PROPAGATION PROTOCOL *for Western Trilliums*

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About 7 species of the genus *Trillium* L. (Liliaceae) grow in the western US, of which 4 grow west of the Cascade Mountains in Oregon. Two species, *Trillium ovatum* Pursh (Pacific trillium) and *T. rivale* S. Wats (brook wakerobin) are pedicellate, belonging to the subgenus *Trillium*. The other 2 species, *T. albidum* J.D. Freeman (giant white wakerobin) and *T. parviflorum* Soukup (smallflower wakerobin), are sessile, belonging to subgenus *Phyllantherum*.

Trillium ovatum thrives in the mossy forest floor of the coniferous woods from sea level to about 1070 m (3500 ft) elevation in the western Cascade Mountains. At my elevation (230 m [750 ft]), *T. ovatum* blooms from late March through April and at higher elevations during May. It is pure, shining white with plain green leaves and sweetly fragrant.

Photo by Sheila M Klest

*Figure 1 • Brook wakerobin (*T. rivale*) in bloom.*

Trillium rivale is endemic to the Siskiyou Mountains of southwestern Oregon. Small in stature (10 to 15 cm [4 to 6 in]), it grows in serpentine soils along small creeks, streams, and wet seepages. Despite its diminutive size, *T. rivale* is an exceptional plant having wide, white petals with purple spotting and a variable silver veining on bluish-green leaves. It blooms during March at my elevation and during May and June at higher elevations.

In my opinion, *T. albidum* is elegant and beautiful. This trillium has large, upright, white petals that persist from early March through April—the longest blooming period of the western trilliums. It is also extremely fragrant, similar to daphne (Thymelaeaceae). *Trillium albidum* often produces 2 or 3 stems from a single terminal bud. The leaves have dark mottling. In southern Oregon, it grows in riparian areas under cottonwoods (*Populus* spp. L. [Salicaceae]) and alders (*Alnus* spp. P. Mill. [Betulaceae]) and on wet banks leading to creeks.

Trillium parviflorum, as its name implies, has small flowers with narrow twisting petals that appear in late March through early April. More tolerant of wetter areas than *T. ovatum*, this trillium grows in very wet woods and along rivers at low elevations. The foliage is heavily mottled and most attractive.

KEY WORDS:
Trillium ovatum , Trillium rivale, Trillium albidum, Trillium parviflorum, Liliaceae, seed germination

NOMENCLATURE:
USDA NRCS (2001)

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SEED COLLECTION AND GERMINATION

I collect seeds from my own mature stock plants in early (the case with *T. rivale*) to late July when capsules are just about to split. I sometimes collect slightly under-ripe seeds, so as not to lose any seeds, and I haven't noticed any positive or negative effects on germination. Seeds are immediately sprinkled directly from capsules into a pot containing a mature plant or into 72-cell plug trays (4.2 X 4.2 X 5.6 cm deep [1.7 X 1.7 X 2.25 in]; Land Mark Plastics Inc, Akron, Ohio) containing a 1:1 (v:v) mixture of sphagnum peat moss and perlite. Seeds are left uncovered.

Seeds in plug trays are watered daily throughout the summer and kept in a greenhouse with 80% shade cloth covering. In fall, I move them to an unheated shade house. In eastern trilliums, seeds generally produce a primary root the first spring after planting and a cotyledon the second spring after planting (Cullina 2002; Solt 2002). However, the western trilliums are more precocious. The first spring after planting, *T. rivale* usually germinates at high rates (90% to 100%) and cotyledons are visible by late February. Likewise, a very small percentage (< 15%) of *T. ovatum*, *T. albidum*, and *T. parviflorum* also germinate the first spring (February). Interestingly, *T. ovatum* seeds planted into pots containing mature plants always germinate and produce cotyledons the spring following planting. Regardless of whether cotyledons appear the first or second spring, plants in this stage receive 2 applications of Peters Professional Peat-Lite fertilizer (15N:16P_2O_5:17K_2O; The Scotts Company, Marysville, Ohio) at about 180 ppm N (0.5 tbsp/gal). After true leaves emerge (second or third spring after planting), plants are watered with the same fertilizer and rate once every 2 or 3 wk.

CULTURE

The third or fourth spring after summer sowing, trilliums are potted into 3.7-l (1-gal) containers filled with Rexius potting mix (a proprietary mixture of aged fine fir bark, compost, pumice, balanced fertilizer; pH 6.2 to 6.5; Rexius, Eugene, Oregon). Containers are top dressed with Apex controlled-release fertilizer (19N:8P_2O_5:12K_2O; 10 to 12 mo release rate at 15.5 °C [60 °F]; Simplot Turf & Horticulture, Lathrup, California) once each spring. Plants overwinter outside covered with Reemay fabric (Reemay Inc, Old Hickory, Tennessee) and white plastic. *Trillium rivale* will bloom about 5 y after planting and the others in 7+ y.

DANGERS

It's a long and arduous road to becoming a blooming trillium. Here are some of the dangers faced:

1. Workers pulling up seedlings thinking they are weeds.
2. Sowbugs eating young plants.
3. Mosses, lichens, liverworts, and weeds covering the tops of containers.
4. Slugs—we have slugs, huge slugs, in Oregon. A single bite can eat through all 3 leaves and the flower when the plant is coming up in the spring or completely destroy a young plant.
5. Mice digging into pots and eating rhizomes during winter.
6. Viruses—I have had eastern *T. grandiflorum* (Michx.) Salisb. with mycoplasmas that spread to another eastern species (*T. pusillum* Michx.), however, I did not see it on our western trilliums. I sometimes find and discard *T. albidum* plants with twisted leaves.

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