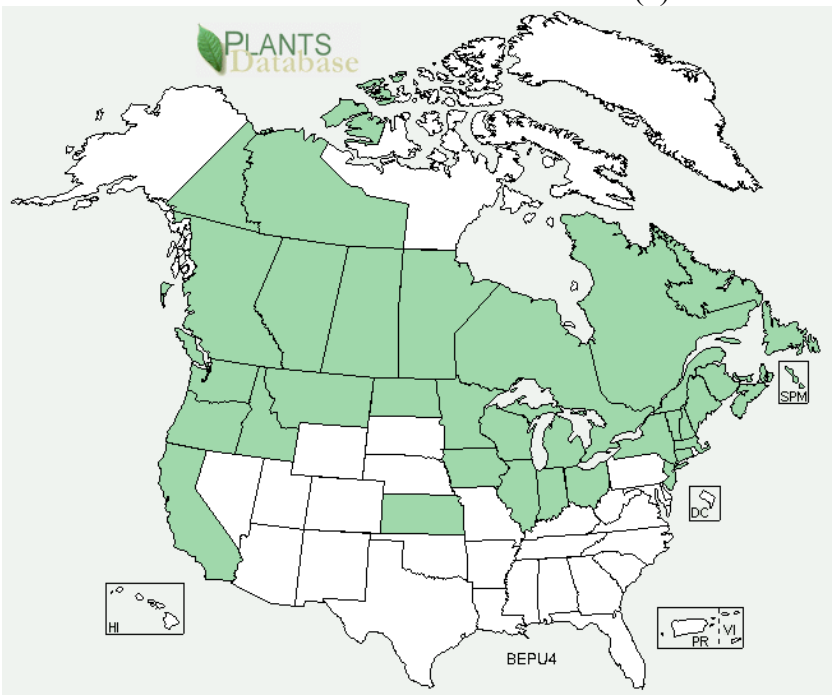
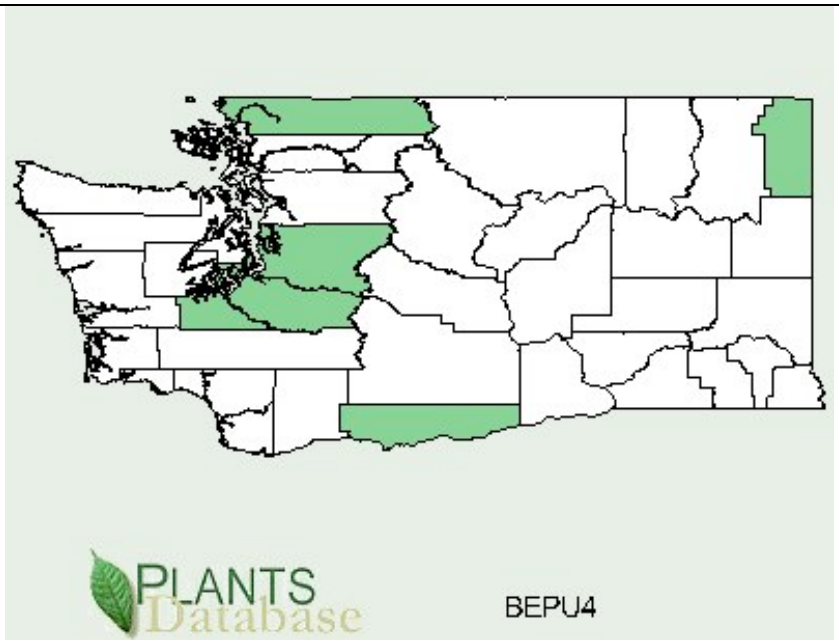
Plant Propagation Protocol for *[Insert Species]*
ESRM 412 – Native Plant Production

TAXONOMY	
Family Names	
Family Scientific Name:	Betulaceae
Family Common Name:	birch
Scientific Names	
Genus:	*Betula*
Species:	*pumila*
Species Authority:	Linnaeus
Variety:	glandulifera
Sub-species:	-
Cultivar:	-
Authority for Variety/Sub-species:	Regel (1)
Common Synonym(s)	*BEGL2 Betula glandulifera (Regel) Butler* *BEGLG Betula glandulosa Michx. var. glandulifera (Regel) Gleason* *BEGLH Betula glandulosa Michx. var. hallii (Howell) C.L. Hitchc.* *BENAG Betula nana L. var. glandulifera (Regel) B. Boivin* (1)
Common Name(s):	bog birch, scrub birch, swamp birch, scrub birch, dwarf birch (4)(8)
Species Code:	BEPUG (1)
GENERAL INFORMATION	
Geographical range	Distributed from British Columbia to California. (4)  (1)

