

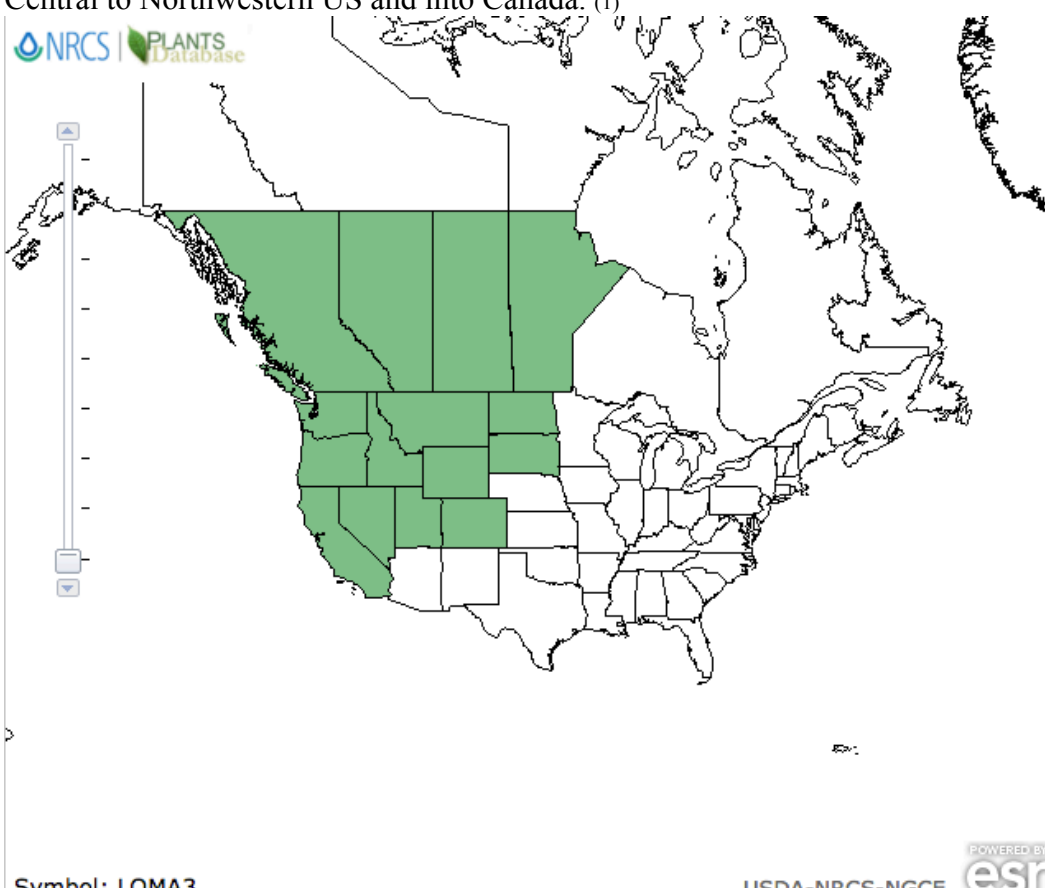
Plant Propagation Protocol for *Lomatium macrocarpum*

ESRM 412 – Native Plant Production

Protocol URL: [https://courses.washington.edu/esrm412/protocols/\[USDA Species Code.pdf\]](https://courses.washington.edu/esrm412/protocols/[USDA Species Code.pdf])



TAXONOMY									
Plant Family									
Scientific Name	Apiaceae/Umbelliferae (1)								
Common Name	Carrot (1)								
Species Scientific Name									
Scientific Name	Lomatium macrocarpum (1)								
Varieties									
Sub-species									
Cultivar									
Common Synonym(s)	<table border="1"> <tbody> <tr> <td>COMA12</td> <td><i>Cogswellia macrocarpa</i> (Nutt. ex Torr. & A. Gray) M.E. Jones</td> </tr> <tr> <td>FEMA</td> <td><i>Ferula macrocarpa</i> Hook. & Arn.</td> </tr> <tr> <td>LOMAA</td> <td><i>Lomatium macrocarpum</i> (Nutt. ex Torr. & A. Gray) J.M. Coult. & Rose var. <i>artemisiarum</i> Piper</td> </tr> <tr> <td>LOMAE</td> <td><i>Lomatium macrocarpum</i> (Nutt. ex Torr. & A. Gray) J.M. Coult. & Rose var. <i>ellipticum</i> (Torr. & A. Gray) Jeps.</td> </tr> </tbody> </table>	COMA12	<i>Cogswellia macrocarpa</i> (Nutt. ex Torr. & A. Gray) M.E. Jones	FEMA	<i>Ferula macrocarpa</i> Hook. & Arn.	LOMAA	<i>Lomatium macrocarpum</i> (Nutt. ex Torr. & A. Gray) J.M. Coult. & Rose var. <i>artemisiarum</i> Piper	LOMAE	<i>Lomatium macrocarpum</i> (Nutt. ex Torr. & A. Gray) J.M. Coult. & Rose var. <i>ellipticum</i> (Torr. & A. Gray) Jeps.
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	PEMA14	<i>Peucedanum macrocarpum</i> Nutt. ex Torr. & A. Gray
	(1)	
Common Name(s)	Bigseed biscuitroot (1)	
Species Code (as per USDA Plants database)	LOMA3 (1)	
GENERAL INFORMATION		
Geographical range	<p>Central to Northwestern US and into Canada. (1)</p>  <p>Symbol: LOMA3</p> <p>USDA-NRCS-NGCE <small>POWERED BY</small> esri</p>	
Ecological distribution	Grasslands of great plains. Open, dry, rocky areas. Arid, rocky, exposed regions. (1)	
Climate and elevation range	Low elevation. (1)	
Local habitat and abundance	Grasslands of great plains. Open, dry, rocky areas. Arid, rocky, exposed regions. (1)	

