Template - Plant Propagation Protocol
ESRM 412 – Native Plant Production
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This template is modified from that available at:
http://www.nativeplantnetwork.org/network/SampleBlankForm.asp

TAXONOMY	
Family Names	
Family Scientific Name:	*Juncaceae*
Family Common Name:	Rushes
Scientific Names	
Genus:	*Juncus*
Species:	*drummondii*
Species Authority:	E. Mey.
Common Synonym(s)	
Variety:	drummondii
Sub-species:	E. Mey.
Common Name(s):	Drummond's Rush
Species Code (as per USDA Plants database):	JUDR
GENERAL INFORMATION	
General Distribution (geographical range (states it occurs in), ecosystems, etc):	Occurs in the western United States and Canada from New Mexico north to Alberta and west to California up through British Columbia and southeast Alaska; at high elevations to the subalpine (USDA 2007).
Climate and elevation range	High-subalpine elevations
Local habitat and abundance; may include commonly associated species	Moist, gravelly or coarse-soiled slopes, streambanks and meadows; usually found in the Cascade range or other mainland mountains; less frequent on islands or the Olympic peninsula (Pojar, 1994); associated with conifer forests (Jepson Flora Manual 1993), especially after landslides/avalanches or other large disturbances (Pojar, 1994). *J. parryi* occurs at similar elevations but in drier areas—commonly found with *J. drummondii* (Dyer, 2001)
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	Colonizing rush, acts as a competitor in open subalpine areas or as a short rush groundcover in disturbed forests (Jepson Flora Manual 1993). This rush colonizes recently deglaciated terrain based on the area's ability to prevent desiccation of seeds and seedlings (Jumpponen, et al. 1999). Moisture and

	porosity of soil often limit distribution (Leigh 1999).
PROPAGATION DETAILS	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from):	"Subalpine meadows at Logan's Pass, 2032 M elevation: Montana" (Hosokawa, 2004)
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plants (Hosokawa, 2004)
Propagation Method (Options: Seed or Vegetative):	Seed (Hosokawa, 2004)
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Container Plug (Hosokawa, 2004)
Stock Type:	116 ml containers (Hosokawa, 2004)
Time to Grow (from seeding until plants are ready to be outplanted):	9 months (Hosokawa, 2004)
Target Specifications (size or characteristics of target plants to be produced):	Firm plug in container; 6-8 true leaves or 8cm tall (Hosokawa, 2004)
Propagule Collection (how, when, etc):	"Hand collect mature inflorescences when capsules are brown; just prior to splitting. Seeds are brown at maturity with a whitish, threadlike appendage on either end of the seed. Capsules are collected in late August using scissors and paper bags and are kept in a well-ventilated drying shed prior to cleaning." (Hosokawa, 2004)
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	Hammermill or fanmill to process; longevity is currently unkown (Hosokawa, 2004)
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	5 months outdoor cold moist stratification to break dormancy (Hosokawa, 2004)
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	"Sowing Method: Direct Seeding. Seeds are surface sown; needs light for germination. Growing media 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 fluctuating 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." (Hosokawa, 2004)
Establishment Phase (from seeding to germination):	Keep media moist during germination; will germinate rapidly
Length of Establishment Phase:	4 weeks
Active Growth Phase (from germination until plants are no longer actively growing):	"Root development of this species occurs at a rapid rate during the growing season. Seedlings were root tight 8 weeks after germination. Seedlings were fertilized with 20-20-20 liquid NPK at 100 ppm during the rapid growth phase." (Hosokawa, 2004)
Length of Active Growth Phase:	8 weeks
Hardening Phase (from end of active growth phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter):	In hardening off, irrigation should be reduced during autumn (Hosokawa, 2004)
Length of Hardening Phase:	4 weeks
Harvesting, Storage and Shipping (of seedlings):	9 months
Length of Storage (of seedlings, between nursery and outplanting):	Overwinter under insulating foam cover and snow; store 5 weeks (Hosokawa, 2004).
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	Outplant in July/August—no outplanting data available (Hosokawa, 2004).
Other Comments:	
INFORMATION SOURCES	
References:	See below…
Other Sources Consulted (but that contained no pertinent information):	AOSA (2006). *Suggested purity and/or germination testing methods for species without AOSA Rules testing procedures*. Association of Official Seed Analysts, Stillwater, OK. Also available online at http://www.aosaseed.com/reference.htm. Chlebicki, A. (2002). Biogeographic relationships between fungi and selected glacial relict plants: The use of host-fungus data as an aid to plant geography on

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