	 (1)
Ecological distribution:	Grows well in wet places such as swamps and bogs. (4)
Climate and elevation range	
Local habitat and abundance:	Occurs infrequently (4)
Plant strategy type / successional stage	
Plant characteristics	6-8 feet, low, shrubby, perennial. Miniature foliage, flower and fruit. (4) Flowers are monoecious on catkins. Staminate catkins remain on trees over winter, elongate and open in spring. Pistillate catkins resemble small cones emerge with leaves. (7)
PROPAGATION DETAILS	
Ecotype	-
Propagation Goal:	Seeds
Propagation Method:	Best propagated from seed. Propagates regularly and seeds can be treated like alder seeds. (4) Can be propagated by cuttings and tissue culture. (9) Layering may also work. (8)
Product Type:	-
Stock Type:	-
Time to Grow:	Flowers May-June, fruits ripen September-October, seed dispersal occurs October-March. (7)
Target Specifications:	-
Propagule Collection:	Collect ripe fruits in summer of fall before they drop from the catkins. (5) Seed turns from greenish tan to light brown or tan at maturity. (7) Collect by picking or stripping intact strobiles from live trees or freshly cut trees. Put directly in bags because strobiles

	are fragile. Removal of wings is not essential. (8)
Propagule Processing/ Propagule Characteristics:	The seed's light weight and static electricity can make them hard to work with. (10) Spread seeds out to dry until strobiles begin to break apart. Flailing, shaking and air screening (screen size 6/64 inch) can facilitate breakdown and increases purity. (7)
Pre-Planting Propagule Treatments:	Seeds of *betula* species are not recalcitrant but shortly after maturity they will lose viability unless they are either in favorable moisture and temperature conditions for germination or dried and stored at a low temperature. (3) For *Betula papyrifera* propagation 3 months cold stratification results in better germination, 1 month or more of chilling may help. (6) Stratification is not necessary. Light requirement is overcome with cool-moist stratification. (9)
Growing Area Preparation / Annual Practices for Perennial Crops:	Germinate on moist peat. (8)
Establishment Phase:	Germination with light overcomes prechilling (8+ hours light). Temperatures for germination are 18/25 degrees C. (7)
Length of Establishment Phase:	-
Active Growth Phase:	-
Length of Active Growth Phase:	-
Hardening Phase:	-
Length of Hardening Phase:	-
Harvesting, Storage and Shipping:	Seeds usually sown after collection, or can be prechilled 4-8 weeks. (7)
Length of Storage	Seed of various *betula* species can be stored 18 months -12 years. (8) Most *betula* seeds stored at 1-3% moisture, 2-5 degrees C. Low moisture is more important than low temperature for viability. (7)
Guidelines for Outplanting / Performance on Typical Sites:	Plant outside in fall to stratify in cool moist winter, then germinate in spring. (5) Can be sown atop snow. (8) Seeds are broadcast, covered minimally, kept moist. Seedling require summer shade 2-3 months. Seedling density of 265-475 per square meter. (7)
Other Comments:	Purity is often low in commercial mixes because of cone scales and disintegrated strobiles. (8) In eight state *Betula pumila* is considered a species of special concern, endangered, or threatened. (1)
INFORMATION SOURCES	
References:	1. "Plant Profile: bog birch." USDA: Natural Resources Conservation Services on-line. http://plants.usda.gov/java/name Accessed: May 4, 2010.

	2. Pojar, Jim and Andy MacKinnon. *Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia & Alaska*. Vancouver: Lone Pine, 1994. 3. Baskin, Carol C. and Jerry M. Baskin. *Seeds: Ecology, Biogeography, and Evolution of Dormancy and Germination.* San Diego: Academic Press, 1998. 4. Kruckeberg, Arthur R. *Gardening with Native Plants of the Pacific Northwest.* USA: University of Washington Press, 1982. 5. Robson, Kathlen A, Alice Richter and Mariane Filbert. *Encyclopedia of Northwest Native Plants for Gardens and Landscapes.* Portland: Timber Press, Inc., 2008. 6. Dirr, Michael A. and Charles W. Heuser, Jr. *The Reference Manual of Woody Plant Propagation: From Seed to Tissue Culture.* Cary, NC: Varsity Press, Inc., 2006. 7. Young, James A. and Cheryl G. Young. *Seeds of Woody Plants in North America.* Portland: Dioscorides Press, 1992. 8. U.S. Department of Agriculture. *Woody-Plant Seed Manual.* Washington D.C.: United States Government Printing Office, 1948. 9. Young, James A. and Cheryl G. Young. *Collecting, Processing and Germinating Seeds of Wildland Plants.* Portland: Timber Press, 1986. 10. Smith, Roger D., John B. Dickie, Simon H. Linington, Hugh W. Pritchard and Robin J. Probert. *Seed Conservation: turning science into practice.* Great Britian: The Cormwell Press Ltd., 2003.
Other Sources Consulted:	-
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