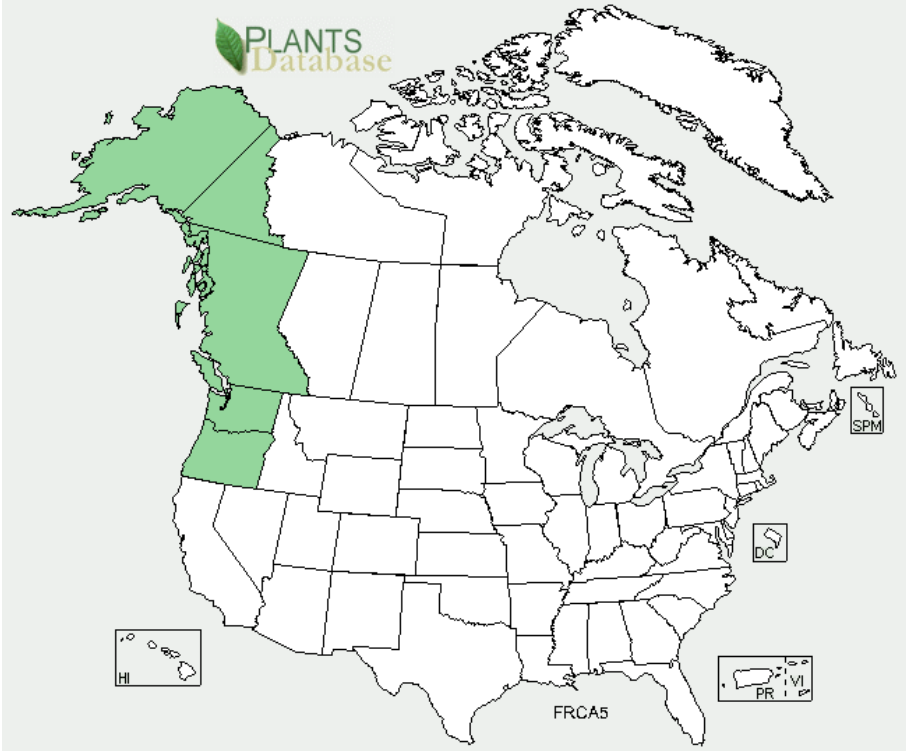
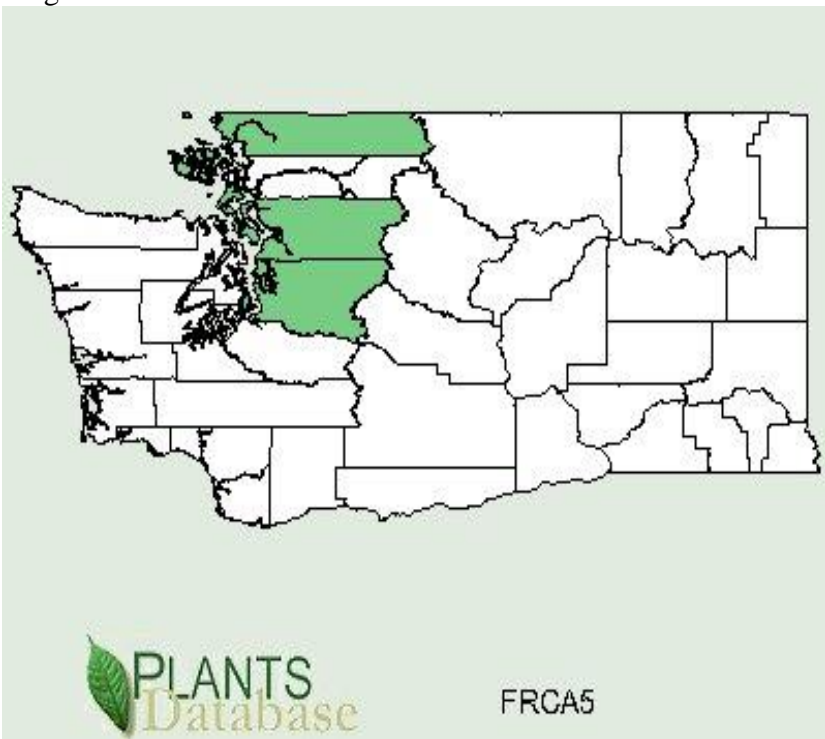


