Plant Propagation Protocol for *Cephalanthera austiniae*
ESRM 412 – Native Plant Production
Spring 2008

TAXONOMY	
Family Names	
Family Scientific Name:	Orchidaceae
Family Common Name:	Orchid
Scientific Names	
Genus:	*Cephalanthera*
Species:	*austiniae*
Species Authority:	(Gray) Heller
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)	*Eburophyton austiniae* (Gray) Heller
Common Name(s):	phantom orchid, snow orchid
Species Code (as per USDA Plants database):	CEAU
GENERAL INFORMATION	
Geographical range (distribution maps for North America and Washington state)	From British Colombia south to California, west into Idaho and south of Sierra Nevada. (2,3,7)

	
Ecological distribution (ecosystems it occurs in, etc):	These orchids are usually found in deep, moist coniferous or deciduous forests (where humus and mycorrhjzae fungi are plentiful). (1,2,7)
Climate and elevation range	Moist maritime climate. 0 - 2200m. (5)
Local habitat and abundance; may include commonly associated species	*Cephalanthera* are associated with conifers and deciduous trees where symbiotic mycorrhizae fungi are plentiful in the soil. (2,3,4,7)
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	Since *Cephalanthera* is typically found in deep coniferous or deciduous forests, one can infer that this orchid is a late successional plant owing to the fact that well established mycorrhizae fungi are found in old growth forest. (2,3,4,7)
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc)	*Cephalanthera austiniae* is an extremely rare, epiparasitic orchid found in deep forests. This perennial orchid is aptly named “phantom orchid” or “snow orchid” for it’s pure white coloration of its flowers, stem, and leaves, which are highly contrasted against the dark forest floor. “Phantom orchid” may also be alluding to the fact that *Cephalanthera* may lay dormant in the soil for up to 17 years before blooming again. *Cephalanthera*’s white coloration hints that it is

	mycoheterotrophic. This means the orchid lacks chlorophyll for photosynthesis and the plant relies solely on mycorrhizae fungi for food. (1,2,4,5,6,7)
PROPAGATION DETAILS	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from):	n/a
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Seeds and possibly (but highly unlikely) plants from tissue culture.
Propagation Method (Options: Seed or Vegetative):	Seed or tissue culture, but both methods are difficult to conduct.
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	n/a
Stock Type:	n/a
Time to Grow (from seeding until plants are ready to be outplanted):	
Target Specifications (size or characteristics of target plants to be produced):	n/a
Propagule Collection (how, when, etc):	Allow seeds to ripen and dry on flowers, but be sure to collect the pod before it splits open and scatters the seeds. However, even this is a risky procedure because these orchids are difficult to find, plus coming in close contact with this orchid is frowned upon. (6)
Propagule Processing/Propagule Characteristics	n/a

(including seed density (# per pound), seed longevity, etc):	
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	n/a
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	n/a
Establishment Phase (from seeding to germination):	n/a
Length of Establishment Phase:	n/a
Active Growth Phase (from germination until plants are no longer actively growing):	n/a
Length of Active Growth Phase:	n/a
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):	n/a
Length of Hardening Phase:	n/a
Harvesting, Storage and Shipping (of seedlings):	n/a
Length of Storage (of	Since seeds lack an endosperm, the seeds are short-lived. If seeds are obtained sow

seedlings, between nursery and outplanting):	them while they are fresh and viable.
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	n/a
Other Comments (including collection restrictions or guidelines, if available):	*Cephalanthera* are losing their habitat and are extremely rare, so collecting plants from the wild is not permitted. Collecting limited amount of seeds is possible, but difficult and frowned upon. (6)
INFORMATION SOURCES	
References (full citations):	1. Wildflower Center. Lady Bird Johnson. The University of Texas at Austin. http://www.wildflower.org/plants/result.php?id_plant=CEAU 2. The Burke Museum of Natural History and Culture. 2006. http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Cephalanthera&Species=austiniae 3. USDA, NRCS. 2008. The Plants Database. http://plants.usda.gov/java/profile?symbol=CEAU&photoID=ebau2_001_avp.tif 4. Wikipedia. 2008. http://en.wikipedia.org/wiki/Cephalanthera_austiniae 5. Flora or North America. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101520 6. Washington Native Orchid Society. 2006. http://www.wanativeorchids.com/Cephalanthera%20austiniae/index.html 7. Hitchcock, C. Leo and Cronquist, Arthur. Flora of the Pacific Northwest. 1998. University of Washington Press, Seattle and London.
Other Sources Consulted (but that contained no pertinent information) (full citations):	1. ITIS Report. 2008. http://www.itis.gov/servlet/SingleRpt/SingleRpt 2. Native Plants Journal and Network. http://nativeplants.for.uidaho.edu/network/PreviewResults.asp 3. Calflora. Taxon Report 1867. http://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=1867
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