**Plant Propagation Protocol for *Platanthera orbiculata***

ESRM 412 – Native Plant Production

Protocol URL: https://courses.washington.edu/esrm412/protocols/*PLOR4.pdf*

| **TAXONOMY** | |
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| Plant Family | |
| Scientific Name | Orchidaceae |
| Common Name | Orchid |
| Species Scientific Name | |
| Scientific Name | Platanthera orbiculata (Pursh) Lindl. |
| Varieties | N/A |
| Sub-species | N/A |
| Cultivar | N/A |
| Common Synonym(s) | *Habenaria orbiculata* (Pursh) Torr. 1826<br>*Platanthera menziesii* Lindl. 1835<br>*Habenaria menziesii* (Lindl.) Macoun. 1888<br>*Lysias orbiculata* (Pursh) Rydb. 1900<br>*Habenaria orbiculata* (Pursh) Torr. var. *longifolia* Clute. 1904<br>*Lysias menziesii* (Lindl.) Rydb. 1917<br>*Lysias orbiculata* (Pursh) Rydb. var. *pauciflora* Jenn. 1920<br>*Habenaria orbiculata* (Pursh) Torr. f. *trifolia* Mousley. 1934<br>*Habenaria orbiculata* (Pursh) Torr. var. *menziesi* (Lindl.) Fernald. 1950<br>*Habenaria orbiculata* (Pursh) Torr. var. *lehorsii* Fernald. 1950<br>*Platanthera orbiculata* (Pursh) Lindl. var. *lehorsii* (Fernald) Catling. 1982<br>(Leshner & Henderson) |
| Common Name(s) | Round-Leaved Rein Orchid (Washington Native Orchid Society)<br>Round-leaved orchid (Lady Bird Johnson Wildflower Center 2012) |
| Species Code (as per USDA Plants database) | PLOR4 |
| **GENERAL INFORMATION** | |

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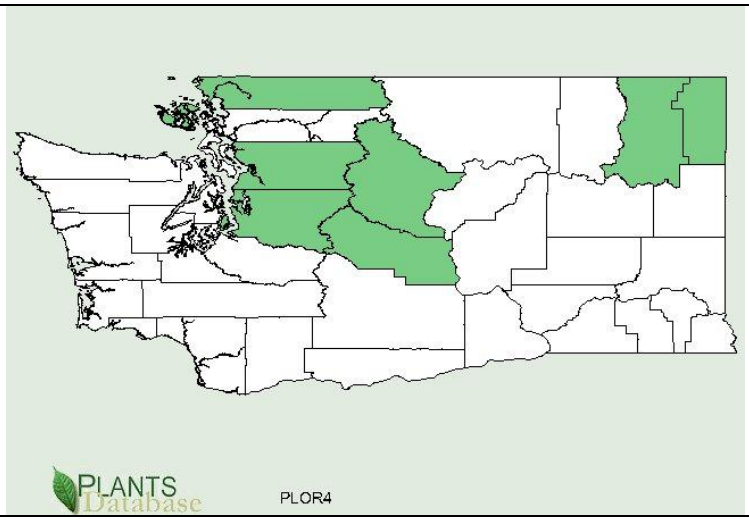
| Geographical range (as per USDA plants database) |  |
| Ecological distribution | In the northern areas of the United States, *P. orbiculata* can typically be found in forested rich peatlands, but in northeastern countries they are more likely to be found in mesic upland forest (Smith 2012). In the Pacific Northwest, *P. orbiculata* is rare within its range and has been documented on Mt. Baker-Snoqualmie and Colville National Forests, North Cascades National Park, and Ross Lake National Recreation Area (Leshner & Henderson). |
| Climate and elevation range | *P. orbiculata* can occur in areas of mesic climates (average temperature of about 8º C with 254cm of precip.) and is found at low to mid elevations (average elevation of 765m above sea level)(Leshner & Henderson). |
| Local habitat and abundance | Locally, *P. orbiculata* grows in shaded environments and is commonly associated with many conifers such as the Western Hemlock, Pacific redcedar, and the Douglas fir (Leshner & Henderson). *P. orbiculata* often grows in beds of living sphagnum mosses, peat, or loamy soils and can tolerate pH levels of 5.5-6.5 (Smith 2012). |
| Plant strategy type / successional stage | Although vulnerable due to many limiting factors restricting *P. orbiculata* from pollination, the plant is a stress-tolerator due to the benefits it receives from mycorrhizal associations (Leshner & Henderson).<br>As the plant's habitat consists of a mesic climate and prefers to grow in sphagnum and peat, it can be inferred that the plant occurs in seral or climax communities (Smith 2012) |
| Plant characteristics | Forb with two large, elliptic to orbicular leaves connecting at the base of the plant. Flowers greenish white, bilateral and conspicuous. *P. orbiculata* has been known to appear in the same place for for 15 to 20+ years (Smith 2012). |
| **PROPAGATION DETAILS** | |
| Ecotype | Bearberry Alberta: Boreal Forest |
| Propagation Goal | Germinated seeds (experiment) |
| Propagation Method | Seed |

