

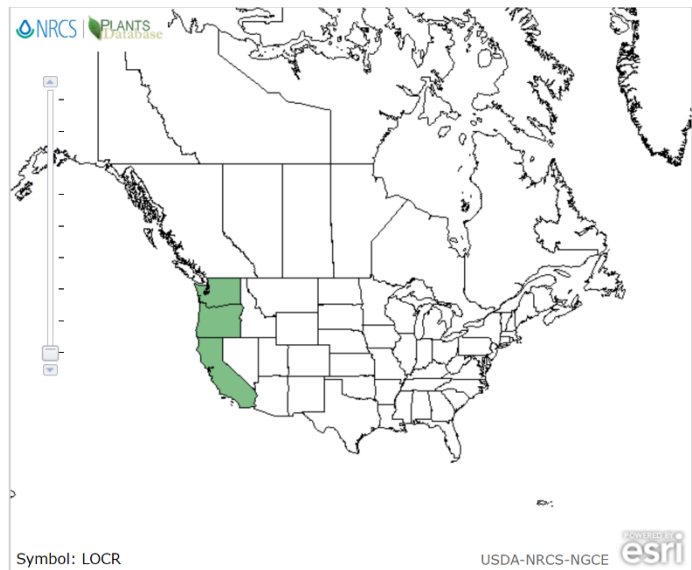
Plant Propagation Protocol for *Lotus crassifolius*

ESRM 412 – Native Plant Production

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



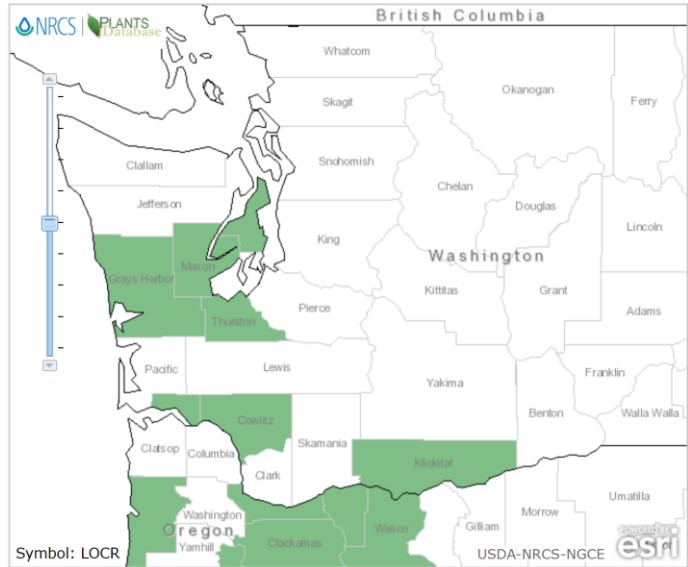
Figure 1. Big deervetch in flower, © 2006 G. D. Carr

