

Plant Propagation Protocol for *Corallorhiza striata* Lindl., orth. var.
ESRM 412 – Native Plant Production
Spring 2019

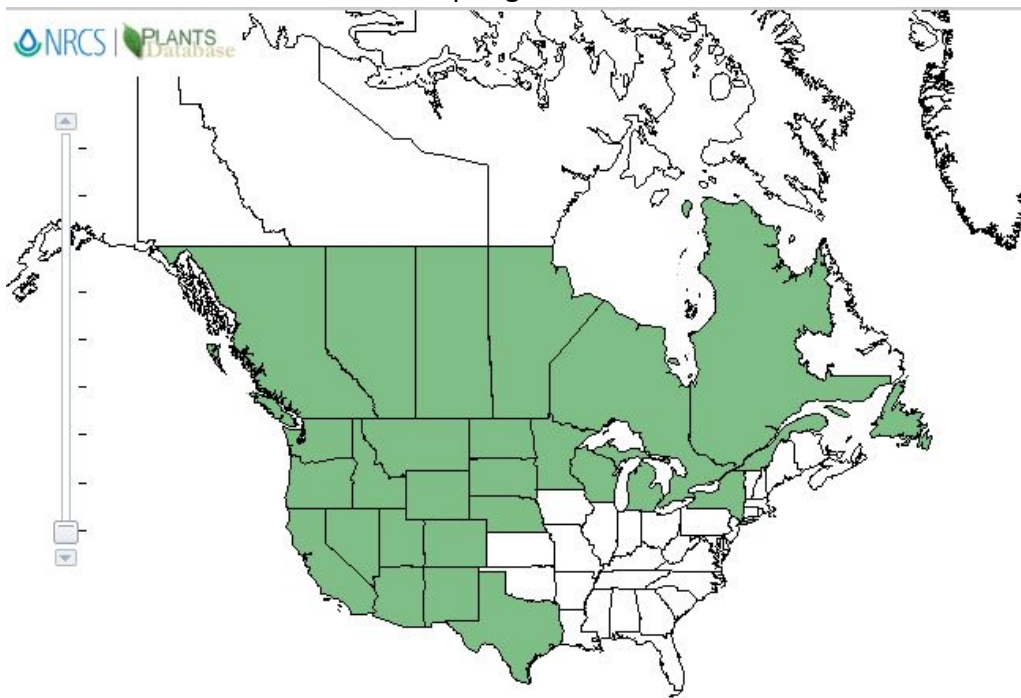


Figure 1 "*Corallorhiza striata*." Plants Database. USDA, n.d. Web. 23 May 2017

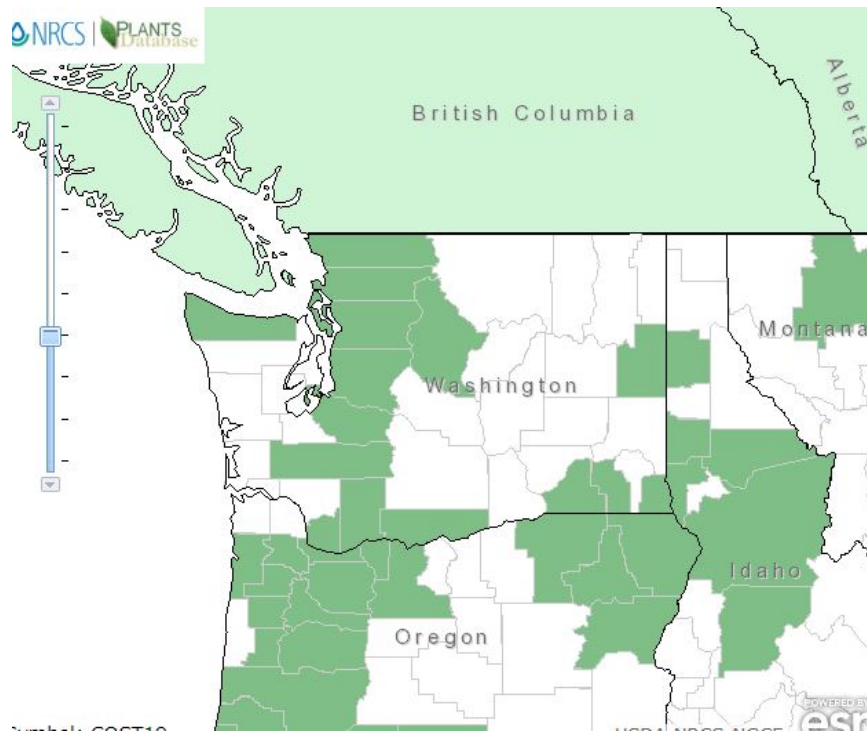


Figure 2 "*Corallorhiza striata*." Plants Database. USDA, n.d. Web. 23 May 2017

TAXONOMY	
Plant Family	
Family Scientific Name	Orchidaceae
Family Common Name	Orchid
Species Scientific Name	
Genus	<i>Corallorhiza, orth. cons.</i>
Species	<i>striata</i>
Authority	Lindl.
Varieties	<i>Corallorhiza striata</i> var. <i>striata</i> <i>Corallorhiza striata</i> var. <i>vreelandii</i> (USDA Plants Database)
Sub-Species	
Cultivar	
Common Synonym(s)	<i>Neottia striata</i> (USDA Plants Database)
Common Name(s)	Striped Coralroot Madder-stripes Madder-purple Hooded Coralroot Chicken Toes Bigelow's Coral Root Macrae's Coral Root (Pojar)(TWC)(NorthAmericanOrchidCenter)
Species Code (as per USDA Plants database)	COST19 (USDA Plants Database)
GENERAL INFORMATION	
Geographical range	N. America. See above map from USDA Plants Database for N. America and Washington State
Ecological distribution	Forests, Woodlands (Pojar)(NorthAmericanOrchidCenter)
Climate and elevation range	Moist high organic matter (humus) soil in shady coniferous and deciduous forests; streambanks, valleys; withstands cold but not high heat; common at low to middle elevations (100-2200m above sea level) (Army Corps. of Engineers)
Local habitat and abundance	Globally: common, widespread and abundant Locally: rare and vulnerable throughout its northern range (Army Corps. of Engineers)

Plant strategy type / successional stage	Myco-heterotrophic: obtains nutrients from mycorrhizal fungi. Achlorophyllous (Pojar)
