Plant Propagation Protocol for *Amerorchis rotundifolia*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*[AMRO.pdf]*

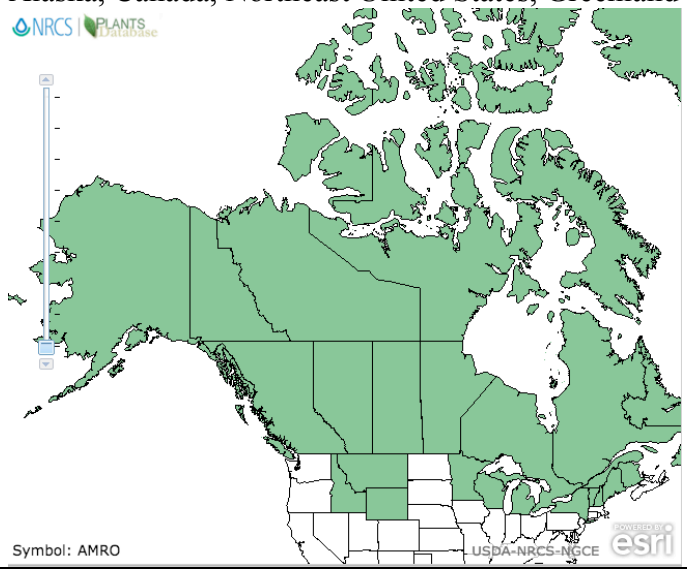
TAXONOMY	
Plant Family	Orchidaceae
Scientific Name	*Amerorchis rotundifolia*
Common Name	Hultén Roundleaf Orchid
Species Scientific Name	
Scientific Name	*Amerorchis rotundifolia* (Banks ex Pursh) Hultén
Varieties	*Orchis rotundifolia* Banks ex Pursh var. *lineata* Mousley (white-lipped color variation)
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	*Galearis rotundifolia* (Banks ex Pursh) R. M. Bateman, *Orchis rotundifolia* Banks ex Pursh, *Habenaria rotundifolia* (Banks ex Pursh) Lindl., *Platanthera rotundifolia* (Banks ex Pursh) Lindl., *Ponerorchis rotundifolia* (Banks ex Pursh) Soó
Common Name(s)	Hultén roundleaf orchid, Roundleaf orchid, small roundleaf orchid
Species Code (as per USDA Plants database)	AMRO
GENERAL INFORMATION	
Geographical range	Alaska, Canada, Northeast United States, Greenland 

	Photo credit: USDA Plants database, *Amerorchis rotundifolia*
Ecological distribution	Found in moist areas or seepage areas in conifer forests, tundra, white-cedar (*Thuja occidentalis*) bogs, larch (*Larix laricina*) bogs, areas with calcareous substrate (ie, containing calcium carbonate, limestone soil, more basic than acidic); occasionally found in non-wetland areas farther north in Canada, when it is found in the tundra. (Fertig, 2008) (Bergmann, 2013).
Climate and elevation range	Requires cold soils, grows mostly in moist locations but occasionally in non-wetland areas Elevation range: 0m (coastal) to1200m elevation
Local habitat and abundance	Low abundance (globally secure species, but locally threatened or endangered in several states in U.S.), local habitat often contains mosses and forbs in understory with dense conifer overstory (*Larix laricina, Thuja occidentalis*) (Fertig, 2008) (Michigan State University, 2004).
Plant strategy type / successional stage	Late successional, does not respond well to disturbance like many other orchid species (ex, does not grow well in powerline clearings). Does not tolerate stress, non-competitive. (Hilaire, 2002)
Plant characteristics	Forb, short-lived. Small glabrous plant, up to 35cm tall; fibrous roots grow from small rhizome. 1 solitary round leaf that is dull green. Inflorescence is slender and can have up to 15 flowers. Flowers are white to pink with pink/purple dots on lower lobe of flower. (Luer, 1975)
PROPAGATION DETAILS	
Ecotype	N/A
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	N/A
Time to Grow	21-27 months (Handley, 2005)
Target Specifications	Formation of single basal leaf
Propagule Collection Instructions	Flowers in May-August (peaking in June), collect capsules July-August (Luer, 1975) (no more that 10% of local population). Capsules are very small (1.5 x 0.5cm) and contain dust-like seeds. (Arditti, 2000)
Propagule Processing/Propagule Characteristics	Seed viability widely variable, from 0% to 78% per capsule (Argue). Many sterile seeds produced, possibly due to inbreeding depressions. (Argue) Seeds are very small and numerous; they have no nutrient storage compartment and so have a short life span; seeds that do not germinate immediately for next growing season suffer desiccation and do not survive. (Hilaire, 2002)
Pre-Planting Propagule Treatments	Seeds are light and easily dispersed by wind, have no nutrient storage compartment. Possibly require winter stratification (3-4 months of winter temperatures) to germinate in spring-like conditions.

