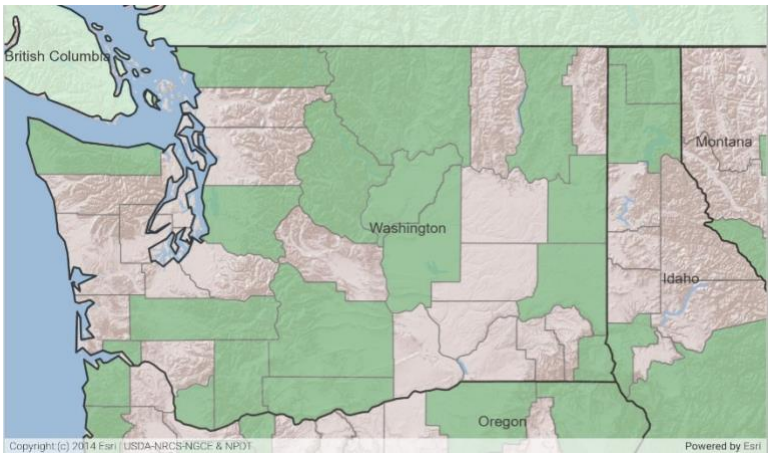
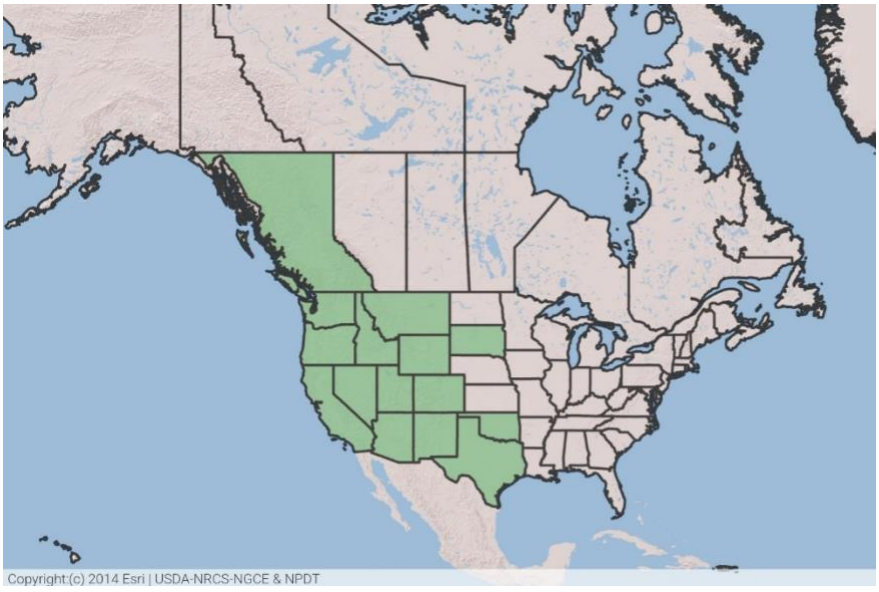
Plant Propagation Protocol for *Epipactis gigantea*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/2023/EPGI.pdf

USDA Plant Database

TAXONOMY	
Plant Family	
Scientific Name	*Epipactis*
Common Name	Orchid family (*Orchidaceae*)
Species Scientific Name	
Scientific Name	*Epipactis gigantea* Douglas ex Hook.[10]
Varieties	
Sub-species	
Cultivar	Serpentine Night (*Forma rubrifolia*)[8] Serpentine Candy[4]
Common Synonym(s)	*Arthrochilium giganteum* *Epipactis americana* *Helleborine gigantea*[3]
Common Name(s)	Stream Orchid, Chatterbox, Giant Helleborine[5]

Species Code (as per USDA Plants database)	EPGI
GENERAL INFORMATION	
Geographical range	Stream Orchid are native throughout the western United States from central Mexico to southern British Columbia.[2] They are native to Washington State as well. The Crescent Lake area of the Olympic National Park hosts a large population of Stream Orchids. Otherwise, they are relatively rare throughout the state.[3]  USDA Plant Database  USDA Plant Database