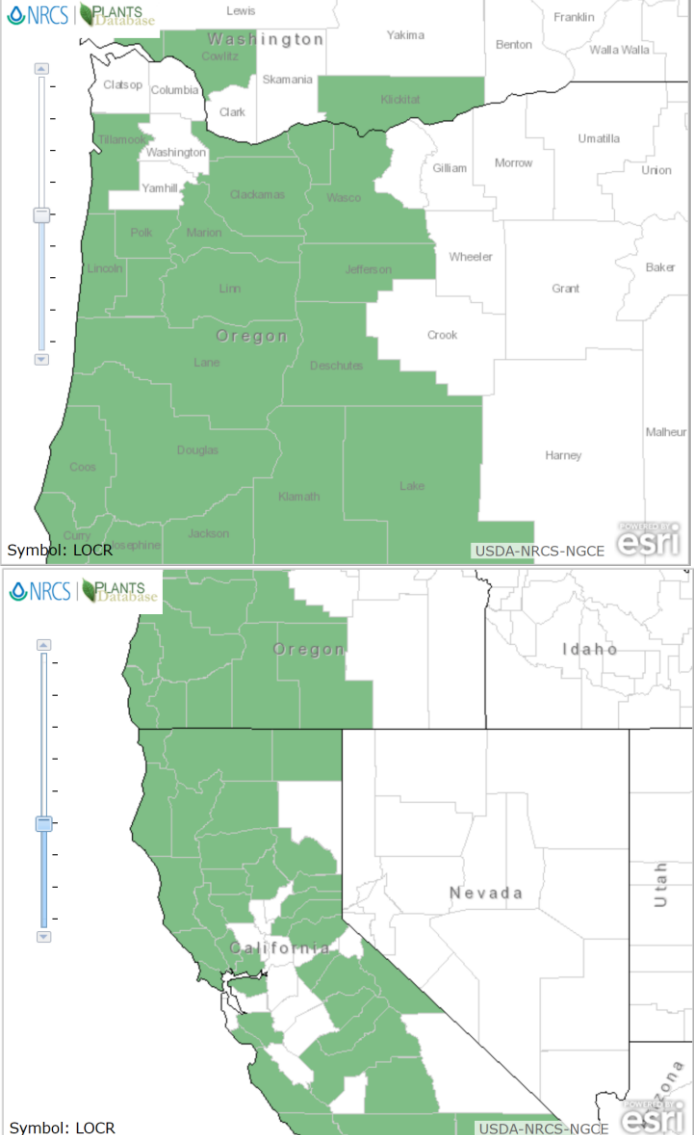


12- 1 - USDA, NRCS. 2019. *The PLANTS Database* (<http://plants.usda.gov>, 27 May 2019). National Plant Data Team, Greensboro, NC 27401-4901 USA.



2 - USDA, NRCS. 2019. *The PLANTS Database* (<http://plants.usda.gov>, 27 May 2019). National Plant Data Team, Greensboro, NC 27401-4901 USA.

TAXONOMY	
Plant Family	
Scientific Name	Fabaceae
Common Name	Pea Family
Species Scientific Name	
Scientific Name	<i>Lotus crassifolius</i> (Benth.) Greene
Varieties	<ul style="list-style-type: none"> - <i>Lotus crassifolius</i> (Benth.) Greene var. <i>crassifolius</i> - <i>Lotus crassifolius</i> (Benth.) Greene var. <i>otayensis</i> Moran ex Isely big deervetch - <i>Lotus crassifolius</i> (Benth.) Greene var. <i>subglaber</i> (Ottley) C.L. Hitchc.
Sub-species	N/A
Cultivar	
Common Synonym(s)	<ul style="list-style-type: none"> - <i>Hosackia crassifolia</i> Benth. - <i>Lotus aboriginus</i> Jeps. (previously called <i>Lotus crassifolius</i> (Benth.) Greene var. <i>subglaber</i> (Ottley) C.L. Hitchc.
Common Name(s)	Buck lotus, broad leaved lotus, thick-leaved lotus, thickleaf trefoil, thickleaf bird's-foot trefoil, Otay Mountain lotus [<i>L. crassifolius</i> var. <i>otayensis</i>]
Species Code (as per USDA Plants database)	LOCR
GENERAL INFORMATION	
Geographical range	<p>3- 1 - USDA, NRCS. 2019. The PLANTS Database (http://plants.usda.gov, 27 May 2019). National Plant Data Team, Greensboro, NC 27401-4901 USA.</p>  <p>Symbol: LOCR</p> <p>USDA-NRCS-NGCE esri</p>

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Ecological distribution	<p>Common in openings in chaparral, pine or mixed woodlands as well as on stream banks, disturbed areas and roadsides.</p> <p>Dry mountain slopes or flats, back of the coast or in the interior</p>
Climate and elevation range	<p>2300 – 8000 ft. High mountains of Southern California, Coast Ranges from San Luis Obispo Co. to Siskiyou Co.; Sierra Nevada from Kern Co. to Modoc and Siskiyou Cos. South to Lower California. North to Washington.</p>
Local habitat and abundance	<p>Otay Mountain Lotus ranked as a 1B by the California Native Plant Society as its population is limited to a few highly restricted areas in the state.</p> <p><i>Crassifolius</i> variety is common and widespread</p>

