

Listera caurina

Plant Propagation Protocol for *Listera caurina*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/LICA10.pdf>



Figure 1- *Listera caurina* flower. Photo credit: © 2004, Ben Legler



Figure 2 – *Listera caurina*. Photo credit: © 2004, Ben Legler

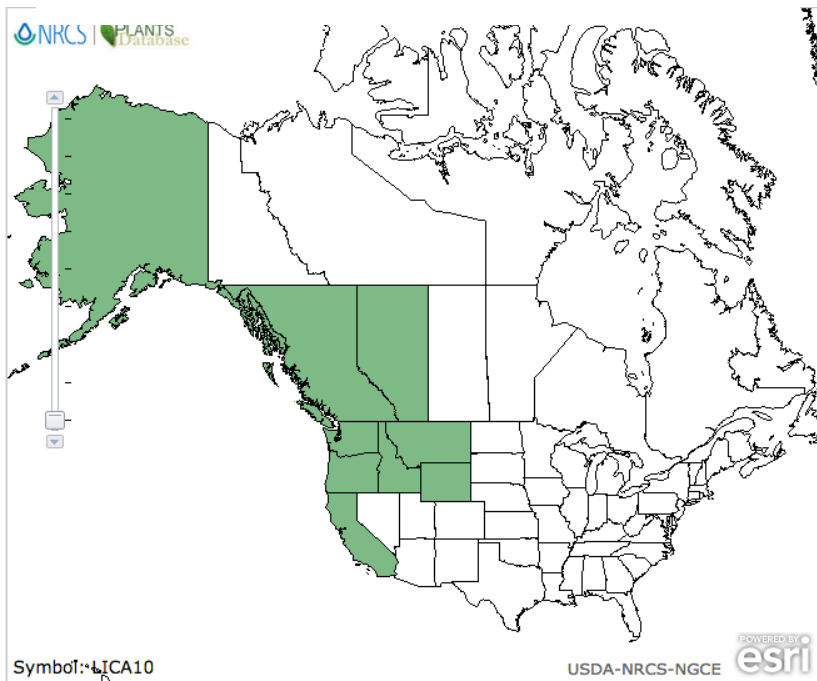


Figure 3 - North American Distribution Map - USDA PLANTS database (1)

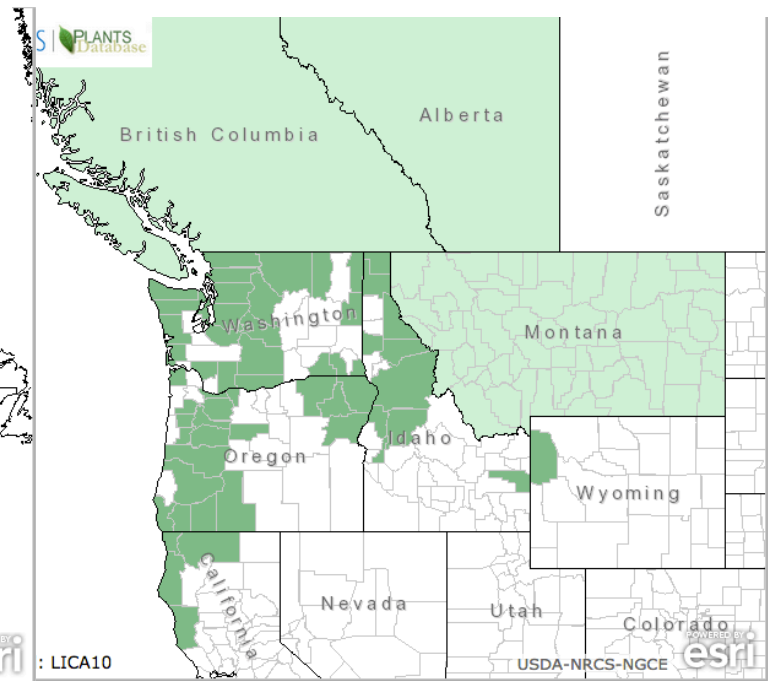


Figure 4 - Pacific Northwest Distribution Map – USDA PLANTS database (1)