	(Handley, 2005)
Growing Area Preparation / Annual Practices for Perennial Crops	Growing media should contain bryophyte-like texture (course, moisture-holding); bryophyte media also provides habitat for native mycorrhizal symbionts of *A. rotundifolia*, though specific information on which mycorrhizal species is currently unknown. (Handley, 2005)
Establishment Phase Details	N/A
Length of Establishment Phase	N/A
Active Growth Phase	N/A
Length of Active Growth Phase	N/A
Hardening Phase	N/A
Length of Hardening Phase	N/A
Harvesting, Storage and Shipping	N/A
Length of Storage	N/A
Guidelines for Outplanting / Performance on Typical Sites	N/A
Other Comments	Very little is known about *A. rotundifolia's* biology. Some observations indicate it needs to re-seed to maintain populations and that vegetative propagations have had little success. (Luer, 1975) This orchid is very different from many that are traditionally cultivated; therefore, it is difficult to draw conclusions about its care from other orchid species.
INFORMATION SOURCES	
References	Arditti, J., & Ghani, A. K. A. (2000). Tansley Review No. 110. Numerical and physical properties of orchid seeds and their biological implications. *New Phytologist*, 367-421. http://onlinelibrary.wiley.com/store/10.1046/j.1469-8137.2000.00587.x/asset/j.1469-8137.2000.00587.x.pdf?v=1&t=inid8fwo&s=f58df100fb69b979e899dcf4439a934282811a29

	Argue, C. L. (2011). *The Pollination Biology of North American Orchids: Volume 1: North of Florida and Mexico* (Vol. 1). Springer Science & Business Media. Bergmann, Karel. Botany.cz. (2013). *Amerorchis rotundifolia* (Banks ex Pursh) Hultén—Round-leaved Orchid or Orchis, Small round-leaved orchid. http://botany.cz/en/amerorchis-rotundifolia/ Fertig, Walter. (2008). State Species Abstract. Wyoming Natural Diversity Database. *Amerorchis rotundifolia*, Round-leaved orchid. https://www.uwyo.edu/wyndd/_files/docs/reports/speciesabstracts/amerorchis_rotundifolia.pdf Handley, Joy and Heidel, Bonnie. (February 25, 2005). USDA Forest Service, Rocky Mountain Region, Species Conservation Project. *Amerorchis rotundifolia* (Banks ex Pursh) Hultén (roundleaf orchid): A Technical Conservation Assessment. http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5206972.pdf Hilaire, Lisa. (2002). New England Plant Conservation Program. *Amerorchis rotundifolia* (Banks ex Pursh) Hultén, Small round-leaved orchis. Conservation and Research Plan for New England. New England Wildflower Society. http://www.newenglandwild.org/docs/pdf/Amerorchisrotundifolia.pdf Luer, Carlyle A. (1975). *The Native Orchids of the United States and Canada, Excluding Florida*. Pgs. 151-153. The New York Botanical Garden. Michigan State University. (2004). *Amerorchis rotundifolia* Banks ex Pursh round-leaved orchis.. http://mnfi.anr.msu.edu/abstracts/botany/amerorchis_rotundifolia.pdf USDA Plants Database. Natural Resources Conservation Service. *Amerorchis rotundifolia* (Banks ex Pursh) Hultén roundleaf orchid. http://plants.usda.gov/core/profile?symbol=amro
Other Sources Consulted	Friend, Robert G.M. *Growing Orchids in Your Garden*. Timber Press, Inc. 2004. Ladybird Johnson Wildflower Center. The University of Texas at Austin. Native Plant Database. Amerorchis rotundifolia (Banks ex Pursh) Hultén. http://www.wildflower.org/plants/result.php?id_plant=AMRO Maine Natural Areas Program. Amerorchis rotundifolia (Banks ex Pursh)

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