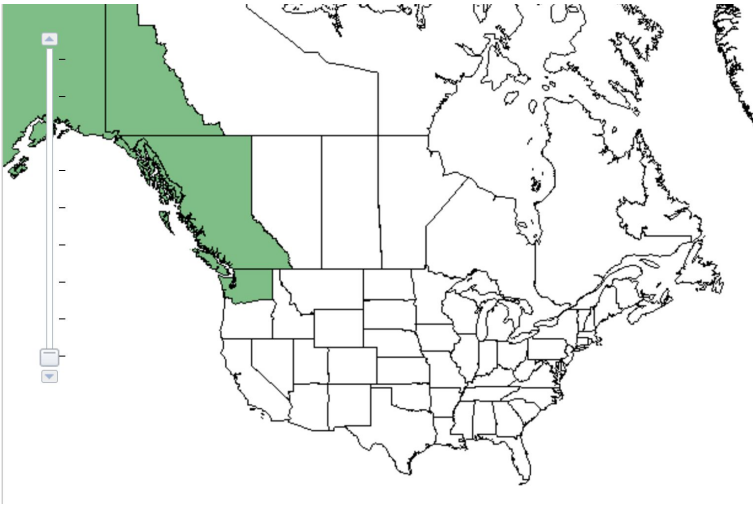
Plant Propagation Protocol for *[Insert Species]*

ESRM 412 – Native Plant Production

Protocol URL: https://courses.washington.edu/esrm412/protocols/*[USDASpeciesCode.pdf]*

If this is a revision and update of a pre-existing protocol, don't forget to attach a PDF of the previous protocol to this document.



TAXONOMY	
Plant Family	
Scientific Name	*Ericaceae*
Common Name	Heath family
Species Scientific Name	
Scientific Name	*Cassiope* Stelleraina
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	*Harrimanella stelleriana (*Pall.) Coville
Common Name(s)	Alaskan-mountain heather, Alaskan moss heather, Alaska bellheather
Species Code (as per USDA Plants database)	HAST3
GENERAL INFORMATION	
Geographical range	Grows wild from Mount Rainier north to Alaska and on to northeast Asia (de Candolle) Look at map above
Ecological distribution	Alpine tundra or boreal
Climate and elevation range	These plants grow in zones 3-6 cool and damp, Sea level-3,000 ft (de Candolle)
Local habitat and abundance	The heather grows in open, well-drained slopes near and above the timberline with other *Ericaceae*, ***Luetkea***

	pectinata*, Empetrum nigrum, and Cladonia rangiferina (*Natural*)* (Borealforest) (Wallace)
Plant strategy type / successional stage	Fire-intolerant (franklin) Stress-tolerator and within the succession of climax or near climax (Franklin, 1988) Lives in acidic, peaty, damp soil (Robson,2008) (Cullina,2002)
Plant characteristics	Perennials, mat, shrub, subshrub (Pojar, 1994) longevity can be up to 20 years old, but they are slow-growing.. (Pojar,1994) Needle leaves are rounded on the underside (distinguishing feature) and mostly cover all of the branch (Pojar, 1994). It has single bell-shaped, white flowers with reddish sepals. Fruit are 5-chambered capsules. (Pojar, 1994)
PROPAGATION DETAILS	
Ecotype	alpine tundra and boreal (de Candolle)
Propagation Goal	Plant
Propagation Method 1 (Seed)	Seed
Product Type	Propagules: seed
Stock Type	
Time to Grow	Over a year (Potash,1997)
Target Specifications	20 cm laterally
Propagule Collection Instructions	Collect fruits in late summer to fall, from early September to snowfall. Snip the whole inflorescence and put it in a paper bag to dry. (Potash, 1997)
Propagule Processing/Propagule Characteristics	Not available
Pre-Planting Propagule Treatments	Seeds must be extracted from fruit. Let fruit dry for 2-4 weeks. Then use a #30 screen to sift the seed from chaff. If there are any fruit left, grind them. No stratification needed. Seeds will germinate with light. (Potash,1997)
Growing Area Preparation / Annual Practices for Perennial Crops	“Seed germination compost”=3 parts fine sphagnum peat, 3 parts #3 horticultural vermiculite, 1-2 part propagation grade perlite, 1 part #4 washed sand place seed on soil surface on 10x20” flats. (Potash,1997)
Establishment Phase Details	3-6 months (Potash,1997)
Length of Establishment Phase	full year (Potash,1997) until transplanting