Ecological distribution	Usually found in wetland riparian zones. Prefers moist climates and shady areas. Found rarely, usually only where it is locally abundant. It is usually isolated to these areas.[9]
Climate and elevation range	As long as sufficient moisture is available, stream orchid can be found in multiple climates including in deserts, mountainous regions and subarctic climates.[9] Elevation is anywhere between sea-level to 3000 meters.[5]
Local habitat and abundance	Seeps, wet meadows, stream banks.[4] Margins of springs, streams and lakes. Requires nutrient rich soils and constant moisture supplies. Occurs alongside other riparian plant species including willow (*Salix* spp.*)* and cottonwood (*Populus* spp.).[9]
Plant strategy type / successional stage	*Epipactis gigantea* exhibits high stress tolerance and is deer resistant.[7] Prefers early successional habitats since disturbance is needed for establishment of species. They are good competitors if well-established.[9]
Plant characteristics	Stream Orchids are perennial herbs. Flowering time occurs between March and October. Flowering petals are usually various colors in shades of green, red, yellow, and purple.[6] Reproduction occurs through pollination and by rhizome.

PROPAGATION DETAILS

(Arditti, J., Michaud, J. D., & Oliva, A. P., Seed germination of North American orchids. i. Native California and related species of calypso, Epipactis, Goodyera, Piperia, and Platanthera.)[1]

Ecotype	Seeds were collected from immature and ripe fruit of plant.
Propagation Goal	Germinant
Propagation Method	Seed
Product Type	Culture flask
Stock Type	
Time to Grow	Germinants were used specifically for research and not intended for outplanting.
Target Specifications	Increase in growth/success dependent on illumination, pH, and culture composition.
Propagule Collection Instructions	Seeds collected directly from plant fruit.

Propagule Processing/Propagule Characteristics	Mature and immature seeds collected.
Pre-Planting Propagule Treatments	Mature seeds were sterilized by soaking in solution for 10 minutes. Immature seeds stored in manila envelopes over $CaCl_2$ at 4 C.
Growing Area Preparation / Annual Practices for Perennial Crops	Culture flasks, Cultured media, sterile conditions.
Establishment Phase Details	*Rhizoclonia repens* was cultured into a defined medium for 1month and sterilized before being added to media at 100 ml/liter.
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	Mature seeds are more likely to go dormant.
Guidelines for Outplanting / Performance on Typical Sites	
Other Comments	*Epipactis* species rely heavily on mycorrhizal fungi. Without mycorrhizal, germination cannot occur.

INFORMATION SOURCES

References

[1]Arditti, J., Michaud, J. D., & Oliva, A. P. (1981). Seed germination of North American orchids. i. Native California and related species of calypso, Epipactis, Goodyera, Piperia, and Platanthera. *Botanical Gazette*, *142*(4), 442–453. https://doi.org/10.1086/337245

[2]Brunton, D.F. (1986), Status of giant helleborine, Epipactus gigantea (Orchidaceae). Canada. Canadian Field-Naturalist, 100(3), 414-417

	[3]*Epipactis gigantea (Chatterbox)*. North American Orchid Conservation Center. (n.d.). https://goorchids.northamericanorchidcenter.org/species/epipactis/gigantea/ [4]*Epipactis gigantea*. Pacific Bulb Society. (2022, June 21). https://www.pacificbulbsociety.org/pbswiki/index.php/Epipactis_gigantea [5]Hooker, D. ex, Brown, P. M., & Argus, G. W. (n.d.). *Epipactis gigantea*. Epipactis gigantea - FNA. http://floranorthamerica.org/Epipactis_gigantea [6]Jepson Flora Project (eds.) 2023, Jepson eFlora, https://ucjeps.berkeley.edu/eflora/, accessed on May 22, 2023. [7]*Plant database*. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. (n.d.). https://www.wildflower.org/plants/result.php?id_plant=EPGI [8]*Stream Orchid, Epipactis gigantea*. California Native Plant Society. (n.d.). https://calscape.org/Epipactis-gigantea-(Stream-Orchid) [9]Rocchio, J., March, M., & Anderson, D. G. (2006). *Epipactis gigantea Dougl. ex Hook.(stream orchid): a technical conservation assessment* (Doctoral dissertation, Colorado State University. Libraries). [10]USDA plants database. (n.d.). https://plants.usda.gov/home/plantProfile?symbol=EPGI
Other Sources Consulted	Lady Bird Johnson Wildflower Center - the University of Texas at Austin. (2019, September 30). https://m.wildflower.org/plants/ Schiebold, J. M. I., Bidartondo, M. I., Karasch, P., Gravendeel, B., & Gebauer, G. (2017). You are what you get from your fungi: nitrogen stable isotope patterns in Epipactis species. *Annals of Botany*, *119*(7), 1085-1095
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Date Protocol Created or Updated	06/08/23