Plant strategy type / successional stage	Early colonizer of disrupted areas *
Plant characteristics	<p>Rhizomatous, perennial herb or subshrub.</p> <p>“Plants are sprawling to erect, 1-5 feet tall, and stems have a hollow base. Leaves have 9-15 leaflets each about 1 inch long, elliptic to obovate, with length generally 1-2.5 times the width, bright green on the upper surface and paler below. Yellow-green flowers that are often dark red or purple-blotched, especially with age. Tubular, lobed calyx half encloses the petals and gives the inflorescences a pink to deep red color. Fruits are oblong (1.4-2.8 inches long by 0.1-0.2 inch wide) and hairless, with several dark brown seeds per pod.” *</p>
PROPAGATION DETAILS	
Ecotype	<p>NOTE: From Native Plant Network’s Protocol Database – Lotus (crassifolius) written by Lee Riley, Horticulturist, Reforestation, Nurseries, and Genetics Resources, 2018</p> <p>Ecotype: Umpqua National Forest, Oregon; Rogue River Siskiyou National Forest, Oregon</p> <p>All blue asterisk (*) indicate information found in the Native Plant Network’s Protocol Database</p> <p>(Riley, 2018) *</p>
Propagation Goal	Plants *
Propagation Method	Seed *
Product Type	Container (Plug) *
Stock Type	“262 ml (16 in3) container” *
Time to Grow	16 Weeks *
Target Specifications	Stock Type: Container seedling Root System: Firm plug in container. *
Propagule Collection Instructions	<p>June 1 – July 30th</p> <p>Hand collected into paper bag *</p>

Propagule Processing/Propagule Characteristics	46,000 seeds per pound *
Pre-Planting Propagule Treatments	<u>Scarification, stratification</u> Scarification: Required before stratification Light sanding of seed coat or 10 seconds in water at 95 degrees Celsius * Stratification: 10-week stratification with 24 – 48hr soak Mesh bags are placed in a sealed container. The containers are placed in refrigeration at 1 – 3 degrees Celsius for 90 days. If mold is evident, seeds should be treated with 1% hydrogen peroxide. *
Growing Area Preparation / Annual Practices for Perennial Crops	Media: 40:20:20:20 peat: composted fir bark : perlite : pumice * Seedlings remain in the greenhouse for 16 weeks, and then moved to an outdoor growing area to induce dormancy.
Establishment Phase Details	Fertilized with soluble 12-2-14-6Ca-3Mg at 100ppm for 2 weeks *
Length of Establishment Phase	2 -3 weeks*
Active Growth Phase	Fertilization depends on weather. Soluble 20-9-20 NPK, 20-18-18 NPK, or 17-5-24 NPK at a range of 100 – 150 ppm is applied throughout the growing season. *
Length of Active Growth Phase	14 weeks*
Hardening Phase	No dry-down is done to induce dormancy. Seedlings are moved to an outdoor growing area in mid-September *
Length of Hardening Phase	2 -3 weeks*
Harvesting, Storage and Shipping	Harvest date: Mid to late October Storage Conditions: seedlings are usually outplanted in fall to early winter. No storage except in outdoor growing area. Plants are well irrigated prior to shipping and shipped in containers. *
Length of Storage	Not Found

Guidelines for Outplanting / Performance on Typical Sites	Plants require little management once established, they are long-lived, drought-tolerant, and re-sprout or germinate readily after fire and other major disturbances.*
Other Comments	
INFORMATION SOURCES	
References	<p>Riley, Lee E.; Klocke, Allison. 2018. Propagation protocol for production of Container (plug) <i>Lotus crassifolius</i> Plants 262 ml (16 in3) container; USDA FS - Dorena Genetic Resource Center Cottage Grove, Oregon. In: Native Plant Network. URL: http://NativePlantNetwork.org (accessed 2019/05/28). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources.*</p> <p>Young-Mathews, A., and D. Darris. 2011. Plant guide for big deervetch (<i>Lotus crassifolius</i>). US DANatural Resources Conservation Service Plant Materials Center, Corvallis, OR.*</p> <p>"Plants Profile For Lotus Crassifolius (Big Deervetch)." <i>Plants.sc.egov.usda.gov</i>. N. p., 2019. Web. 29 May 2019.</p> <p>" Hosackia Crassifolia Calflora ." <i>Calflora.org</i>. N. p., 2019. Web. 29 May 2019.</p> <p>"Hosackia Crassifolia." <i>Ucjeps.berkeley.edu</i>. N. p., 2019. Web. 29 May 2019.</p> <p>"CNPS Inventory Plant Detail." <i>Rareplants.cnps.org</i>. N. p., 2019. Web. 29 May 2019.</p> <p>Hitchcock (1951), Ogle (2008), Rose et al. (1998), USDA FS (1937), USDA NRCS (2006), USDI BLM (2003), Zlatnik (1999).</p>
Other Sources Consulted	

Protocol Author	Aidan Jensen
Date Protocol Created or Updated	05/28/19