

**Plant Propagation Protocol for *Lilium bolanderi***

ESRM 412 – Native Plant Production

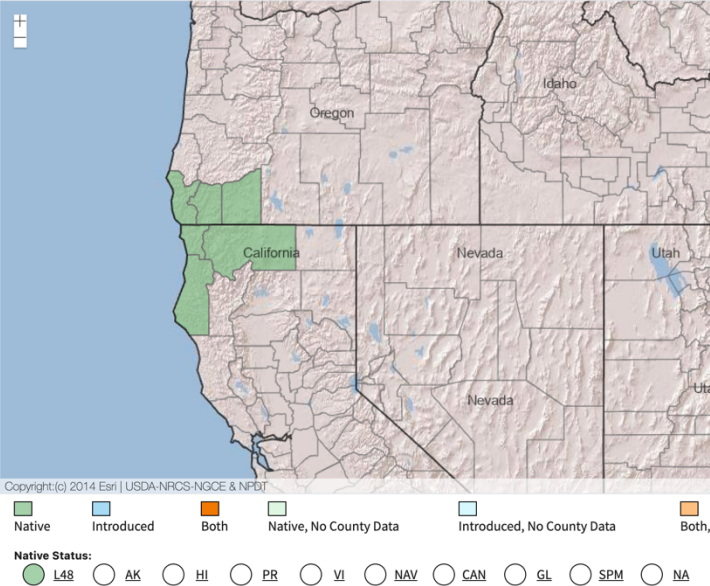
URL: <https://courses.washington.edu/esrm412/protocols/2025/LIBO.pdf>



Image by Curt Kline.<sup>1</sup>

<b>TAXONOMY</b>	
Plant Family	
Scientific Name	<i>Liliaceae</i>
Common Name	Lily family
Species Scientific Name	
Scientific Name	<i>Lilium bolanderi</i> (S.) Watson
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	<i>Lilium howellii</i> I.M. Johnst. <sup>2</sup>
Common Name(s)	Bolander's lily
Species Code (as per USDA Plants database)	LIBO

## GENERAL INFORMATION

<p>Geographical range</p>	<p>Grows from northwestern California to southwestern Oregon.<sup>3</sup></p>  <p>Distribution map of <i>Lilium bolanderi</i> along the western coast of the United States.<sup>3</sup></p>
<p>Ecological distribution</p>	<p>Rocky, shrubby areas and conifer forests.<sup>4</sup> Also found in chaparral communities, yellow pine forests, and wetland-riparian habitats.<sup>5</sup></p> <p>Is listed as Facultative Wetland (FACW) by the U.S. Army Corps of Engineers, meaning it usually occurs in wetlands but may also occur in non-wetlands.<sup>6, 7</sup></p>
<p>Climate and elevation range</p>	<p>Low to mid elevations.<sup>4</sup></p>
<p>Local habitat and abundance</p>	<p>Prefers serpentine soil.<sup>8</sup></p> <p>Is primarily pollinated by hummingbirds,<sup>9</sup> specifically rufous hummingbirds,<sup>10, 8</sup> although it can also be pollinated by bees.<sup>9</sup></p> <p>Can hybridize with <i>Lilium pardalinum</i>, <i>Lilium rubescens</i>, and <i>Lilium washingtonianum</i> spp. <i>purpurascens</i>.<sup>9</sup></p>
<p>Plant strategy type / successional stage</p>	<p>No information found.</p>
<p>Plant characteristics</p>	<p>Perennial monocot<sup>3</sup> that grows up to 3ft tall.<sup>5</sup></p> <p>Leaves grow up to 7cm and are found in 2-6 whorls.<sup>8</sup></p>