Active Growth Phase	Not Available
Length of Active Growth Phase	
Hardening Phase	Keep flats on misting bench with 55-65 ℉ bottom heat during the winter and 65 ℉ during the summer with a shade cloth (Potash,1997).
Length of Hardening Phase	
Harvesting, Storage and Shipping	Shade seedling with a shade cloth when storing or shipping (Potash,1997)
Length of Storage	Not available
Guidelines for Outplanting / Performance on Typical Sites	Wait for a full year before transplanting and can be done in spring or winter. (Potash,1997)
Other Comments	As with any propagation, make sure to properly displays the population. Do this by collecting seeds from multiple sources.
Propagation Method 2	Vegetative
Product Type	Propagule: cutting
Stock Type	
Time to Grow	Growing takes about 3-4 months or until the plant has so much root as to poke out the bottom of the flats. (Potash,1997)
Target Specifications	20 cm laterally
Propagule Collection Instructions	Use heel cuts from non-flowering lateral branches from healthy mother plants that are mostly found in ravines. (Potash,1997)
Propagule Processing/Propagule Characteristics	Not available
Pre-Planting Propagule Treatments	1. Subdivide branches 2. Trim off excessively woody parts 3. Leave the leaves and branches 4. Place in compost mix 5. fertilize every two weeks (Potash,1997)
Growing Area Preparation / Annual Practices for Perennial Crops	Compost mix: **3 parts fine sphagnum peat, 3 parts horticultural perlite, and 1 part #4 washed sand (sharp silicon masonry sand is best)** **Container: 50 cuttings per 10x20" flat (Potash,1997)** **Fertilizer:** 9-45-15 plant starter but only ½ the recommended strength and maxicrop liquid kelp but only ¼ the recommended strength

Establishment Phase Details	Not Available
Length of Establishment Phase	
Harvesting, Storage and Shipping	Keep flats on misting bench with 55-65 ℉ bottom heat during the winter and 65 ℉ during the summer with a shade cloth (Potash,1997)
Length of Storage	Full Year (Potash,1997)
Guidelines for Outplanting / Performance on Typical Sites	Transplant during the spring and winter. 1. Use a spoon to pick up plants, handling the roots as little as possible 2. promptly water with fertilizer mix of 9-45-15 plant starter but only ½ the recommended strength and maxicrop liquid kelp but only ¼ the recommended strength 3. keep in shade and add mulch to shade the plant 4. water every day or every other day (Potash,1997)
Other Comments	As with any propagation, make sure to properly displays the population. Do this by collecting cuttings from multiple sources.
INFORMATION SOURCES	
References	"Cassiope Mentensiana." *Shrubs of the World Boreal Forests - Cassiope Mentensiana - White Mountain Heather*. Faculty of Natural Resources Management Lakehead University, n.d. Web. 26 Apr. 2017. Cullina, William. *Native Trees, Shrubs, & Vines*. New York: New England Wild Flower Society, 2002. Print. De Candolle, Augustin Pyramus, and Peter Simon Von Pallas. "Cassiope Stelleriana."*Cassiope Stelleriana*. Alpine Garden Society, n.d. Web. 26 Apr. 2017. Duguid, Alex. "Propagation by Sphagnum." (n.d.): n. pag. Print. Franklin, Jerry F., and C. T. Dyrness. *Natural Vegetation of Oregon and Washington*. Corvallis: Oregon State UP, 1973. Print. "Harrimanella Stelleriana (Pall.) Coville Show All Alaska Bellheather." *Plants Profile for Harrimanella Stelleriana (Alaska Bellheather)*. Natural Resources Conservation Service, n.d. Web. 26 Apr. 2017. Pojar, and Mackinnon. *Revised Plants of the Pacific Northwest Coast: Washington, Oregon, British Colombia & Alaska*. Vancouver: Lone Pine, 1994. Print.

	Potash, Laura, and Carol Aubry. "Native Plant Notebook : Mt. Baker-Snoqualmie National Forest." *Find in a Library with WorldCat*. Mt. Baker-Snoqualmie National Forest, 02 Apr. 2017. Web. 26 Apr. 2017. Robson, Kathleen A., Alice Richter, and Marianne Filbert. "Shrubs and Trees." *Encyclopedia of Northwest Native Plants for Gardens and Landscapes*. Portland, Or.: Timber, 2008. 390-91. Print. Wallace, Gary D. "ERICACEAE." *UC/JEPS: Jepson Manual Treatment for Xxxxxxxx*. Regents of the University of California, n.d. Web. 26 Apr. 2017.
Other Sources Consulted	"Cassiope Stelleriana." *Folia*. Folia, n.d. Web. 26 Apr. 2017. Malone, THomas. "List of Plant Species Present on Forest Permanent Sample Plots in Interior and Southcentral Alaska." (n.d.): n. pag. Print. Rose, Robin, Caryn E.C. Chachulski, and Diane L. Haase. "Propagation of Pacific Northwest Native Plants." *Robot Check*. Oregon State University Press, 1998. Web. 26 Apr. 2017. *USDA Native Seed Production Manual*. N.p.: Natural Resources Conservation Service, n.d. Print. "Washington State University Extension." *Grow Your Own Native Landscape: A Guide to Identifying, Propagating & Landscaping with W.WA Native Plants*. Ed. Micheal Leigh. Washington State University, 1996. Web. 26 Apr. 2017.
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Older Protocol: http://depts.washington.edu/propplnt/Plants/cassiopestelleriana.htm