

Plant Propagation Protocol for *Glehnia littoralis*

ESRM 412 – Native Plant Production

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



Image © 2012, G. D. Carr

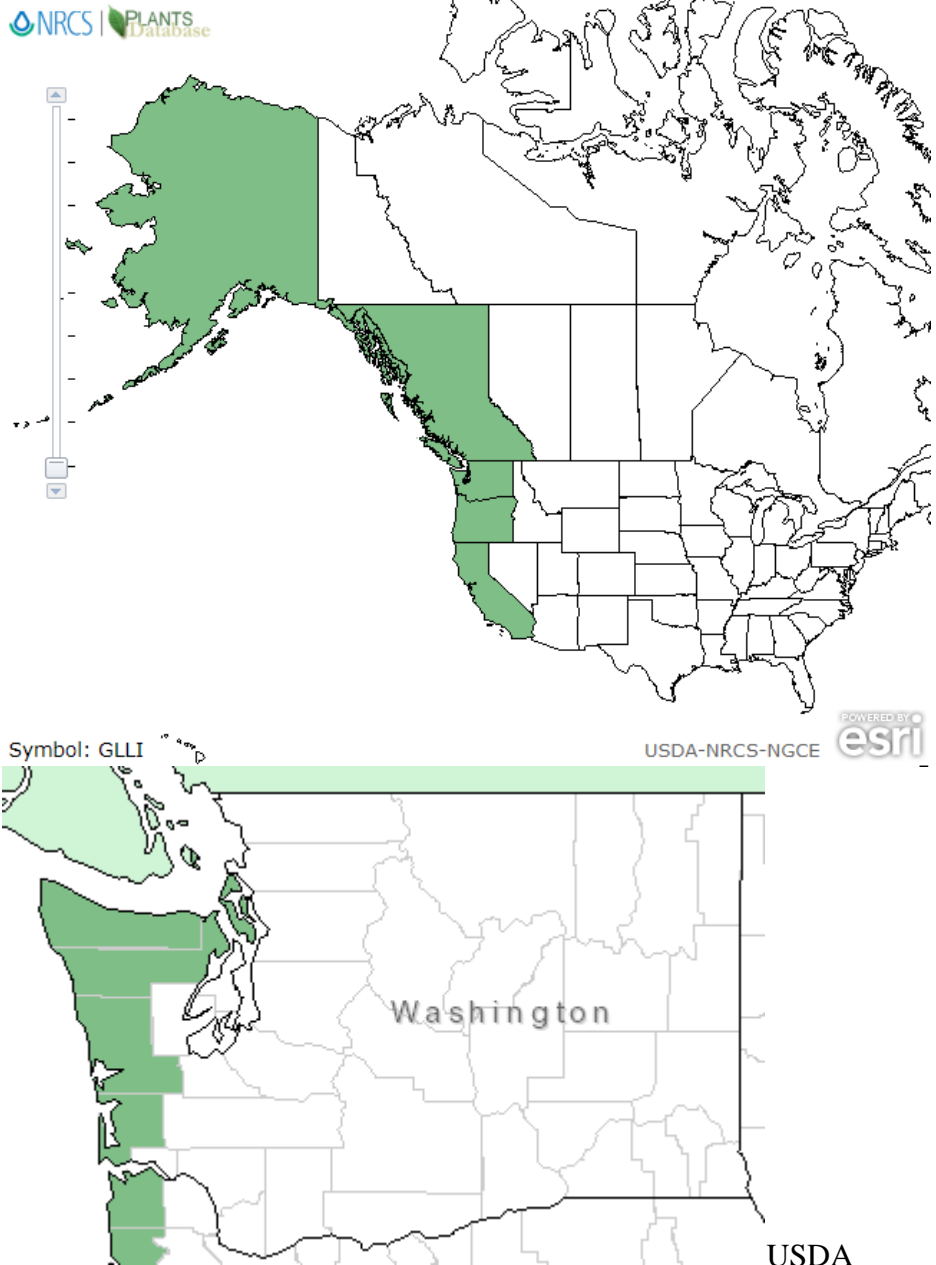


© 2007 Pieria

TAXONOMY

Plant Family	
Scientific Name	Apiaceae/Umbelliferae
Common Name	Carrot Family
Species Scientific Name	
Scientific Name	<i>Glehnia littoralis</i> F. Schmidt ex Miq.
Varieties	N/A
Sub-species	<i>Glehnia littoralis</i> ssp. <i>leiocarpa</i>
Cultivar	N/A
Common Synonym(s)	N/A
Common Name(s)	American silvertop, Bei Sha Shen, American glehnia, Large-leaved Avens, Beach silvertop
Species Code (as per USDA Plants database)	GLLI

GENERAL INFORMATION

<p>Geographical range</p>	
<p>Ecological distribution</p>	<p>Sandy beaches by the sea and dunes on the Pacific coast ranging from southern Alaska to Northern California.¹</p>
<p>Climate and elevation range</p>	<p>Elevation 0-140m, precipitation 36-69 inches, Wet season 6-9 months, 40-69 degrees Fahrenheit.²</p>
<p>Local habitat and abundance</p>	<p>Soil pH of 4.5-5 and soil depth minimum 99 cm.² Moist costal dunes and sandy beaches.³ Associates with seashore bluegrass (<i>Poa douglasii</i> ssp. <i>macrantha</i>), Red fescue (<i>Festuca rubra</i>), and Beach knotweed (<i>Polygonum paronychia</i>).⁴</p>
<p>Plant strategy type /</p>	<p>Salt tolerant, and tolerates poor soil.⁵</p>