	<p>Produces 1-9 flowers in early summer. Flowers are narrowly bell-shaped<sup>4</sup> and nodding outwards<sup>11</sup> with 6 petals and 6 stamens.<sup>5</sup> Flowers are dark red to pink with yellowish centers and dark spots on inner surface.<sup>4</sup> Flowers bloom June through August.<sup>8</sup></p> <p>Is primarily pollinated by Allen’s and Rufous hummingbirds.<sup>5</sup> Fruits are 2-4cm.<sup>8</sup> Seeds are easily dispersed by wind.<sup>12</sup></p>
<b>PROPAGATION DETAILS: FROM SEED</b>	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container
Stock Type	Seedlings in 6” containers.
Time to Grow	4 years. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Target Specifications	Plants should be several inches tall and have bulbs with established live roots. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Propagule Collection Instructions	Collect seed pods after they have turned yellow or tan but before they have opened. Dry the seed pods in a paper bag, then shake out the seeds. <sup>14</sup>
Propagule Processing/Propagule Characteristics	No information found.
Pre-Planting Propagule Treatments	<p>Seeds require 3-6 months of warm stratification followed by 2-3 months of cool, moist stratification before planting.<sup>5</sup> This can be accomplished by planting them outside in summer and keeping them moist during fall and winter. This may also be accomplished by placing seeds into bags of moist perlite and refrigerating them for several months.<sup>12</sup></p> <p>Fresh seeds can be forced to germinate earlier if given 6-8 weeks of warm stratification at 70°F (so that the majority of seeds have formed bulblets), then 4-6 weeks of cold stratification at 35°F.<sup>5</sup></p>
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds should be started in 6” containers that provide very good drainage and aeration. Growing media should be a combination of sand, gravel, and some organic matter. No clay, silt, or loam should be used in

	growing media. <sup>14</sup> Seedlings may also benefit from extra perlite in the growing media. <sup>12</sup>  Growing media should also be slightly acidic. <sup>12</sup>
Establishment Phase Details	Keep seeds moist and never allow the containers to dry out. Keep the containers outdoors in partial shade but protect them from wildlife. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Length of Establishment Phase	6-8 months. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Active Growth Phase	Occasional, infrequent watering during the summer. <sup>14</sup>  Fertilize the plants once a month with a weak solution. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .  Containers must be kept shaded during summer to prevent fungus rot. <sup>12</sup>
Length of Active Growth Phase	3-4 years. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Hardening Phase	No information found.
Length of Hardening Phase	No information found.
Harvesting, Storage and Shipping	No information found.
Length of Storage	No information found.
Guidelines for Outplanting / Performance on Typical Sites	Outplant the seedlings into an area with partial shade and keep them moist year-round. Plant them 2-4" deep. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Other Comments	Bulbs are often eaten by gophers and leaves, stems, and flowers are often eaten by deer and rabbits. Depending on the nursery/growing environment, preventative measures may need to be taken to protect the seedlings. <sup>12</sup>
<b>PROPAGATION DETAILS: VEGETATIVE</b>	
Ecotype	
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Container-field grown hybrids
Stock Type	Bareroot plants with well-established bulbs.
Time to Grow	4 years. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .

Target Specifications	Plants should be several inches tall and have bulbs with established live roots. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Propagule Collection Instructions	Has scaly bulbs. <sup>14</sup> Bulbs from mature plants should be carefully lifted during winter. The outer bulb scales should be removed, keeping the base of the scales intact. <sup>12</sup>
Propagule Processing/Propagule Characteristics	No information found.
Pre-Planting Propagule Treatments	Bulbs must be kept shaded and cool to avoid fungus rots. <sup>12</sup>
Growing Area Preparation / Annual Practices for Perennial Crops	<p>Scales can be planted relatively close together in flats.</p> <p>Plant the lower third of each scale in a well-drained medium, then place the flats in a cool, shady location, making sure they remain moist.<sup>12</sup> Once the scales have grown bulblets, transplant them into the ground.</p> <p>If using bulbs or bulblets, plant them directly in the ground, 2-4" apart from each other. They should be planted in a moist, well-drained soil that receives partial shade.<sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i>.</p>
Establishment Phase Details	<p>Roots and shoots will begin to grow after small bulblets form on the scales.</p> <p>At the first signs of germination, the seedlings can be transplanted directly into the ground.</p>
Length of Establishment Phase	6-8 months. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Active Growth Phase	<p>Occasional, infrequent watering during the summer.<sup>14</sup></p> <p>Fertilize the plants once a month with a weak solution.<sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i>.</p> <p>Keep area shaded during summer to prevent fungus rot.<sup>12</sup></p>
Length of Active Growth Phase	2-3 years. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Hardening Phase	No information found.
Length of Hardening Phase	No information found.
Harvesting, Storage and Shipping	No information found.