Plant strategy type / successional stage	
Plant characteristics	Perennial herb, half a meter long, hairy, gray-green herbage. Leaves up to 24 cm long, intricately divided into small, narrow segments. Inflorescence bears umbrel of yellowish, purple or white flowers. Fruit is compressed disc about 2 cm long. Blooms March-May. Flowers are hermaphroditic. (3)
PROPAGATION DETAILS	
Ecotype	
Propagation Goal	Plant
Propagation Method	By Seed: best sown as soon as it is ripe in a cold frame. Stored seed can be rather slow to germinate, when sown in spring it usually takes at least 12 months to germinate. Giving it a period of cold stratification might reduce this time. The seedlings need to be pricked out into individual pots as soon as they are large enough to handle, and should be planted out into their permanent positions in the summer. Fresh seed can be sown immediately in situ. Division may be possible in spring or autumn.
Product Type	Container (1)
Stock Type	
Time to Grow	Weeks (1)
Target Specifications	Well-developed crowns, roots and rhizomes filling soil profile in container. (1)
Propagule Collection Instructions	Can be wild harvested. Seed can sell for \$20-30/lb. Find a native stand, source identify seed with latitude/longitude and local ecotype. Closer gathered to restoration site the better. Usually gather large quantities at one time, 500-600 lbs. Get permit or permission from whomever owns land. Harvest 10-20% of stand, leave rest, knock seed heads to ground to assist reseeding. (13)
Propagule Processing/Preparation	Clean seed, pop seed head off, clean with series of combines and screens, hardware screen specifically. (13)
Pre-Planting Propagule Treatments	This plant benefits from 40-95 days of cool/moist stratification in order to break dormancy. (1) Not difficult to germinate. (12)
Growing Area Preparation / Annual Practices for Perennial Crops	Prefers well drained soil. Cannot grow in shade. (1)
Establishment Phase	

Details	
Length of Establishment Phase	Takes a long time to produce full grown plant. Grows with periods of dormancy. Doesn't show a lot of gain each year. (12)
Active Growth Phase	Takes 3-5 years to get up and out of ground, yield every other year is unreliable. (13) It will pop up after the first year, but then go back down under the soil, putting all its energy into root development. After third year begins to become a plant that you can take out of a tube. When it comes up, put in walk in cooler for about 3 months to emulate the cold cycle. Leave it in greenhouse it will go into dormancy and come back up in spring. Speed cycles up by not transplanting, direct seed in tube. (14)
Length of Active Growth Phase	Takes 3 years to get a plug, as do most bigroot/taproot plants. Don't like to grow because you have to hold for so long to develop its root as a storage container. (14)
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	Don't see a lot for sale commercially because the tuber is not visible for long periods of time, not attractive for retail to buy an empty pot. (12)
Other Comments	Very few nurseries will grow out because of its long growth time to get a mature plant. (13) Edible roots and seed. Can be made into tea. Staple food for number of north American tribes. Dried, ground into powder, made into cakes. Very nutritious. (4)
INFORMATION SOURCES	
References	1. Native Plant Network, Propagation Protocol Network http://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=apiaceae-lomatium-4047 2. USDA, Natural Resources Conservation Service http://plants.usda.gov/core/profile?symbol=LOMA3 3. Wikipedia https://en.wikipedia.org/wiki/Lomatium_macrocarpum 4. Burke Museum of Natural History and Culture

	<p>http://biology.burke.washington.edu/herbarium/imagecollection.php?Genus=Lomatium&Species=macrocarpum</p> <p>5. Plants for a Future http://www.pfaf.org/user/Plant.aspx?LatinName=Lomatium+macrocarpum</p> <p>6. Turner Photographics http://www.pnwflowers.com/flower/lomatium-macrocarpum</p> <p>7. Flora of the Turnbull National Wildlife Refuge http://web.ewu.edu/turnbullflora/Apiaceae/Lomatium%20macrocarpum.html</p> <p>8. Science Halley Hosting http://science.halleyhosting.com/nature/basin/5petal/pars/lom/biscuit.htm</p> <p>9. Black Foot Native Plants http://www.blackfootnativeplants.com/big-seed-biscuitroot-lomatium-macrocarpum/blackfoot-native-plants/</p> <p>10. ITIS Report http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=29719</p> <p>11. Nature's Notebook https://www.usanpn.org/nn/Lomatium_macrocarpum</p>
Other Sources Consulted	<p>Interviews:</p> <p>12. Kathy Hutton-Plants for the Wild-509-284-2848, September 2016</p> <p>13. Kevin Miller, Rainier Seeds-1800-828-8873, September 2016</p> <p>14. Sandy, The Plant Works-541-786-5122, September 2016</p>
Protocol Author	Emily Ritchie
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