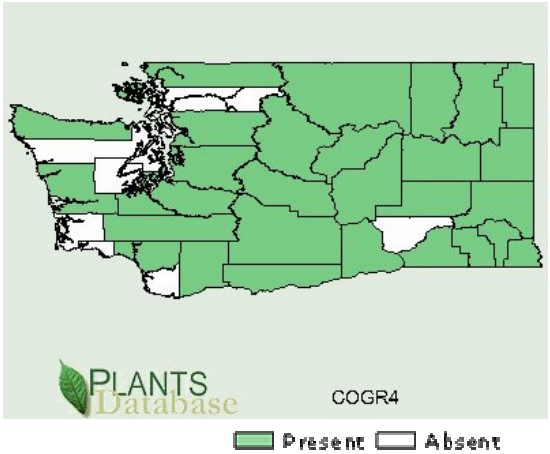
Plant Propagation Protocol for *Collomia grandiflora*

ESRM 412 – Native Plant Production



TAXONOMY	
Family Names	
Family Scientific Name:	*Polemoniaceae*
Family Common Name:	Phlox family
Scientific Names	
Genus:	*Collomia*
Species:	*Grandiflora*
Species Authority:	Douglas ex Lindl.
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym(s) (include full scientific names (e.g., *Elymus glaucus* Buckley), including variety or subspecies information)	
Common Name(s):	Large flowered collomia, Grand collomia, Mountain collomia (CNPLE)
Species Code (as per USDA Plants database):	COGR4
GENERAL INFORMATION	
Geographical range (distribution maps for North America and Washington state)	**USA**: AZ, CA, CO, ID, MT, NV, OR, UT, WA, WY; **CAN:** BC. (USDA) Found on both sides of the Cascades: south from southern B.C. through California to Arizona, and east through Montana and Wyoming (Robson)
Ecological distribution (ecosystems it occurs in, etc):	Open woods and clearings, meadows, often in dry conditions (Skinner). Found in the Palouse regions of the Northwest United States. Grows in full sun to part sun/dappled shade in moist to dry conditions (Robson)
Climate and elevation range	Low to mid elevation range. (Robson) 0-8000 feet (CNPLE) In the Colombia River Gorge it can be found at 100 – 3900 feet (Nicholls)
Local habitat and abundance; may include commonly associated species	Commonly associated with: *Poa secunda ssp. secunda, Elymus multisetus, Solidago californica, Epilobium brachycarpum, Agrostis pallens, Amelanchier utahensis, Bromus sp., Eschscholzia californica, Pteridium aquilinum var. pubescens, Heracleum lanatum, Sambucus mexicana, Mentzelia laevicaulis, Quercus chrysolepis, Lupinus bicolor, Achillea millefolium, Koeleria macrantha, Vulpia microstachys var. pauciflora* (CNPLE)
Plant strategy type / successional stage:	No information on specific successional stage; will colonize areas where there are gaps in vegetative cover (Skinner)
Plant characteristics	Forb: annual; will self sow on sites where it is

	established if there is open ground (Robson) (Skinner).
PROPAGATION DETAILS	
Ecotype:	Paradise Creek drainage, Pullman, WA., USA (Skinner)
Propagation Goal:	Plants (Skinner)
Propagation Method:	Seed (Skinner)
Product Type:	Plug + container (Skinner)
Stock Type:	
Time to Grow:	3 months (Skinner)
Target Specifications:	Compact root plug in a container (Skinner)
Propagule Collection:	Collect seeds in late summer to early fall (Robson) usually in July – August. Seeds are dark brown and muscilaginous (Skinner) Collect seed when seed head begins to dry, just as capsules start to open. Remove by trimming stalk directly below seed head; care must be taken as seeds are expelled forcefully from capsules when mature. Seeds are muscilaginous, so store in a material which allows air circulation (i.e. open paper bag covered with cheesecloth). (Skinner) 146,986 seeds/lb were found for the Paradise Creek drainage, Pullman, WA., USA (Skinner)
Propagule Processing/Propagule Characteristics (including seed density:	Seed capsules will eject nearly all seeds into collection material, and additional recovery methods are not considered worth the effort (Skinner) These large seeds can be cleaned easily with air column separator, or air screen equipment for larger quantities. (Skinner) Store at 40'F at 40% humidity for greatest longevity. (Skinner) Information on germination rates and longevity for stored seeds not indicated.
Method for Seed Increase Plantings:	Cut entire plants and lay on tarp; store in a shed or greenhouse, or cover with row covers. Use fans for continuous air circulation to prevent any green stems and leaves from molding. (Skinner)
Pre-Planting Propagule Treatments:	None indicated. Trials show that stratifying seed did not show increased germination, though an after-ripening period may be indicated as newly harvested seed had a lower germination rate than seed stored in cool dry conditions. (Skinner) Direct sowing recommended. (Robson) (Toogood)
Growing Area Preparation / Annual Practices for Perennial Crops:	As this plant produces a taproot it is preferable to direct sow on-site to avoid disturbing roots (Robson) (Toogood). If sowing indoors use deep, narrow containers to accommodate the taproot (Robson). Sow seed in greenhouse in February or outdoors in fall or early spring in weed-free seedbeds (Skinner). Recommended container for greenhouse sowing is 10 cu. in. Ray Leach super cell conetainers filled with