**Plant Propagation Protocol for *Fritillaria Camschatcensis***  
**ESRM 412 – Native Plant Production**

<b>TAXONOMY</b>	
<b>Family Names</b>	
Family Scientific Name:	Liliaceae
Family Common Name:	Fritillary or mission bells
<b>Scientific Names</b>	
Genus:	<i>Fritillaria</i>
Species:	<i>Camschatcensis</i>
Species Authority:	(L.) Ker Gawl.
Variety:	n/a
Sub-species:	n/a
Cultivar:	n/a
Authority for Variety/Sub-species:	n/a
Common Synonyms:	<i>Lilium camschatcense</i> L.
Common Names:	Common names include Kamchatka fritillary, northern rice root, black lily, chocolate lily, Indian rice, Eskimo Potato, Black Sarana Lily, riceroor fritillary, Kamchatka-lily and black sarana.
Species Code:	FRCA5
<b>GENERAL INFORMATION</b>	
Geographical range:	<p>United States distribution:</p>  <p>Image courtesy of USDA Plants Database</p>

	<p>Washington State distribution:</p>  <p>Image courtesy of USDA Plants Database</p>
Ecological distribution:	Found in moist open places including wet meadows, lakes, streambanks, sphagnum bogs, coniferous-forested wetlands, deciduous lowland valley floors, at the edges of salt marshes and along shorelines (1 and 2).
Climate and elevation range:	Found from sea level to subalpine elevations of 3,000 feet (1 and 2) in moist soils with sun to part shade (1).
Local habitat and abundance:	<i>Fritillaria Camschatcensis</i> is listed as a Sensitive species in Washington state with a rank of G5S2. Sensitive species status within the state of Washington means that <i>Fritillaria Camschatcensis</i> is “vulnerable or declining and could become endangered or threatened”. G5 indicates that globally, this plant is “Demonstrably secure” and S2 indicates that in Washington state, this plant is “Imperiled (6 to 20 occurrences), very vulnerable to extirpation” (2). <i>Fritillaria Camschatcensis</i> is found in a variety of moist to wet habitats, from coniferous and deciduous forests to open meadows, bogs and saltwater marshes (2). It is found in sandy and loamy well-drained soils (3 and 4).
Plant strategy type / successional stage:	This seral/late successional species prefers sites in good ecological condition (2).
Plant characteristics:	<i>Fritillaria Camschatcensis</i> is a perennial forb, with variable size and flower color (brown, green or purple) (4) that blooms with one to eight flowers from May to June (2). Some people describe these hermaphrodite flowers as smelling like rotten meat, and they are pollinated by flies (2). This plant roots from a bulb that consists of multiple large and fleshy scales, subtended by many smaller bulbets, which resemble grains of rice (5 and 6). The stem is sturdy and the plant grows to a height of 8 to 24 inches. The leaves are lanceolate (5).

PROPAGATION DETAILS	
Ecotype:	Information not available.
Propagation Goal:	Bulbs
Propagation Method:	Seeds
Product Type:	Propagules (seeds, cuttings, poles, etc.)
Stock Type:	Field grown
Time to Grow:	12 or more months (2).
Target Specifications:	Flowering and seeding.
Propagule Collection:	The flowers bloom in spring or early summer. Allow the pods to dry on the plant and break open to collect seeds (2 and 3).
Propagule Processing/Propagule Characteristics:	Let seeds dry without heat. Store in cool, dry location in paper envelopes (3).
Pre-Planting Propagule Treatments:	Seeds are to be sown as soon as ripe (immediately after harvest in early fall) in a cold frame and will germinate in early spring, but can take a year or more to germinate (2 and 7). Protect from frost.
Growing Area Preparation / Annual Practices for Perennial Crops:	Sow the seeds thinly in a well drained sandy or peaty soil. Plant to a depth of 8 cm in pots that are at least 12 cm deep. Keep soil moist (3).
Establishment Phase:	At the end of the second growing season (August), after the plant has died down, divide the bulbs and plant two to three per pot. Plant bulbs immediately following collection (4). Grow in light shade in a greenhouse for one more growing season prior to outplanting.
Length of Establishment Phase:	Two growing seasons (3).
Active Growth Phase:	Give seedlings occasional liquid feed to ensure there is no mineral deficiency (3).
Length of Active Growth Phase:	3-4 years.
Hardening Phase:	No hardening phase necessary (3). Plant dies back in the winter (4).
Length of Hardening Phase:	n/a
Harvesting, Storage and Shipping:	Information not available.
Length of Storage:	Protect aboveground plant from frost, and store until outplanting in autumn (4).
Guidelines for Outplanting / Performance on Typical Sites:	Plant out larger bulbs while dormant in autumn (3). For smaller bulbs, place in pots and grow them in a cold frame for one year, to plant out the subsequent autumn (3). It can take 3-5 years to flower, if starting from seed (3).
Other Comments:	<i>Fritillaria camschatcensis</i> bulbs are a traditional food source of native American tribes throughout the Northwest coast of North America (8) and they were propagated by harvesting all parts of the bulb except for the bottom part of the bulb, which was replanted to form next year's crop (9).

