, L.B. 1865. Flore des serres et des jardin de l’Europe, vol. 16, t. 1662. Right: *Dodecatheon meadia* (*Primula meadia*). Source: The Garden. 1876, vol. 10, t. 41 p. 360.

ly with two floral morphs and tristily in which there are three morphs. *Primula* is known for distyly, producing two types of flowers in approximately a 50:50 ratio: long-styled flowers with anthers attached midway along the floral tube (“L-morph,” or “pin”), and short-styled flowers with anthers attached at the top of the floral tube (“S-morph,” or “thrum”). Crossing between but not within the two floral types produces viable seeds. Heterostyly has evolved in more than two dozen plant families. Heterostylous species frequently are programmed to reject pollen not just from the same plant but also from the same floral morph. About 90% of *Primula* species are distylous, whereas the remaining 10% produce self-compatible flowers of just one type. Charles Darwin, experimenting with primroses, was the first to explain that heterostyly is a mechanism promoting outbreeding. In 1876 he wrote: “I do not think anything in my scientific life has given me so much satisfaction as making out the meaning of the structure of heterostyled flowers.” Darwin was responsible for the terms pin and thrum. He named pin flowers for the resemblance of the prominent style and stigma in the mouth of the flower to a dress-makers pin, and

thrum flowers for the resemblance of the anthers at the mouth of the flower to a “thrum” – an old weaving term for a tuft of thread.

Domesticated *Primula* species

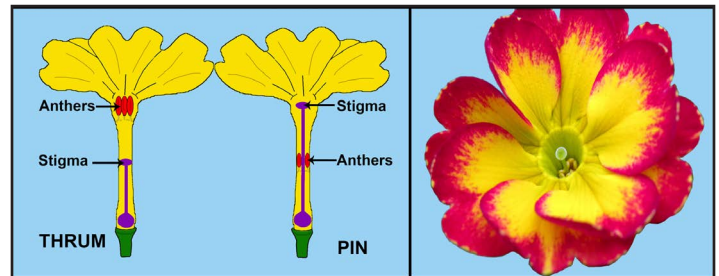


Figure 3. Heterostyly in *Primula*. Left: Diagrammatic contrast of Pin (long-styled) and Thrum (short-styled) flowers of *P. veris*. The calyx is not shown. Prepared by B. Brookes. Right: Pin flower. © Nicolas Gent (CC BY ND 2.0).

Primroses have been cultivated for centuries. As with other major ornamental plants, most cultivars grown today are hybrids, often with parentage tracing to several wild species. Although most varieties have Asian par-



Figure 4. Chinese primrose (*Primula sinensis*), which was much more popular in the past than today. Public domain illustrations. Top: Cover (public domain) of a 19th century catalogue. Bottom: Painting from Lindley, J. 1821–1826, *Collectanea botanica* or, figures and botanical illustrations of rare and curious exotic plants. Richard and Arthur Taylor, London.

entage, several European species were also domesticated over the last several hundred years, such as English primrose (*P. vulgaris*), also known as acaulis primrose), oxlip (*P. elatior*), cowslip (*P. veris*), and fairy primrose or baby primrose (*P. malacoides*). English primrose is one of the main parents in the polyantha hybrids, discussed next, and the name English primrose is often employed as a generic name for many of the polyantha hybrids. Houseplant primroses are often the English primrose.

“Polyanthus” primroses (horticulturally termed *P. ×polyantha*) are hybrid cultivars of *P. veris* and *P. vulgaris*. The word polyanthus is based on the Greek polyanthos meaning many-flowered. A large variety of colourful varieties are available, and these frequently dominate offerings at garden centres. Indeed, most primroses cultivated outdoors are these hybrids. The group has especially diverse flowers, some bi-coloured, some striped, and some doubled. The polyanthas are perennial, although often short-lived (grown as annuals or biennials), and are often established from seed or from young plants. The polyanthus primroses and its parental species are often grown as pot plants. In Japan, *P. ×polyantha* was crossed with *P. juliae* to produce unique dwarf cultivars called Julian Hybrids.

The orchid primrose (*P. vialii*) (also known as Chinese pagoda primrose and poker primrose) is a particularly attractive short-lived garden perennial, growing to



Figure 5. “Polyanthus” primroses (*Primula ×polyantha*). Left: © Foshie (CC BY 2.0). Right: © Garry Knight (CC BY 2.0).

30–45 cm in height. At first sight it does not look like a typical primrose. It produces spikes of tiny pinkish-purple flowers, but the uppermost flowers, which are unopened, are reddish. The species is relatively frost tender, but can be grown as an annual in Canada.

Several other species are particularly well known, as exemplified by the following. “Candelabra” primroses (such as such as *P. japonica*, *P. bulleyana*, and *P. flo-*



Figure 6. Orchid primrose (*Primula vialii*) © Harlow Carr (CC BY ND 2.0).

rindae) carry their flowers in whorls spaced on a main peduncle. Many of the cultivars have doubled flowers. Drumstick primrose (*P. denticulata*) is a widely planted garden species, with globular flower heads on 30 cm long peduncles (looking like drumsticks).