successional stage	
Plant characteristics	Low laying stout perennial herb from a woody taproot with sheathing stalks coming from the sand. Basal egg-shaped triple divided leaves, thick and firm, glabrous on top and white and fuzzy beneath. Flowers in white clusters with hairy stalks. Fruits with hairy 6-13 mm wing ribbed egg shaped fruits. ³ Bloom time May-August. ²
PROPAGATION DETAILS	
Ecotype	Mature seeds of the species (carrying seed capsule) from undisturbed sandy coasts. ⁷
Propagation Goal	Germination of seedling
Propagation Method	Seed
Product Type	Container outdoor grown Propagules – from seed
Stock Type	No information
Time to Grow	No information
Target Specifications	Germination of seedling
Propagule Collection Instructions	August, before Autumn. ⁷ When the plant is producing fruits, collect the fruit off the plant, but leave at least 5 per plant to ensure plant reproduction.
Propagule Processing/Propagation Characteristics	No information
Pre-Planting Propagule Treatments	After collection, air dry the seeds. Seeds have a winter dormancy and require cool winter temperatures longer than 2.5 months to break dormancy. ⁷
Growing Area Preparation / Annual Practices for Perennial Crops	Grow in wood boxes measuring 40 cm (length) × 20 cm (width) × 20 cm (height) with drainage holes at the bases with sand from the coast. Leave outdoor at the coast and spread a mesh 2 m above to prevent birds. ⁷
Establishment Phase Details	Grow 30 seeds in each box sow seeds 3 cm or better for best germination. ⁷ Immerse in sea water for 25 days for highest germination. ⁷ This is to represent elevated flood like sea levels, which is a growth response factor for the species. Fastest germination for seeds sowed 4.5 months before spring germination. ⁷
Length of Establishment Phase	About a month. ⁷

Active Growth Phase	From spring to autumn, the seedlings grow as fast as possible. Several months later, taproots of them grow deep and strong enough to tolerate the first winter they will encounter. ⁷
Length of Active Growth Phase	Spring to Autumn. ⁷
Hardening Phase	After the winter, they revive to grow. By perennial roots and winter-resistant buds, they repeat the revival and growth year after year, bearing seeds for species recruitment and persistence. ⁷
Length of Hardening Phase	First winter, Autumn to Spring.
Harvesting, Storage and Shipping	No information
Length of Storage	No information
Guidelines for Outplanting / Performance on Typical Sites	Performs well on salt water beaches particularly on the pacific coast.
Other Comments	Salt tolerant, can grow with salt water or rainfall.

INFORMATION SOURCES

References	<ol style="list-style-type: none"> 1. "Plant Database - <i>Glehnia littoralis</i> ssp. <i>Leiocarpa</i>" Lady Bird Johnson Wildflower Center <i>The University of Texas at Austin</i>. 2007. Accessed 05/06/2018. <https://www.wildflower.org/plants/result.php?id_plant=GLLIL> 2. "<i>Glehnia littoralis</i> F. Schmidt ex Miq." Calflora: Information on California plants for education, research and conservation. <i>The Calflora Database</i>. Berkeley, California. 2018. Accessed 05/06/2018. <http://www.calflora.org/cgi-bin/species_query.cgi?where-taxon=Glehnia+littoralis> 3. Brian, K. "<i>Glehnia littoralis</i> F. Schmidt ex Miq". E-FLORA BC: ELECTRONIC ATLAS OF THE FLORA OF BRITISH COLUMBIA. <i>Department of Geography. University of British Columbia</i>. Accessed 05/09/2018. <http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Glehnia%20littoralis> 4. Christy, John. "Rare Plant Associations, Oregon Dunes National Recreation Area, Sutton Recreation Area, and Heceta Sand Dunes ACEC/ONA". PDX Scholar. <i>Portland State University. Institute for Natural Resources Publications</i>. 2013. Accessed 05/09/2018.
------------	---

	<p><https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1006&context=naturalresources_pub></p> <p>5. “Beach Silvertop”. Plants Database. <i>The National Gardening Association</i>. n.d. Accessed 5/9/2018. <https://garden.org/plants/view/140863/Beach-Silvertop-Glehnia-littoralis/></p> <p>6. Knoke, D, Giblin D. “<i>Glehnia littoralis</i>” Burke Museum of Natural History and Culture. <i>WA Native Plant Society</i>. 2018. Accessed 05/08/2018. <http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Glehnia&Species=littoralis></p> <p>7. Yang H, Chu J, Liu X. “Natural persistence of the coastal plant <i>Glehnia littoralis</i> along temperate sandy coasts”. <i>Scientific Reports. PMC</i>. 2017. <i>Sci. Rep.</i> 7, 42784; doi: 10.1038/srep42784. Accessed 05/09/2018. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5314325/></p> <p>8. “<i>Glehnia littoralis</i> F. Schmidt ex Miq. American silvertop” USDA – Plant Database. <i>United States Department of Agriculture</i>. n.d. Accessed 05/05/2018. <https://plants.usda.gov/core/profile?symbol=glli></p>
Other Sources Consulted	<p>1. “American silvertop”. Calscape. <i>California Native Plant Society</i>. n.d. Accessed 05/09/2018. <http://calscape.org/Glehnia-littoralis-Q></p> <p>2. “<i>Glehnia littoralis</i> - F.Schmidt. ex Miq.” Plants for the Future. n.p. 2012. Accessed 05/06/2018. <https://www.pfaf.org/user/Plant.aspx?LatinName=Glehnia+littoralis></p>
Protocol Author	Jason Panzera
Date Protocol Created or Updated	06/03/2018