

Trillium

Family: *Liliaceae*

Rhode Island Natives

- Trillium cernuum* – Nodding Trillium
- Trillium erectum* – Wake-robin, Purple Trillium
- Trillium undulatum* – Painted Trillium
- Trillium grandiflorum* – Large Flowered Trillium

By Dick Fisher

Trilliums are part of the magical and mysterious ritual of spring in New England woodlands. Growing from a few inches to a foot and a half in height they form a beautiful ground cover beneath the spring forest canopy. Their name almost certainly reflects their very clear and striking three-fold symmetry (see diagram).

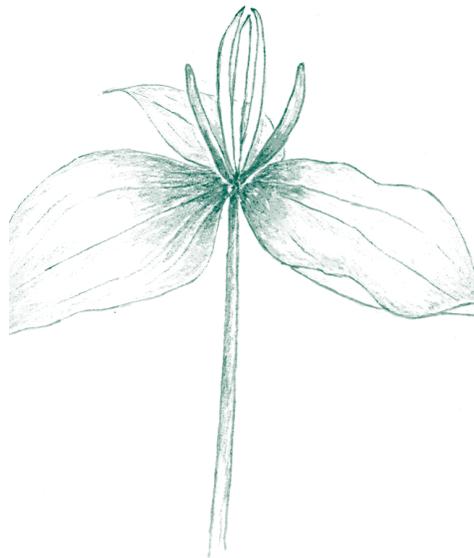
Trilliums are native only to North America and Asia and, of the roughly 50 species, 35 are native to Eastern North America. Only those listed above are native to Rhode Island. *T. grandiflorum* is found in a large area of the northeast including Massachusetts, Connecticut, Vermont and New Hampshire. It may be naturalized to some extent in Rhode Island and so is included here. Whether in the wild or in the garden, trilliums prefer a shaded, moist environment with rich, well-drained soil. Cultivation is often not difficult but propagation is very slow, and the temptation to dig the plants in the wild is great. When purchasing plants or rhizomes be certain that they have been nursery grown.

Trilliums are members of the Lily Family [*Liliaceae*] and as such are rhizomatous monocots with three-part symmetry: three whorled leaves, three petals, three sepals, six stamens, and three united carpals (see drawing). They have been further placed in the asparagus subfamily, a group having berrylike fruit similarly arranged into three compartments each containing multiple seeds. The trillium genus contains two major groups based on plant morphology. In the sessile form (subgenus *phyllanththerum*) the flower develops at the same level as the leaves. The flower of the pedicellate trilliums (subgenus *trillium*) develops on an extension of the stem (pedicel or peduncle) one to six centimeters above the leaves (see drawing). The sessile forms are mostly native to the southern US; the Rhode Island natives are all pedicellate.



Trillium cernuum, Nodding Trillium. Nodding Trillium was so named because the pedicel and the flower bend downward and the blossom appears under the leaves, making it one of the least showy trilliums. The flower is white to pale pink and blooms in late April to early June. It grows best in cool, moist woodlands but is reported to do poorly in the garden.

Trillium erectum, Purple Trillium, Wake-robin. *Trillium erectum* grows 12 to 18 inches high and blooms from late April to June with a deep purple flower. Several stems may develop from the same rhizome. Found in upland deciduous forests often in association with hemlock, laurel, and rhododendron, it prefers rich, moist, acidic soil. It has been reported to hybridize easily, and there is a white flowered variety in wild populations. It does well in the woodland garden and will self-seed to produce enlarged clumps. These clumps can then be divided to produce new plantings. It is rarely found in the wild in Rhode Island.



Trillium undulatum, Painted Trillium. One of the more striking trilliums in the wild, Painted Trillium has upright, showy, white flowers with deep red centers. It stands about 12 inches tall and grows only in cool, acidic humus soils. It is difficult to cultivate in the garden setting and is not readily available as nursery grown stock.

Trillium grandiflorum, Large Flowered, Great White Trillium. *T. grandiflorum* is one the most spectacular trilliums growing up to 18 inches tall with large white flowers fading to pink as they age. It is typically found in deciduous woodlands (Sugar Maple-Beech) in neutral soils, and often forms large masses of contiguous plants. A natural occurring double or multi-pedaled form is striking, but it is

sterile and so cannot be seed propagated. This species does well in cultivation and is available as nursery grown stock.

Propagation

Seed: Seed propagation is extremely slow and requires great patience even for the most dedicated of gardeners: it takes five to seven years for the first flower to appear. The berrylike fruit turns dark red as it matures in late July or August. It contains three compartments with multiple seeds in each compartment. As the berry ripens, the seeds can be squeezed out. Each seed is 2 – 4 mm in size and has two parts: the dark seed and a light colored appendage, an elaiosome, (see note below). Some think the appendage should be removed from the dried seed before planting by gentle rubbing. The seeds have a double dormancy and so require a cold-warm-cold-warm cycle to germinate. The initial germination produces the radicle, which forms the rhizome. Nothing appears above ground until another cold-warm cycle, which produces the cotyledon and a single leaf. The single leaf stage persists for several years during which the leaf gradually increases in size, and then progresses to two and then three leaves. Eventually, a pedicel and flower appear, about five to seven years after planting.

In schematic:

[*plant seed* in fall -> cold -> warm - *rhizome development* - cold -> warm -- *leaf*]

Another method of propagation is to pick the seed several weeks before it matures (i.e., while still green) and plant it immediately. Germination (rhizome development) can occur during that first summer and fall, saving one cold-warm cycle. A leaf will develop the following spring. It is apparent that planting in garden beds is simpler than attempting container production.

Vegetative: The mature rhizome is about thumb size and has a single terminal bud from which the stem develops. Typically it does not generate other viable off-set buds spontaneously, but several methods have been devised to induce budding. They involve some risk of fungal disease in the original rhizome and are very slow. Perhaps the most effective is to dig the rhizome after flowering, cut through it an inch behind the terminal bud, treat both pieces with fungicide, and then replant them. Removing the terminal bud will induce budding in the remaining rhizome, and with luck new and multiple off-sets will form that can be removed one to two years later. It has been suggested that the rhizomes of older plants will tolerate division if viable growth buds remain on each section.

Cultivation

Trilliums grow best in moist, well-drained fertile soil of neutral or somewhat acidic pH. They prefer dappled shade or a woodland garden similar to their native habitat. Plant the rhizomes two to three inches deep, being careful not to injure tender roots. Water if they become dry, and mulch and fertilize in the spring.

Some species of trillium do form natural hybrids, but this is uncommon. Selective artificial hybridization has produced a variety of flower colors and structural changes. Beware of plants with a color variation, usually green or white streaks, in the leaves or petals, as they are usually due to infection with a mycoplasma organism, and the plant may have a short lifespan. This occurs in both wild and domestic populations.



Note: Trillium seeds have an attached appendage, elaiosome, which is composed of an oily substance extremely appetizing to ants. As the seeds fall to the ground the ants shuttle them off to their underground dwellings, eat the elaiosome and leave the seeds to germinate. The process of ant dispersal is termed myrmecochory and is perhaps in part responsible for the development of the large trillium colonies that make this plant so special.

References

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