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| Product Type | N/A |
| Stock Type | N/A |
| Time to Grow | N/A |
| Target Specifications | N/A |
| Propagule Collection Instructions | Seeds collected in summer by cutting seed-stalk right before maturity and letting stalk sit in water until seeds mature (Smreciu & Currah 1989). |
| Propagule Processing/Propagule Characteristics | N/A |
| Pre-Planting Propagule Treatments | Allowed seeds to dehisce before storing in unsealed vials and storing at 1-6°C for several days to one and a half months. Seeds were then placed in filter paper and suspended in a 10% bleach solution with several drops of Ivory dish soap for 6-7 minutes. Seeds were then washed with distilled water for three changes before inoculating with *Sistotrema sp.* And sowing (Smreciu & Currah 1989). |
| Growing Area Preparation / Annual Practices for Perennial Crops | 60x15 mm petri plates with Warcup's cellulose agar (sodium nitrate 0.3g; potassium dihydrogen phosphate 0.2g; magnesium sulphate 0.2g; potassium chloride 0.1g; yeast extract (Difco) 0.1g; distilled water 1000ml; agar 12g) (Smreciu & Currah 1989). |
| Establishment Phase Details | Petri plates sealed with Parafilm and incubated in the dark at room temperature for up to 27 weeks to test for germination (Smreciu & Currah 1989). |
| 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 | In the experiment, seeds of *P. orbiculata* were tested without inoculating with *Sistotrema sp.* and inoculating with several different fungi. *Sistotrema sp.* was the only fungi that resulted in successful germination. |
| **INFORMATION SOURCES** | |
| References | Hornbeck, J. H., Sieg, C. H., Reyer, D. J., & D. J. Bacon. 2003. Conservation Assessment for the Large Round-leaved Orchid in the Black Hills National Forest, South Dakota and Wyoming. United States Department of Agriculture, Forest Service, Custer, South Dakota, USA. |

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| | Leshner, R. D., & J. A. Henderson. Management Recommendations for Large Round-leaved Orchid (*Platanthera orbiculata* [Pursh] Lindl.) [syn. Habenaria orbiculata (Pursh) Torr.]. 12. Bureau of Land Management, Vascular Plants, Oregon/Washington, USA.<br><br>The Platanthera Genus. Washington Native Orchid Society. http://www.wanativeorchids.com/Platanthera/index.html<br><br>Smith, W. R. 2012. *Platanthera orbiculata* (Pursh) Lindl. Native Orchids of Minnesota. Pages 192-195. Native Orchids of Minnesota. University of Minnesota Press, St. Paul, Minnesota, USA.<br><br>Smreciu, E. A. & R. S. Currah. 1989. Symbiotic Germination of Seeds of Terrestrial Orchids of North America and Europe. Lindleyana 4:6-15.<br><br>Wildflower Center Staff. 2012. *Platanthera orbiculata*. Lady Bird Johnson Wildflower Center. http://www.wildflower.org/plants/result.php?id_plant=PLOR4 |
| Other Sources Consulted | Argue, C. L. 2012 Platanthera Group. Pollination Biology of North American Orchids 1:109-121.<br><br>Currah, R. S. & C. Zelmer. 1992. A key and notes for the genera of fungi mycorrhizal with orchids and a new species in the genus Epulorhiza. Reports of the Tottori Mycological Institute 30:43-59.<br><br>O'Byrne, R. 2007. Final Environmental Impact Statement. United States Department of Agriculture, Forest Service, Spearfish, South Dakota, USA.<br><br>Reddoch, A. H. & J. M. Reddoch. 1993. The species pair Platanthera orbiculata and P. macrophylla (Orchidaceae): Taxonomy, morphology, distributions and habitats. Lindleyana 8:171-181. |
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