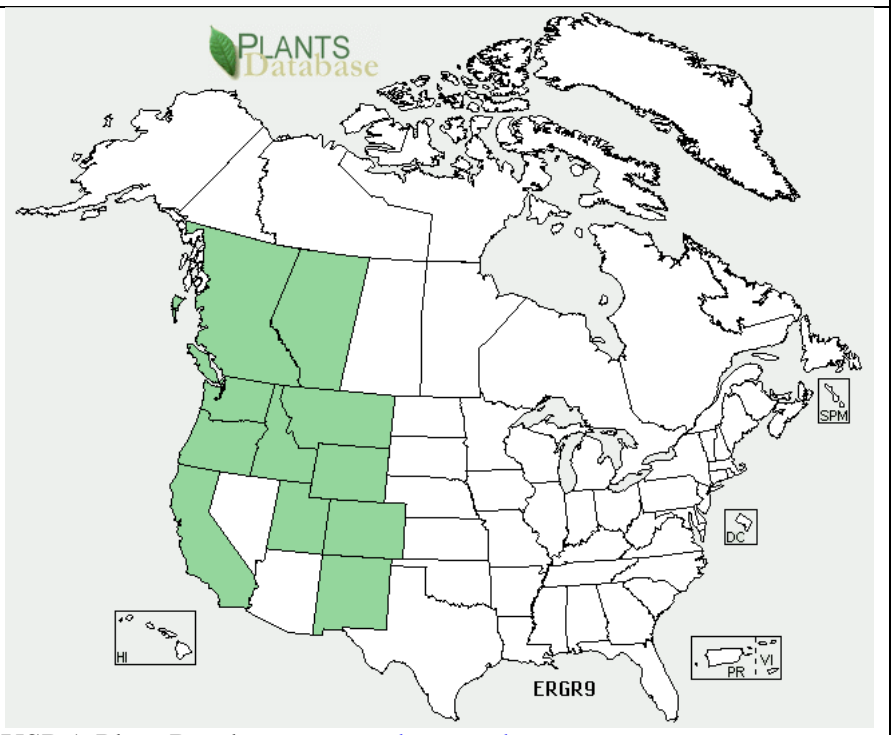
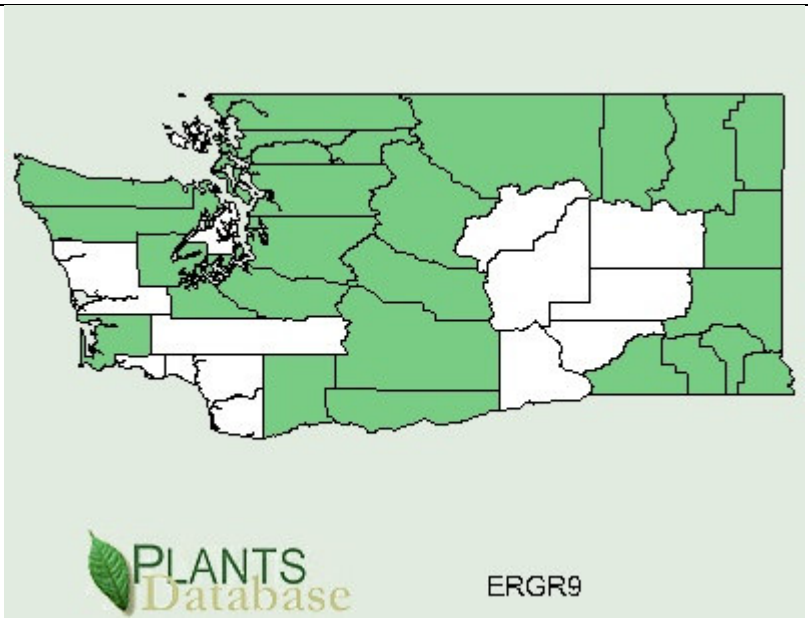
Plant Propagation Protocol for *Erythronium grandiflorum*
ESRM 412 – Native Plant Production
Spring 2008

http://commons.wikimedia.org/wiki/Image:Erythronium_grandiflorum.jpg

TAXONOMY	
Family Names	
Family Scientific Name:	Liliaceae
Family Common Name:	Lily family
Scientific Names	
Genus:	*Erythronium*
Species:	*grandiflorum*
Species Authority:	Pursh
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):	Glacier Lily, Avalanche lily(3)
Species Code :	ERYGRA(2)
GENERAL INFORMATION	
Geographical range:	 USDA Plant Database. www.plants.usda.gov