INFORMATION SOURCES	
References:	<ol style="list-style-type: none"> <li>(1) Pojar, J. and Mackinnon, A. (2004) Plants of the Pacific Northwest coast: Washington, Oregon, British Columbia &amp; Alaska. Vancouver; Lone Pine Publishing.</li> <li>(2) Rare Care Species. List of Plants Tracked by the Washington Natural Heritage Program. Washington State Department of Natural Resources. <i>Fritillaria camschatcensis</i> (L.) Ker-Gawl black lily Liliaceae (Lily Family) Accessed on 03 April 2011 at <a href="http://www1.dnr.wa.gov/nhp/refdesk/lists/plantrnk.html">http://www1.dnr.wa.gov/nhp/refdesk/lists/plantrnk.html</a></li> <li>(3) <i>Fritillaria camschatcensis</i> - (L.)Ker-Gawl. (2010) Plants for a Future. Accessed on 03 April 2011 at <a href="http://www.pfaf.org/user/Plant.aspx?LatinName=Fritillaria%20camschatcensis">http://www.pfaf.org/user/Plant.aspx?LatinName=Fritillaria%20camschatcensis</a></li> <li>(4) Phillips. R. and Rix. M. (1989) Bulbs. Pan Books.</li> <li>(5) Douglas, G.W., Straley, G.B., Meidinger, D., and Pojar, J. (2001) Illustrated Flora of British Columbia vol. 6: Monocotyledons (Acoraceae Through Najadaceae) . Ministry of Environment, Lands and Parks, Victoria, British Columbia.</li> <li>(6) Hitchcock, C.L., Cronquist, A., Ownbey, M., and Thompson, J.W. (1969) Vascular Plants of the Pacific Northwest Part 1: Vascular Cryptogams, Gymnosperms, and Monocotyledons. University of Washington Press, Seattle, WA. 914 pp.</li> <li>(7) Huxley. A. (1992) The New RHS Dictionary of Gardening. 1992. MacMillan Press</li> <li>(8) Turner, N.J. and Kuhnlein, H.V. (1983) Camas (<i>Camassia</i> spp.) and riceroot (<i>Fritillaria</i> spp.): Two liliaceous “root” foods of the Northwest Coast Indians. Ecology of Food and Nutrition. Vol13:4. pp 199-219.</li> <li>(9) Turner, N.J. (1999) “Keeping it Living”: Applications and Relevance of Traditional Plant Management in British Columbia to Sustainable Harvesting of Non-timber Forest Products. NTFP Conference Proceedings. pp 66-92.</li> <li>(10) <i>Fritillaria camschatcensis</i> (L.) Ker Gawl. Plants profile. (2011) USDA Plants Database Website. Accessed on 03 April 2011 at <a href="http://plants.usda.gov/java/profile?symbol=FRCA5">http://plants.usda.gov/java/profile?symbol=FRCA5</a></li> </ol>
Other Sources Consulted:	<ol style="list-style-type: none"> <li>(1) Taxon: <i>Fritillaria camschatcensis</i> (L.) Ker Gawl. (2009) USDA, ARS, National Genetic Resources Program. <i>Germplasm Resources Information Network - (GRIN)</i> [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. Accessed on 03 April 2011 at <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?70861">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?70861</a></li> </ol>
Protocol Author:	Caitlin Guthrie
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