	recommended growing medium (Sunshine #4) to within ½" of top to allow for ample watering (Skinner). May use a thin layer of gravel mulch to keep seeds in place (Skinner). Water Conetainers deeply (Skinner).
Establishment Phase:	Seed germination begins within 5 days at 70' F (Toogood), and is usually finished in 10 days (Skinner). In outdoor seedbeds germination usually occurs in spring (Skinner).
Length of Establishment Phase:	2 weeks (Skinner).
Active Growth Phase:	After germination roots develop quickly (Skinner). Water plants deeply every other day and use a complete fertilizer with micronutrients once a week (Skinner).
Length of Active Growth Phase:	2 months (Skinner).
Hardening Phase:	Depends on weather conditions; generally move plants out into a cold frame in March or early April (Skinner).
Length of Hardening Phase:	2-4 weeks (Skinner).
Harvesting, Storage and Shipping:	No information available on harvest storage, or shipping.
Length of Storage:	No information on length of storage
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	Survival in sites without competition from other plants is ~95%. On sites with existing vegetation survival rates and plant vigor are less (Skinner). Transplanting can be done with an electric drill, drilling 1.5" diameter holes on site. (Skinner). As this is an annual it will flower in its first year from seed.
Other Comments:	No restrictions or guidelines for collection found.
INFORMATION SOURCES	
References:	See Below
Other Sources Consulted:	See Below
Protocol Author:	Lisa Haglund
Date Protocol Created or Updated:	5/9/10

California Native Plant Link Exchange (CNPLE): Plant Information. Retrieved from: http://www.cnplx.info/nplx/species?taxon=Collomia+grandiflora

Nicholls, B. (2002). *Alpine plants of North America: an encyclopedia of mountain flowers from the Rockies to Alaska.* Timber Press: Portland OR.

Robson, K., Richter, A., Filbert M. (2008). *Encyclopedia of Northwest Native Plants for Gardens and Landscapes.* Timber Press: Portland OR.

Skinner, David M. 2005. Propagation protocol for production of container *Collomia grandiflora* Dougl. ex Lindl plants; USDA NRCS - Pullman Plant Materials Center, Pullman, Washington. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 11 May 2010). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

Toogood, A. (1999). *Plant Propagation.* DK Publishing, for the American Horticultural Society: New York ["sow seeds directly to avoid disturbing roots. At 70'F seeds germinate w/in 5 days. Protect autumn sown seedlings over winter where marginally hardy."]

Sources Consulted but not Used

Franklin, J. F. & Dyrness, C. T. (1984). *Natural Vegetation of Oregon and Washington.* Oregon State University Press: USA.

Harper-Lore, B. & Wilson, M. (2000). *Roadside Uses of Native Plants.* Island Press: Canada.

Kruckeberg, A.R. (1982). *Gardening with Native Plants of the Pacific Northwest.* The University of Washington Press: U.S.A.
Leigh, M. (1999). Grow *Your Own Native Landscape. Native Plant Salvage Projec.*, WSU Cooperative Extension-Thurston County.

Pettinger, A. & Costanzo, B. (1996). *Native Plants in the Coastal Garden.* Whitecap Books: British Columbia, Canada.

Rose, R., Chachulski, C., & Haase, D. (1998). *Propagation of Pacific Norhtwest Native Plants*. Oregon State University Press: Corvallis, OR.

Smith, R. D., Dickie, J. B., Linington, S. H., Pritchard, H. W., Probert, R. J. (2003). *Seed Conservation: Turning science into Practice.* The Royal Botanic Gardens Kew. The Cromwell Press Ltd.: Great Britain

Young, J. A., & Young, C. G. (1986). *Collecting, Processing and Germinating Seeds of Wildland Plants in North America*. Timber Press: Oregon.