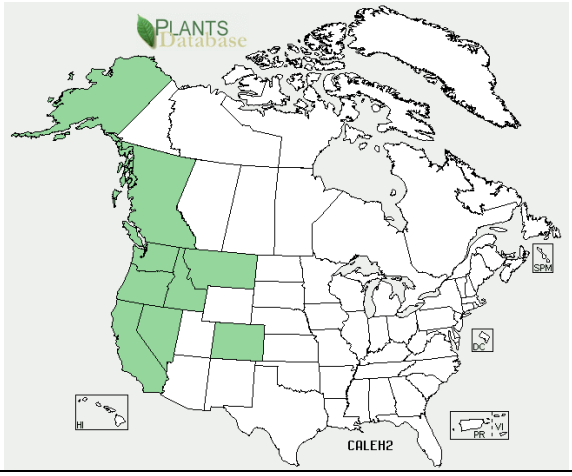
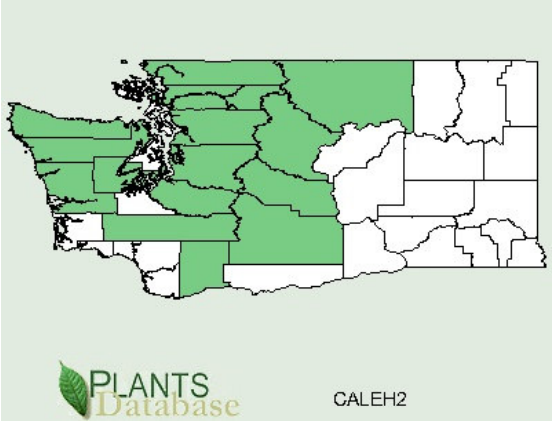
Plant Propagation Protocol for *Caltha leptosepala* ssp. *howellii*
ESRM 412 – Native Plant Production
Spring 2008

TAXONOMY	
Family Names	
Family Scientific Name:	Ranunculaceae
Family Common Name:	Buttercup Family
Scientific Names	
Genus:	*Caltha*
Species:	*leptosepala*
Species Authority:	DC.
Sub-species:	*howellii*
Authority for Sub-species:	(Huth) P.G. Sm.
Common Synonyms:	*Caltha biflora* DC. *Caltha biflora* DC. ssp. *howellii* (Huth) Abrams *Caltha howellii* Huth *Caltha leptosepala* DC. ssp. *biflora* (DC.) P.G. Sm. *Caltha leptosepala* DC. var. *biflora* (DC.) G. Lawson
Common Name:	Marsh marigold, Howell's marsh marigold
Species Code:	CALEH2
GENERAL INFORMATION	
Geographical range:	

	 (USDA, 2008) http://plants.usda.gov/java/profile?symbol=CALEH2
Ecological distribution:	Occurs in wet areas such as bogs, fens, seepages, and wet forest (Pojar and MacKinnon, 2004). Species of *Caltha* in this region grow on nutrient rich soils (Klinka et al, 1995).
Climate and elevation range:	Occurs from low to subalpine elevations in the north, and occurs from mostly subalpine to alpine in the south (Pojar and MacKinnon, 2004). Grows in climates that are hypermaritime to maritime, subalpine boreal, and cool mesothermal (Klinka et al, 1995).
Local habitat and abundance; may include commonly associated species	Grows scattered or abundantly in herbaceous communities along little streams fed by snowmelt. Also characteristic of alpine communities (Klinka et al, 1995).
Plant strategy type / successional stage:	No information found.
Plant characteristics:	Plant is a perennial herb with white flowers.
PROPAGATION DETAILS	
Ecotype:	
Propagation Goal:	The goal is plants for Baskin and Baskin (2002). Deno's goal is germination (1993).
Propagation Method:	The method is seeds for Baskin and Baskin (2002) and for Deno (1993).
Product Type:	Container (plug) (Baskin and Baskin, 2002).
Stock Type:	No information found.
Time to Grow:	Time to grow from seed to maturity is12 months (Arbury et al, 1997).
Target Specifications:	No specifications mentioned.
Propagule Collection:	No information found.

Propagule Processing/Propagule Characteristics:	Seeds are inferred to have morpho-physiological dormancy (Basking and Baskin, 2002).
Pre-Planting Propagule Treatments:	1 out of 8 germinated in an experiment of stratifying seeds for 3 months at 40°F, 3 months at 70°F, but germination was in the seventh week. The experiment had only a small supply of seeds (Deno, 1993). *Caltha* species in general can be divided in late summer or in early spring for vegetative propagation (Toogood, 1999). Another method suggested for *Caltha* species in general is to divide after flowering for vegetative propagation. (Arbury et al, 1997).
Growing Area Preparation / Annual Practices for Perennial Crops:	Seeds should be sown on a wet peaty medium (Kruckeberg, 1982).
Establishment Phase:	Seeds of *Caltha* species may germinate well if they are sown as soon as ripe at 15°C and placed under a mist propagator (Arbury et al, 1997). Alternatively, it is suggested that *Caltha* species seeds be sown fresh at 50°C (Toogood, 1999).
Length of Establishment Phase:	Germination time for Arbury was 2 weeks (Arbury et al, 1997).
Active Growth Phase:	No information found.
Length of Active Growth Phase:	For Arbury time to maturity was 12 months after germination from seeds and 9 months after vegetative division (Arbury et al, 1997).
Hardening Phase:	No information found.
Length of Hardening Phase:	No information found.
Harvesting, Storage and Shipping:	No information found.
Length of Storage:	No information found.
Guidelines for Outplanting / Performance on Typical:	No information found.
Other Comments:	
INFORMATION SOURCES	
References:	The American Horticultural Society. Toogood, Alan, ed. Plant Propagation. New York, NY: DK Publishing, Inc., 1999. Arbury, Jim, Richard Bird, Mike Honour, Clive Innes, and Mike Salmon. Heuser, Charles W. Jr., ed. The Complete Book of Plant Propagation. London, UK: The Taunton Press, 1997. Baskin, Carol C.; Baskin, Jerry M. 2002. Propagation

	protocol for production of container *Caltha leptosepala* DC. plants; University of Kentucky, Lexington, Kentucky. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 13 May 2008). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery. Deno, Norman C. Seed Germination Theory and Practice. Pennsylvania State University, 1993. Klinka, K., V.J. Krajina, A. Ceska, and A.M. Scagel. Indicator Plants of Coastal British Colombia. Vancouver, BC: UBC Press, 1995. Kruckeberg, Arthur R. Gardening with Native Plants. Seattle, WA: University of Washington Press,1982. Pojar, Jim, and Andy MacKinnon. Plants of the Pacific Northwest Coast. Lone Pine Publishing: Canada, 2004. USDA, NRCS. 2008. The PLANTS Database (http://plants.usda.gov, 13 May 2008). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
Other Sources Consulted:	Hartman, Hudson T, Dale E. Kester, and Fred T. Davies Jr. Plant Propagation Principles and Practices. Englewood Cliffs, NJ: Prentice Hall Career & Technology, 1990. Potash, Laura L., and Carol A. Aubry, ed. Native Plant Notebook: Mt. Baker-Snoqualmie National Forest. Sedro-Woolley, WA: North Cascades Institute, 1997. Young, James A. and Cheryl G. Young. Collecting, Processing, and Germinating Seeds of Wildland Plants. Portland, OR: Timber Press, 1986.
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