Protocol Information

(Dunn 2002)

Family Scientific Name:	Liliaceae
Family Common Name:	Lily Family
Scientific Name	*Trillium ovatum* Pursh ssp. *ovatum*
Genus:	*Trillium*
Species:	*ovatum*
Species Authority:	Pursh
Variety:	
Sub-species:	ssp. *ovatum*
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym	
Genus:	
Species:	
Species Authority:	
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
General Information	
Common Name:	Pacific Trillium, Wake-robin
Species Code:	TROVO2 (USDA)
Ecotype:	
General Distribution:	Occurs from British Columbia to California and inland to Montana (Vance et.al 2001).
Climate and Elevation:	Maritime to submaritime cool mesothermal climates (Klinka et al 1989). Sea Level to 1070m and 3500ft (Klest 2002). Elevation:10 – 2000m (

Local habitat and Abundance:	Abundance decreases with increased elevation (Klinka et al 1989). Local habitats include shaded open areas, streambanks, and moist to wet woods (Pojar 1994). Commonly occering with *Achlys triphylla*, *Galium triflorum*, *Polystichum munitum*, *Streptopus amplexifoliu*s, and *Tiarella trifoliata* (Klinka et al 1989).
Strategy Type:	Late successional
Propagation Details	
Propagation Goal:	Plants
Propagation Method:	Seeds, Rhizome divisions, transplanting usually is not successful.
Product Type:	Container (plug)
Stock Type:	
Time to Grow:	Not transplanted until 3-4 springs from sowing (Klest 2002).
Target Specifications:	
Propagule Collection:	Klest collects seed from *Trillium rivale* just as they split in early to mid July(2002). To propagate by rhizome division, remove soil from top of rhizome when foilage is diying and "cut off the top at ring that shows line of demarcation between new pointed bud and older part" of the rhizome, then cover with dirt again (Everett 1982).
Propagule Processing/Propagule Characteristics:	Seeds loose viability drasticaly if not immediatly sown or stored.
Pre-Planting Propagule Treatment:	1 month to 3 years of cold stratification recommended by Vance et. al at 15^0 F (2001).
Growing Area Preparation/Annual Practices for Perennial Crops:	*T. rivale* seed is sprinkled immediately after collection into 72-cell plug trays that are 4.2 X 4.2 X 5.6 cm deep (1.7 X 1.7 X 2.25 inches) filled with 1:1 sphagnum peat moss and perlite and left uncovered (Klest 2002). Immediatly sow after collection of store in cool place until next fall (Everett 1982). Everett sugests to sow seeds in well drained soil with leaf mold, peatmoss, and decayed material, and cover 1/2in (1982).
Establishment Phase:	Klest suggests to water seeds daily throughout the summer and cover with an 80% shade cloth in the green house (2002). Prone to dampening off if kept in too moist of conditions (Vance et. al 2001).
Length of Establishment Phase:	Less than 15% will germinate and produce cotyledons the first spring but 100% will be successful if initially planted in pot containing a

	mature plant (Klest 2002). "The cotyledon stage lasts one growing season, after which the plant produces a single leaf from its rhizome" (Kahmen and Jewls 2005).
Active Growth Phase:	Give 2 applications of Peters Professional Peat-Lite fertilizer (15N:16P2O5:17K2O) at about 180 ppm N (0.5 tbsp/gal) even if cotyledons have not emerged and give that same fertilizer once every other 2-3 weeks starting the first or second year when the first true leaves have come (Klest 2002). Huxly sugests to annualy mulch with well rotted compost in autum (1999).
Length of Active Growth Phase:	Late winter to early fall.
Hardening Phase:	Begins for freshly sown seeds in fall for *T. rivale* when seeds should be moved to an unheated shade house (Klest 2002). Over winter plants outside covered with white plastic and Reemay fabric (Klest 2002).
Length of Hardening Phase:	Fall to late winter.
Harvesting, Storage and Shipping:	Transplant into 1 gallon containers in spring filled with Rexius Potting Mix (Klest 2002).
Length of Storage:	
Guidelines for Outplanting / Performance on Typical Sites:	Takes 7 or more years from seed to flower (Klest 2002). From seed it may take 4-5 years to flower (Smith 2007)
Other Comments:	Characterized as nitrophitic by Klinka et.al (1989).

References:

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Huxley A. 1999. New Royal Horticultural Society Dictionary of Garderning. New York: Groves. Vol. 4: 510p

Kahmen A, Jules ES. 2005. Assessing the recovery of a long-lived herb following logging: Trillium ovatum across a 424-year chronosequence. Forest Ecology and Management 210 (1-3): 107-116

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First Name: Lacey
Last Name: Jeroue
Updated: 04/25/07

Appendix:

Plant Data Sheet

Species

Trillium ovatum

Range

British Columbia to Central California (www.wnps.org), CA OR WA CO ID MT WY (www.wildflower.org)

Climate, elevation

Low to middle elevations (Pojar and Mackinnon, 1994)

Local occurrence (where, how common)

Common in Western Washington forests.

Habitat preferences
Moist to wet woods, stream banks, shaded open areas.

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)
Summer drought tolerant.

Associated species

May be collected as: (seed, layered, divisions, etc.)
Division. Seeds are covered with an aril called an elaisome that attracts ants, which disseminate the seed.

Collection restrictions or guidelines
Flowers from April to June.

Seed germination (needs dormancy breaking?)
Seeds have combinational dormancy where the radicle emerges after the first chilling stratification and the epicotyl emerges after a second chilling stratification. This requires two seasons for seedling emergence.

Seed life (can be stored, short shelf-life, long shelf-life)
Seeds should be sown as soon as the seed ripens.

Recommended seed storage conditions

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)
Rhizome division or seed. Seeds do best when planted outdoors soon after fruits have ripened. Seedlings take many years to bloom. Divide rhizomes in fall. (www.wildflower.org).

Soil or medium requirements (inoculum necessary?)
Maintain even moisture levels until seedlings emerge.

Installation form (form, potential for successful outcomes, cost)
Division

Recommended planting density
Spacing; 6-9 in. (15-22 cm)

Care requirements after installed (water weekly, water once etc.)

Average Water Needs; Water regularly; do not overwater (plantsdatabase.com)

Normal rate of growth or spread; lifespan

If planting seeds, leaves will not usually appear until the second spring, and plants may take 5-7 years to reach flowering size.

Sources cited

http://www.wnps.org/plants/trillium_ovatum.html Washington State Native Plant Society

http://www.wildflower.org/?nd=native_plants_database Lady Bird Johnson Wildflower Center

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Pojar, Jim and Andrew MacKinnon. 1994. Plants of the Pacific Northwest Coast Washington, Oregon British Columbia & Alaska. BC Ministry of Forests and Lone Pine Publishing, Vancouver, British Columbia, Canada 527 p.

Data compiled by (student name and date)

Lara Johnson, April15th, 2003