TAXONOMY

Plant Family	
Scientific Name	ORCHIDACEAE
Common Name	Orchid Family
Species Scientific Name	
Scientific Name	<i>Listera caurina</i> Piper (1)
Varieties	None Recognized
Sub-species	None Recognized
Cultivar	None Recognized
Common Synonym(s)	LIBA3 <i>Listera banksiana</i> auct. non Lindl. NEBA2 <i>Neottia banksiana</i> (Lindl.) Rehb.f. NECA9 <i>Neottia caurina</i> (Piper) Szlach. OPCA4 <i>Ophrys caurina</i> (Piper) Rydb.
Common Name(s)	Northwestern Twayblade
Species Code (as per USDA Plants database)	LICA10

GENERAL INFORMATION

Geographical range	<p>Endemic to northwestern North America. Occurs from Southern Alaska south to Mendocino County, California. Occurs inland as far as the Grand Teton Range in Wyoming. (2)</p> <p>Occurs in AK , CA , ID , MT , OR , WA , WY, British Colombia, and Alberta. (3)</p> <p>(see distribution maps at top) (1)</p>
Ecological distribution	<p>Occurs in forest litter in moist to wet, coniferous to mixed forests, meadows, stream banks, and boggy slopes. Prefers mossy rocks and/or soil. (4)(11)</p> <p>The wetland designation for LICA10 is considered FACU, facultative upland, throughout most of its range, signifying that it most occurs in uplands. (1) However, in the southern-end range it is designated as FACW. (3)</p>
Climate and elevation range	<p>Occurs from low to subalpine elevations, 100-2200m (4)(5)</p> <p>Tolerant of sun to shade, but requires a humid or moist environment. (6) Found to have a preference for cold sites. (15)</p> <p>Experiments in a closed forest canopy show slow growth and spread in LICA10, although it is not compared to an open canopy setting, and instead compared to other understory herbaceous species. (7)</p>

Local habitat and abundance	<p>Locally uncommon. Conservation status considered “Apparently Secure” which implies that the species is uncommon but not considered at risk. In Washington State, the center of its range, it is relatively abundant. (1)(11)</p> <p>Listera was observed to decrease in abundance or disappear entirely in response to logging operations in a 2005 study on forest-edge effects and responses. (8)</p> <p>It is described by Franklin and Dyrness as typical in the wetter and cooler habitats within the <i>Tsuga mertensiana</i> zone. This zone is associated with <i>Rhododendron albiflorum</i>, <i>Vaccinium ovalifolium</i>, <i>Vaccinium membranaceum</i>, <i>Menziesia ferruginea</i>, <i>Sorbus spp.</i>, <i>Rubus pedatus</i>, <i>Rubus lasiococcus</i>, <i>Valeriana sitchensis</i>, <i>Viola sempervirens</i>, and <i>Ertythronium montanum</i>. (9)</p> <p>It is also included within the <i>Tsuga heterophylla</i> / <i>Oplopanax horridus</i> association. (9)</p> <p>Dyrness and Acker describe its common associations at lower elevations: <i>Acer circinatum</i>, <i>Achlys triphylla</i>, <i>Athyrium filix-femina</i>, <i>Galium aparine</i>, <i>Gymnocarpium dryopteris</i>, <i>Polystichum munitum</i>, <i>Ribes bracteosum</i>, <i>Mainthemum stellatum</i>, <i>Tiarella trifoliata</i>, and <i>Vaccinium parvifolium</i>. (16)</p>
Plant strategy type / successional stage	<p>Occurs in late seral forests, largely due to the requirement for development of mycorrhizal fungal communities, which may not be present in recently disturbed environments. Is considered a late-seral indicator species. (10)</p> <p>Not tolerant of severe disturbances; LICA10 was observed to decrease in abundance or disappear entirely in response to logging operations in a 2005 study on forest-edge effects and responses. (8)</p>
Plant characteristics	<p>Perennial herb from slender fibrous roots and rhizomes. (1)(2)(4)(5)(13)</p> <p>Does not effectively spread via rhizomes. Sexual reproduction may be considered necessary for community growth. (7)</p>
PROPAGATION DETAILS – SEED & VEGETATIVE DIVISION	
Ecotype	No information available – no experimental propagation has been recorded.
Propagation Goal	Live plants
Propagation Method	<p>Sexual reproduction via seed is considered essential for successful establishment and propagation (7)</p> <p>Vegetative propagation is likely only by sprouting from slender rhizomes, but is not vigorous. (15)(7)(8)</p> <p>Like most North American orchids, very little is known about reproduction by seed, but is considered to be likely the most viable method. (15)</p>
Product Type	No definitive information available on this subject. Given that most propagation would of LICA10 be for restoration, conservation, or ornamental purposes, product type should be based on the most practical for out planting and long term survival. Containers may be the ideal product-type because of the need to preserve the rhizospheric fungi supporting the plant.