Plant characteristics	Perennial saprophyte from branched, coral-like rhizomes. The branches are 15-50 cm tall and are purplish. The leaves are nonexistent, but plant has up to 4 thin, transparent sheathing bracts/scales. The lip tonged-shaped sepals are yellowish-pink with three purple strips that merge into a solid brown-purple. There are 7-25 flowers in loose terminal clusters (racemes) and the fruits are 2cm long capsules that bend downward (Pojar)
PROPAGATION DETAILS	
The complications of collecting mycorrhizal fungi needed by <i>Corallorhiza striata</i> to germinate has caused a lack of formal propagation. Thus, propagation techniques have been acquired from <i>Corallorhiza striata</i> field studies where the orchids have been growing in nature (Barrett)(Coleman)(Philip).	
Ecotype	The germination details and process explained hereafter are based on an experiment detailing the chronology of germination from seed (the changed variable being moisture) that took place in the Northern Great Lakes region, USA of <i>Corallorhiza striata</i> (Philip).
Propagation Goal	Large diverse pool of plants
Propagation Method	Mostly seeds and some vegetative reproduction (Philip). (There may be some exciting studies of micropropagation [tissue culture] in the future) (Coleman).
Product Type	Live orchids in nature (Philip).
Stock Type	N/A
Time to Grow	1 year to 2 years after germination to maturation with seeds (Philip).
Target Specifications	Full Grown, Flowering, Mature, could have multiple scapes from a clone (Philip).
Propagule Collection Instructions	Seeds and a few cut back bulbs were collected from existing orchids on the same site as the experiment was taking place (Philip).
Propagule Processing/Propagule	Seeds/bulbs are viable for two years (Philip).
Pre-Planting Propagule Treatments	Germination occurs predominantly in mid-summer (Philip).
Growing Area Preparation /Annual	A 5-acre area in the Northern Great Lakes was determined to be the test group. All were planted in a varying shady to sunny spots (Philip).