Length of Storage	No information found.
Guidelines for Outplanting / Performance on Typical Sites	Outplant the seedlings into an area with partial shade and keep them moist year-round. Plant them 2-4" deep. <sup>13</sup> This information is based on protocols for <i>Lilium pardalinum</i> .
Other Comments	Bulbs are often eaten by gophers and leaves, stems, and flowers are often eaten by deer and rabbits. Depending on the nursery/growing environment, preventative measures may need to be taken to protect the seedlings. <sup>12</sup>

**INFORMATION SOURCES**

References	<ol style="list-style-type: none"> <li>1 Curt Kline. (2012, June 27). <i>Lilium bolanderii</i> [Photograph]. <a href="https://commons.wikimedia.org/wiki/File:Lilium_bolanderii_-_panoramio.jpg">https://commons.wikimedia.org/wiki/File:Lilium_bolanderii_-_panoramio.jpg</a>.</li> <li>2 Global Biodiversity Information Facility (GBIF). (2023). <i>Lilium bolanderi</i> S. Watson. <a href="https://www.gbif.org/species/2753549">https://www.gbif.org/species/2753549</a>.</li> <li>3 USDA NRCS National Plant Data Team. (n.d.). <i>Lilium bolanderi</i> S. Watson. USDA NRCS National Plant Data Center. <a href="https://plants.usda.gov/plant-profile/LIBO">https://plants.usda.gov/plant-profile/LIBO</a>.</li> <li>4 Turner, M. &amp; Gustafson, P. (2006). <i>Wildflowers of the Pacific Northwest</i>. Timber Press.</li> <li>5 California Native Plant Society. (2025). <i>Bolander's lily</i>. Calscape. <a href="https://calscape.org/Lilium-bolanderi-(Bolander's-Lily)">https://calscape.org/Lilium-bolanderi-(Bolander's-Lily)</a>.</li> <li>6 TWC Staff. (2023, April 11). <i>Lilium bolanderi</i>. Lady Bird Johnson Wildflower Center. <a href="https://www.wildflower.org/plants/result.php?id_plant=LIBO">https://www.wildflower.org/plants/result.php?id_plant=LIBO</a>.</li> <li>7 James, R. D. (2020, May 15). <i>National Wetland Plant List</i>. U.S. Federal Register. <a href="https://www.federalregister.gov/documents/2020/05/18/2020-10630/national-wetland-plant-list">https://www.federalregister.gov/documents/2020/05/18/2020-10630/national-wetland-plant-list</a>.</li> <li>8 Meyers, S. C., Jaster, T., &amp; Mitchell, K. E. (2015). <i>Flora of Oregon. Volume 1: Pteridophytes, gymnosperms, and monocots</i>. Botanical Research Institute of Texas Press.</li> <li>9 Fiedler, P. L. (1996). <i>Rare lilies of California</i>. California Native Plant Society.</li> <li>10 Skinner, M. (2025). <i>Lilium bolanderi</i> S. Watson. Oregon Flora.</li> </ol>
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	<p><a href="https://oregonflora.org/taxa/index.php?taxon=6075">https://oregonflora.org/taxa/index.php?taxon=6075</a>.</p> <p>11 Kozloff, E. N. (2005). <i>PLANTS of Western Oregon, Washington, &amp; British Columbia</i>. Timber Press.</p> <p>12 Smith, M. N. (2006). <i>Native treasures: Gardening with the plants of California</i>. University of California Press.</p> <p>13 Anderson, M. K. &amp; Roderick, W. (2003, May 21). <i>Plant guide: Leopard lily</i>. USDA NRCS National Plant Data Center.  <a href="https://plants.usda.gov/DocumentLibrary/plantguide/pdf/cs_lipa.pdf">https://plants.usda.gov/DocumentLibrary/plantguide/pdf/cs_lipa.pdf</a>.</p> <p>14 Harlow, N. &amp; Jakob, K. (Eds.). (2003). <i>Wild lilies, irises, and grasses: Gardening with California monocots</i>. University of California Press.</p>
Other Sources Consulted	<p>1 Calflora. (2025). <i>Lilium bolanderi</i>. The Calflora Database.  <a href="https://www.calflora.org/app/taxon?crn=4800">https://www.calflora.org/app/taxon?crn=4800</a>.</p> <p>2 Skinner, M. W. (2012). <i>Lilium bolanderi</i>. Jepson Herbarium.  <a href="https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=30926">https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=30926</a>.</p>
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Date Protocol Created or Updated	05/26/25