Time to Grow	<p>No definitive information available on this subject.</p> <p>Seedlings typically develop underground (called: protocorms) , potentially for years, before developing necessary fungal relationships required for proper nutrition and consequently growth. (12)</p> <p>The Alpine Garden Society claims that some <i>Listera</i> species take up to 15 years before they produce flowers. (6)</p>
Target Specifications	No information available on this subject for purposes of propagation, however physiology studies performed on LICA10 are insightful – see “Guidelines for Outplanting / Performance on Typical Sites” (7)
Propagule Collection Instructions	<p>Blooms appear in mid-to-late summer, with seeds forming in late-summer to fall. (11)(15)(17)</p> <p>Seed should be gathered when ripe or shortly afterwards. (6)</p> <p>Attempts at propagation by division should occur in later winter. (6)</p>
Propagule Processing/Propagule Characteristics	<p>Like all orchids, seeds of LICA10 contain little nutrition, however the effect of this trait on longevity is unclear. (12)</p> <p>It is suggested that seeds be germinated shortly after collection. (6)</p>
Pre-Planting Propagule Treatments	Seedlings typically develop underground (called: protocorms) , potentially for years, before developing necessary fungal relationships required for proper nutrition and consequently growth. (6)(12) Therefore, allowing for germination of seeds into protocorms, would be an essential first step. Protocorms would need to be allowed sufficient time to accumulate nutrition necessary to develop leaves.
Growing Area Preparation / Annual Practices for Perennial Crops	Prefers mossy medium. (4)(5)
Establishment Phase Details	Potentially up to 15 years. Dependent on available mycorrhizal fungi. (6)(12)
Length of Establishment Phase	No definitive information available on this subject.
Active Growth Phase	No definitive information available on this subject.
Hardening Phase	No definitive information available on this subject.
Length of Hardening Phase	No definitive information available on this subject.

Harvesting, Storage and Shipping	No definitive information available on this subject.
Length of Storage	No definitive information available on this subject.
Guidelines for Outplanting / Performance on Typical Sites	<p>Physiology studies performed on LICA10 are insightful (7):</p> <p>Average rhizome length / max rhizome diameter : 2.0cm / 1.5mm Max root length: 9.9cm Max spread: 5.9cm Plant average height: 8.4cm Average Total plant dry weight: 0.15g Average root-to-shoot ratio: 2.6 % of Total Dry Weight Below Ground: 65.6%</p> <p>The Alpine Garden Society claims that some <i>Listera</i> species take up to 15 years before they produce flowers. (6)</p>
Other Comments	“Trade controlled to avoid use incompatible with species survival” (18)

INFORMATION SOURCES

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Cover photographs copyright attributed to Ben Legler, with use in this report by express permission. Available at: http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=listera&Species=banksiana	