Some of the species develop a white mealy white powder (“farina”) on their surfaces. This is most pronounced in some of the natives of high-altitude habitats where there is high irradiation. The farina appears to be protective, like sunblock lotion. The character has been particularly selected for its ornamental value in auricula primroses (*P. auricula*), which are often grown protected in glass houses to maximize the white bloom for competitive flower shows. Auricula primroses have small clusters of flat topped flowers, and grows 15–20 cm in height. Numerous floral variations have been selected. Aside from the powdery coating, the plants are also notable for their distinctive thick leaves. Unusual for primroses, they are adapted to alkaline soil.



Figure 7. Paintings (public domain) of some popular primrose species. Left: Drumstick primrose (*P. denticulata*). Source: Curtis, W. 1842. Curtis’s botanical magazine, vol. 68, t. 3959. Centre: Auricula primrose (*P. auricula*), showing various strains, by Pierre Joseph Redoute (1827). Notice the farina (whitish covering) on foliage. Right: *Primula japonica*, a “candelabra” type. Source: Revue horticole, sér. 4, vol. 42 (1870).

The very attractive poison primrose (also known as German primrose; *P. obconica*) has leaves that can cause skin irritation, and indeed this was a problem in the past, especially for florists. In modern times the cultivar ‘Touch Me’ is often marketed, since it lacks primine, the principal sensitizer causing itching.



Figure 8. Poison primula (*Primula obconica*). Left: Chromolith, ca. 1897. © Welcome collection (CC BY 4.0). Right: © Yewchan (CC BY SA 2.0).

Economic importance

Primroses represent one of the major, standard flowering commercial ornamentals, grown in numerous greenhouses for sale as houseplants, and bedding and container plants. Many commercial interests internationally are involved in breeding and selling of primroses.

Care of indoor plants



Figure 9. Primroses being grown in a commercial greenhouse. © Vicky Brock (CC BY SA 2.0).



Figure 10. Container plants, the main way that primroses are grown in Canada (public domain images). Left: English primrose (*Primula vulgaris*). Source: Revue horticole, Librairie agricole de la maison rustique, Paris (1898). Right: source: Piklist.com.

The majority of potted houseplant primroses are purchased in supermarkets (hence the nickname “grocery store primroses”), often as gift plants. They are extremely attractive, relatively cheap, and compact, and so appeal strongly to impulse buyers. Unfortunately many are disappointed by difficulties in maintaining the plants long term. Primroses need moderate light and cool temperatures to thrive, and do not respond well to relatively dark, overheated homes, especially in winter. They also require consistent moist but not soaked soil. To prolong good growth, the following procedures are recommended. Decorative wrapping or foil on the outside of the pot should be removed, as it tends to retard free drainage. The plants should be located in a cool (10 to 20°C) location, and the soil maintained neither too dry nor too wet. If a very bright location is unavailable, the plants may be placed under a fluorescent light, about 30 cm above the plants, for at least 12 hours a day. Fertilizer is usually not necessary for several months. Note that gift primrose houseplants (frequently *P. vulgaris*) are often forced to bloom for out-of-season sales, and when subsequently planted outdoors they may lack the energy reserves needed to survive. Except in the warmest areas of Canada (particularly the Pacific coast), the exercise of attempting to salvage houseplants for transplanting outdoors is likely to be unsuccessful.

Care of outdoors plants



Figure 11. Primula gardens. Left: tall garden. © Forde Abbey and Gardens (CC BY ND 2.0). Right: Low garden. © Soham Banerjee (CC BY 2.0).

A considerable proportion of gardeners consider primroses to be “disposable annuals,” grown primarily as dainty container plants, especially as houseplants or as patio or windowbox plants. Nevertheless, there are numerous cultivars that are viewed as superlative garden plants.

PROPAGATION

Quite cool conditions (10°C or lower) are often re-

quired to germinate the tiny seeds (often carried out in a refrigerator) and establish seedlings. Many cultivars will self-sow outdoors. After flowering in the garden, primrose can easily be lifted and divided, which may be the only way of maintaining the genetic purity of some hybrids. Primroses usually transplant well. The crowns should be position at soil level, and at least 15 cm apart.

PURCHASING

The principal cultivated species and classes are sold in mass marketing outlets. Purchasing potted primrose when they are in flower guarantees the plant will reproduce the desired kinds of flowers (seeds sometimes are of hybrid origin and the resulting plants segregate for flower colour). The uncommon species are often available from rock garden societies and specialist on-line nurseries. The American Primrose Society (see Key Websites guide, below) sells seeds to Canadians (membership is required).

SOIL & MOISTURE CONDITIONS

Most cultivated primroses of Asian and/or woodland origin prefer slightly acidic (pH ca 6.5), strongly organic soils, and some of these do best in constantly moist soils. Species of upper alpine origin tend to thrive in well-draining gritty soils resembling their high-mountain scree habitats.

