

## Plant Propagation Protocol for *Garrya elliptica*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2021/GAEL.pdf>



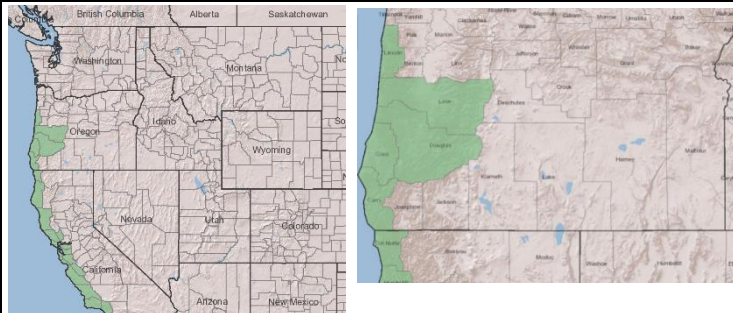
Photo credits: Left: Breen, P.<sup>13</sup>; Right: Carr, G.D.<sup>14</sup>

### TAXONOMY

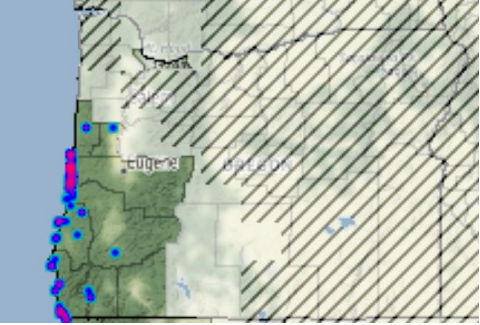
<b>Plant Family</b>	
Scientific Name	Garryaceae
Common Name	Silk Tassel family
<b>Species Scientific Name</b>	
Scientific Name	<i>Garrya elliptica</i> Douglas ex. Lindl.
Varieties	Not found
Sub-species	Not found
Cultivar	<i>Garrya elliptica</i> ‘James Roof’ <i>Garrya elliptica</i> ‘Evie’
Common Synonym(s)	Not found
Common Name(s)	Wavyleaf Silk-Tassel, Wavyleaf Silktassel, Silk-tassel Bush, Coastal Silktassel, Silktassel
Species Code (as per USDA Plants database)	GAEL

### GENERAL INFORMATION

Geographical range



Above map shows distribution of *G. elliptica* in California and Oregon (left); Oregon State counties (right).

	 <p>Above map shows where <i>G. elliptica</i> has been found in Oregon State. Blue dot indicates single plants. Darker and redder dots indicate many plants.<sup>7</sup></p>
Ecological distribution	<i>G. elliptica</i> is found on dry slopes and ridges, from Ventura County, California to Oregon. <sup>2</sup>
Climate and elevation range	<i>G. elliptica</i> is restricted to coastal bluffs and hills in southwestern Oregon from Cape Perpetua south into California <sup>6</sup> below 200 ft. elevation. <sup>2</sup>
Local habitat and abundance	Chaparral and forest on dry slopes and ridges. <sup>13</sup>
Plant strategy type / successional stage	No information found.
Plant characteristics	<p>Evergreen shrub, erect, dense, to 8 ft. (2.5 m) high and wide, may be a small tree 20-30 ft (6-9 m). Leaves opposite, simple, elliptical to oval, 4-6 cm long, leathery, margins entire and slightly wavy and irregularly turned under (revolute), glossy, essentially smooth and dark green above, paler and woolly below; petiole stout, to about 13 mm long, grooved and flattened above. Flowers appear in winter, male and female flowers on separate plants (dioecious), male catkin-like clusters are yellowish to greenish then gray, 8-20 cm long ("silk tassels"), female flower clusters are shorter, 5-9 cm long. Fruits are in grape-like clusters, each is round, about 6 mm wide, at first green but finally covered with a purplish-gray pubescence; may be present through the summer if not eaten by birds.<sup>4</sup></p> <p><i>G. elliptica</i> is wind pollinated.<sup>11</sup> However, the male flowers appear to have a vestigial nectary, which has often been confused for an ovary.<sup>9</sup></p> <p>Planted as ornamentals in many areas of the world. The graceful catkins and stately shape of these species make them desirable landscape shrubs. Introduced into cultivation between 1842 and 1902<sup>5</sup>, <i>G. elliptica</i> have also been used for erosion control in restoration projects.<sup>8</sup></p>
<b>PROPAGATION DETAILS</b>	
Ecotype	Marin County, California <sup>2</sup>
Propagation Goal	Plants <sup>2</sup>
Propagation Method	Seed <sup>2</sup>

