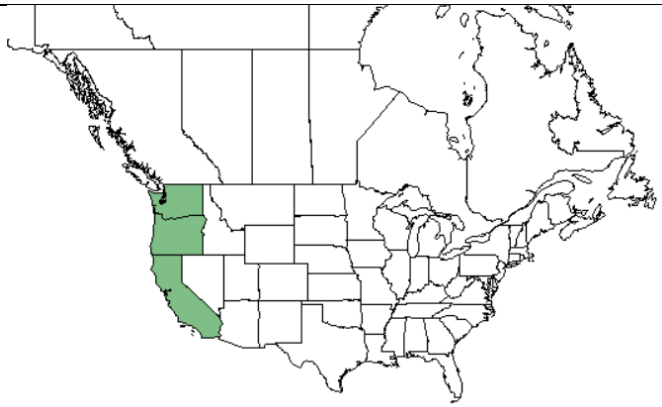
Plant Propagation Protocol for *[Insert Species]*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*[USDASpeciesCode.pdf]*

TAXONOMY	
Plant Family	
Scientific Name	Pteridaceae
Common Name	Fern family
Species Scientific Name	
Scientific Name	*Pellaea brachyptera* (T. Moore) Baker
Varieties	Can hybridize with *Pallaea mucronata* [6]
Sub-species	
Cultivar	
Common Synonym(s)	
Common Name(s)	Sierra cliffbrake
Species Code (as per USDA Plants database)	PEBR3
GENERAL INFORMATION	
Geographical range	 California, Oregon, and Washington  Chelan County, Washington Pictures [7]
Ecological distribution	Dry, open slopes. Grows in rocky soils around the base of boulders [1]
Climate and elevation range	Dry, 300-1100 meters

Local habitat and abundance	Found with *Pinus ponderosa* and *Pseudotsuga menziesii*
Plant strategy type / successional stage	Shade tolerant Drought tolerant [2]
Plant characteristics	Rhizomatous, highly branched, linear leaves, approximately 30 cm high [5]
PROPAGATION DETAILS	
Propagation from Spores – Commercial Method [3]	
Ecotype	Arid, drier environments, from rocky environments
Propagation Goal	Plants
Propagation Method	Spores
Product Type	Container (plug)
Stock Type	Wood flats or large clay pots with holes on the bottom for maximum drainage [3].
Time to Grow	6 to 10 months for gametophytes to grow into transferable sporophytes.
Target Specifications	Sporophyte
Propagule Collection Instructions	Collect spores from clean ferns not covered in dirt to lower risk of contamination of other spores from different individuals or species [3]. Collect spores when sporangia are fully developed and robust [3].
Propagule Processing/Propagule Characteristics	Spores can be sprinkled on in an organized manner using a salt shaker or can be put in clumps in small plugs or depressions in the medium [3].
Pre-Planting Propagule Treatments	To separate spores from non-spore material, fine cloths such as a cheese cloth can be used as a screening material [3]. Spores can be stored in refrigeration [3].
Growing Area Preparation / Annual Practices for Perennial Crops	Moist to dry soil with little sun [3] Sterilize the soil or mediums by microwaving the medium for several minutes [2].
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	Sporophytes need at least three fronds before transplanting, where upon transplanting can take place by picking up the individual sporophyte along with a piece (about 0.2 to 0.5 in.) of the medium it was growing in [2].
Length of Storage	

Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	
Propagation from Rhizomes	
Ecotype	
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Container
Stock Type	Can be planted in a separate container or directly in the ground with arid soil [5].
Time to Grow	Autumn with mild winters Spring with harsh winters Before the new frond growth of the year [5]
Target Specifications	Rhizomes should be close to 10 cm long if possible [5].
Propagule Collection Instructions	Cut back foliage and include at least one growing tip and many roots along the rhizome [5].
Propagule Processing/Propagule Characteristics	
Pre-Planting Propagule Treatments	
Growing Area Preparation / Annual Practices for Perennial Crops	Moist to dry soil with little sun [3]. One part peat moss and one part perlite; avoid using soil, compost, and manure to lower the chance of contamination [2].
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	

INFORMATION SOURCES	
References	[1] Author, W., Alverson, E. R. & Arnett, J. *American Fern Society Pellaea brachyptera New to. American Fern Journal* **76**, [2] Calflora. Plant Characteristics and Associations. (n.d.). Retrieved from https://www.calflora.org/entry/plantchar.html?crn=6124

	[3] Hoshizaki, B. J., & Moran, R. C. (2001). *Fern Grower's Manual Revised and Expanded Edition*. Oregon: Timber Press. [4] Lellinger, D. B. *A field manual of the ferns & fern-allies of the United States & Canada*. (Smithsonian Institution Press, 1985). [5] Olsen, S. (2007). *Encyclopedia of Garden Ferns*. Portland, Or.: Timber Press. [6] Jepson Flora Project. Treatment from the Jepson Manual (1993). Retrieved from http://ucjeps.berkeley.edu/cgi-bin/get_JM_treatment.pl?92,122,124 [7] United States Department of Agriculture, Natural Resources Conservation Service. Plants Profile (n.d.). Retrieved from https://plants.usda.gov/core/profile?symbol=PEBR3
Other Sources Consulted	Grillos, S. J. (1966). *Ferns and Fern Allies*. Berkeley and Los Angeles, CA: The Regents of The University of California. Steffen, R., & Olsen, S. (2015). *The Plant Lover's Guide to Ferns*. Portland, OR: Timber Press.
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