	 USDA Plant Database. www.plants.usda.gov
Ecological distribution:	*E. grandiflorum* occurs from sagebrush slopes and montane forests to subalpine to alpine meadows, from southern B.C. to Washington and northeastern Oregon, east to Idaho, Montana, Wyoming, and Colorado. (1)
Climate and elevation range:	Ranges from 1000m to 3500m in elevation. (1) Middle to Alpine elevations.(3)
Local habitat and abundance; may include commonly associated species	
Plant strategy type:	Blooms at the edge of melting snow banks.(3)
Plant characteristics:	Perennial herb. (3)
PROPAGATION DETAILS	
Ecotype:	Subalpine meadows, Logan Pass, 2032m elev. (1)
Propagation Goal:	Plants (1)
Propagation Method:	Seed(1)
Product Type:	Container (plug)(1)
Stock Type:	172 ml conetainers(1)
Time to Grow:	3 years.(1)
Target Specifications:	Stock Type: Container seedling Height: 4 true leaves; 10cm. Caliper: n/a Root System: Developed corm with root system.(1)
Propagule Collection:	Seeds are hand collected in late August and early September when capsules turn papery and begin to split, and when seeds are brown in color. Capsules are collected in paper bags and kept in a well

	ventilated drying shed prior to cleaning.(1)
Propagule Processing/Propagule Characteristics:	Seeds are easily hand cleaned from opened and dry seed capsules. Seed longevity is unknown. Seed dormancy is classified as deep, complex, morpho-physiological dormancy. Seeds/Kg: 189,383 % Purity: 100% % Germination: 36 to 68% (1)
Pre-Planting Propagule Treatments:	5 month cold, moist stratification. 2 year old seeds were treated. No germination was obtained on fresh seeds. Morpho-physiological dormancy is broken when environmental conditions are correct for embryo growth and development and germination is prevented until physiological changes have occurred; in response to cold-moist conditions. The germination results obtained indicate that fresh seeds may require a period of after-ripening. (1)
Growing Area Preparation / Annual Practices for Perennial Crops:	Outdoor nursery growing facility. Sowing method: direct seeding. Surface sow seeds for the light requirement. Growing medium used is 6:1:1 milled spaghnum peat, perlite, and vermiculite with Osmocote controlled release fertilizer (13N:13P2O5:13K2O; 8 to 9 month release rate at 21C) and Micromax fertilizer (12%S, 0.1%b, 0.5%CU, 12% Fe, 2.5%MN, 0.05%Mo, 1%Zn) at the rate of 1 gram of Osmocote and 0.20 gram of Micromax per 172 ml conetainer. Conetainers are filled and sown in late fall and irrigated thoroughly prior to winter stratification. Seedlings germinate in spring under fluctuation outdoor temperatures and are grown under full sun exposure. Seedlings are irrigated with Rainbird automatic irrigation system in early morning until containers are thoroughly leached. Average growing season of nursery is from late April after snowmelt until October 15th.(1)
Establishment Phase:	Seeds germinated uniformly over a 15 day period in early May, when temperatures were between 16 and 21C during the day, and 3C to 11C at night. Seedling developed on cotyledon before going dormant 4 to 5 weeks after emergence. A tiny corm was formed the first year. When seedlings go dormant they must on ly be watered occasionally. (1)
Length of Establishment Phase:	4 Weeks. (1)
Active Growth Phase:	True leaves appeared the following year in early May. Again, plants went dormant by mid-June. The corms doubled in size to 0.5 cm in diameter by the end of the second year. It is estimated that it may take from 3 to 5 years to obtain mature corms. Time to harvest mature corms could be shortened by figuring out the minimum chilling requirement of dormant corms.(1)
Length of Active Growth Phase:	10 weeks. (1)
Hardening Phase :	Not done. Plants were dormant by mid summer. (1)
Length of Hardening	12 weeks. (1)

Phase:	
Harvesting, Storage and Shipping :	Total time to harvest: 3 years minimum. Harvest Date: Not harvested yet Storage conditions: Overwinter in outdoor nursery under insulating foam and snow. (1)
Length of Storage :	5 months.(1)
Guidelines for Outplanting :	N/A
Other Comments:	Members of the Liliaceae are endo-mycorhizzal dependent. Inoculation of growing medium would likely increase growth and development. It is important to protect developing seedlings from rodents and excessive irrigation water; especially after seedling go dormant in mid summer. *E. grandiflorum* has a short growth season; generally having only 10 weeks between emergence and leaf fall. Thus, propagation by seeds is a slow process.(1)
INFORMATION SOURCES	
References :	1. Glacier National Park, Montana. Protocol Information. Native Plant Nursery. Native Plant Network. Nativeplantnetwork.org 2. USDA Plant Database. www.plants.usda.gov. 2008 3. Pojar, J. and MacKinnon, A. Plants of the Pacific Northwest Coast. Lone Pine Publishing, Redmond, WA. 1994. 4. Wikipedia. *Erythronium grandiflorum.* http://en.wikipedia.org (Picture) 5. USDA Forest Service. http://www.fs.fed.us/database/feis/plants/forb/claper/all.html 6. The Burke Museum http://biology.burke.washington.edu/herbarium/imagecollection.php
Other Sources Consulted:	
Protocol Author:	Danielle Cook
Date Protocol Created:	05.14.08

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