Practices for Perennial Crops	
Establishment Phase Details	Seed packets of around 50 seeds were buried vertically in the soil at a depth of 8 cm in. Separately in a different trial. Back bulbs were cut from the main plant and placed on top of a layer of peat moss on top of the soil. The bulbs were sprayed with water daily for 2 weeks. Any bulbs found developing wet rot were removed (Philip).
Length of Establishment Phase	The seeds took an average time of germination of 12 months after the seed packets were buried. The bulbs took an average time of germination of 8 months (Philip).
Active Growth Phase	It took 15 months for the first rhizome to be observed, and then at 24 months the apical bud and leaves to be observed (Philip).
Length of Active Growth Phase	24 months (Philip).
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	It was noted in the experiment that a comparative analysis would need to be had based on the amounts of mycorrhizal fungi found in different systems as well as other contributing factors (Philip).
INFORMATION SOURCES	
References	<p>Barrett, Craig & I Davis, Jerrold. (2012). The plastid genome of the mycoheterotrophic <i>Corallorhiza striata</i> (Orchidaceae) is in the relatively early stages of degradation. <i>American journal of botany</i>. 99. 1513-23. 10.3732/ajb.1200256.</p> <p>Coleman, Richard A., Dieter H. Wilken & William F. Jennings 2012, <i>Corallorhiza striata</i>, in Jepson Flora Project (eds.) Jepson "Corallorhiza striata." Plants Database. USDA, n.d. Web. 23 May 2017</p> <p>Jepson Flora Project (eds.) 2019, Jepson eFlora, http://ucjeps.berkeley.edu/eflora/, accessed on April 23, 2019.</p> <p>Lichvar, R.W. 2013. The National Wetland Plant List: 2013 wetland ratings. <i>Phytoneuron</i> 2013-49: 1-241</p> <p>McKendrick, S. L., et al. "Symbiotic Germination and Development of Myco-Heterotrophic Plants in Nature: Ontogeny of <i>Corallorhiza</i></p>

	<p>Trifida and Characterization of Its Mycorrhizal Fungi.” The New Phytologist, vol. 145, no. 3, 2000, pp. 523–537. JSTOR, www.jstor.org/stable/2588820.</p> <p>Philip, Kris. (2019). An observational study of <i>Corallorhiza trifida</i> and <i>Corallorhiza striata</i> in the northern Great Lakes region.</p> <p>Pojar J., McKinnon A., 1994 <i>Plants of the Pacific Northwest: Washington, Oregon, British Columbia and Alaska</i>, B.C. Ministry of Forests and Lone Publishing, Canada</p>
Other Sources Consulted	<p>“<i>Corallorhiza striata</i> Lindl.” NWPL Home v3.3-f8g, Army Corps. of Engineers , wetland-plants.usace.army.mil/nwpl_static/v33/home/home.html</p> <p>“NorthAmericanOrchidCenter.” North American Orchid Conservation Center, goorchids.northamericanorchidcenter.org/species/corallorhiza/striata/</p> <p>Staff, TWC. “Plant Database.” Lady Bird Johnson Wildflower Center - The University of Texas at Austin, TWC, 3 Mar. 2016, www.wildflower.org/plants/result.php?id_plant=cost19</p>
Protocol Author	Kaitlyn Sweeney
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