LOCATION

Outdoors, primrose usually prefer partial shade, and are often planted in masses near deciduous trees, or in locations with north-facing exposure to the sun. However, planting under trees could be disadvantageous, as the tree roots may outcompete the primulas for moisture and soil nutrients. In cold, northern climates, the plants may need more exposure to the sun, although open locations may subject the plants to winter desiccation.

TEMPERATURE

Most primulas are intolerant of summer heat and drought, and indeed in such climates the plants are often grown as annuals. By contrast, numerous primrose cultivars are extremely hardy and overwinter well in Canada. Indeed, many require winter chilling to survive and produce flowers. Nevertheless, winter mulching is often recommended to minimize freezing damage.

TIPS

The doubled flower cultivars are especially attractive but tend to be relatively fragile. To maintain vigour, it has been recommended that the spent flowers be dead-headed (removed) and the plants divided every 2 or 3 years.

Curiosities of science and technology



Figure 12. Gorgeous primroses with doubled flowers. Left: *Primula vulgaris* ‘Scarlet Parade’. © HQ (CC BY SA 2.0). Right: *Primula sinensis*. Source (public domain): The floral magazine 1874, new serv. v. 3. London, L. Reeve & Co.



Figure 13. Left: Hose-in-hose fashion in Elizabethan times. Painting (National Portrait Gallery, London) of Henry Wriothesley, 3rd Earl of Southampton (1573–1624), one of William Shakespeare’s patrons. Photo (public domain) by Ann Longmore-Etheridge. Right: Hose-in-hose mutation in *Primula*. © Jacki-dee ((CC BY NC ND 2.0).

- One of the oddest primula forms is called “hose-in-hose.” In Elizabethan times in England (i.e. during the reign of Queen Elizabeth I, 1558–1603), it was fashionable for gentlemen to wear two pairs of “hose”, the upper hose often in the form of puffy knee-length trousers which were met by the lower hose (essentially a long stocking) on the lower leg. Hose-in-hose primu-

las seem to develop a flower from inside another flower, hence the name hose-in-hose. In fact, a mutation, often observed in wild *Primula*, causes the calyx of one flower to develop into another flower. Curiously, the floral mutation is linked to the S locus which determines whether the flowers are pin or thrum.

- Reflecting the tradition of accentuating the attractiveness of women with beautiful objects, females are often shown decorated with flowers, including primroses, in allegoric paintings (i.e. art with figures reflecting a story or message).

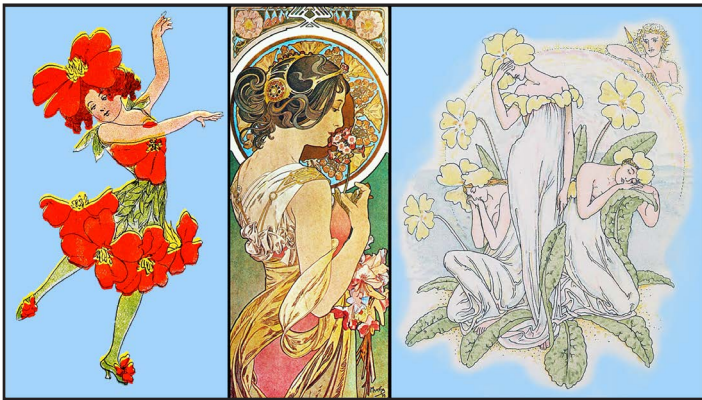


Figure 14. Allegoric paintings (related to fictional characters) showing women decorated with primroses (public domain figures). Left: Source: Gordon, A.E. 1912. Flower children; the little cousins of the field and garden. Centre: Painting, La Primevere/ Polyanthus, by Alphonse Mucha, 1899. Right: Source: Cassell & Co., Ltd., London. 1909. Flowers from Shakespeare's garden.

- Many ships are named for flowers, and the unfortunate demise of one of these is notable. In 1981, a Hong Kong-registered cargo ship, MV Primrose, ran aground on a coral reef off North Sentinel Island in the Bay of Bengal, considered to be “the last island on Earth solely inhabited by noncontacted native people.” The island is out of bounds under Indian law because of the hostility of the natives. For a week, the crew was threatened by members of the Sentinelese tribe on the beach, wielding spears, shooting arrows, and attempting to board the freighter from canoes. Finally, the Indian navy rescued the crew. Less fortunate was a Christian missionary attempting to convert the natives. In 2018, he was shot to death with arrows, tipped with metal that the islanders had obtained from the Primrose wreck.

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Key websites

American Primrose Society – <https://americanprimrosesociety.org/> (the principal primrose organization; most online resources require membership; provides a list of commercial seed sources and also sells seed through its seed exchange)

Canadian seed catalogue Index (Seeds of Diversity Canada) – <https://seeds.ca> + search for “Canadian seed catalogue index” (an extensive list of Canadian companies supplying garden seeds; however, primrose is not well represented)

National auricula and primula society – <http://www.auriculaandprimula.org.uk/> (a British society, presents limited information)

Primula world: A visual reference for the genus primula – <https://primulaworld.blogspot.com/> (a very extensive source of photos)

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