Product	Container <sup>2</sup>
Stock Type	Deepot 40 <sup>2</sup>
Time to Grow	Seedlings are ready for outplanting at age 2 years. <sup>5</sup>
Target Specifications	Root system: Firm plug in container <sup>2</sup>
Propagule Collection Instructions	<p>Silktassel fruits are persistent, 2-sided berries that appear green and fleshy when young but become dry and brittle at maturity. The fruit is globose to ovoid and relatively uniform, averaging 7.2 mm long by 6.2 mm wide and producing from 1, 2, or (rarely) 3 seeds that are 2 to 3 mm in diameter.<sup>5,10</sup></p> <p>Seeds are collected between May 1<sup>st</sup> and August 1<sup>st</sup>.<sup>2</sup> Mature berries are borne in long strands and are dark grey to bluish black. There are ~2 seeds per berry.<sup>2</sup></p> <p>Ripe fruits may be gathered by stripping them from the branches onto canvas, or hand-picking them from the bushes. Because the fruits may be infested with insect larvae, care must be taken to collect only sound fruits.<sup>5</sup></p> <p>Germination tests have been done on pretreated seeds placed in sand, vermiculite, Kimpak™, and sphagnum moss under light for 30 to 60 days, and at temperatures alternating diurnally from 25 to 13 °C, or from 30 to 20 °C.<sup>5</sup></p>
Propagule Processing/Propagule Characteristics	<p>Cleaned seed densities range from 37,500 to 72,800 seeds/kg (17,000 to 33,000/lb).<sup>5</sup></p> <p>About 85 to 99% of the seeds will normally be sound.<sup>5</sup></p>
Pre-Planting Propagule Treatments	<p>Cleaning: After twigs, leaves, and other debris have been sifted out, fruits are run through a macerator and the pulp and empty seeds are floated off or screened out. Seeds may also be extracted by rubbing the fruits over a fine-mesh screen and floating off the pulp and empty seeds in water.<sup>5</sup></p> <p>Storage Conditions: Seeds are kept dry and stored in a refrigerator.<sup>2</sup></p> <p>Pre-Planting Propagule Treatments: Soak clean seeds overnight in fresh water. Drain and wash seeds for 1 minute in a 5% bleach solution. Place seeds in a new freezer bag with an equal amount of pH neutral peat moss. Moisten peat moss and place in refrigerator for 3 months or until seeds start sprouting.<sup>2</sup></p>
Growing Area Preparation / Annual Practices for Perennial Crops	<p>Nursery Environment:</p> <ul style="list-style-type: none"> <li>- Fully Controlled Greenhouse.<sup>2</sup></li> </ul>

	<p>Growing Media:</p> <ol style="list-style-type: none"> <li>1. Sowing Mix-Sunshine® Mix #4 Aggregate Plus (peat moss, perlite, major and minor nutrients, gypsum, and dolomitic lime).<sup>2</sup></li> <li>2. Transplant Mix- Contains standard potting mix of peat moss, fir bark, perlite, and sand.<sup>2</sup></li> </ol> <p>Containers:</p> <ol style="list-style-type: none"> <li>1. Flats- (14-days) Seeds are mixed with sowing media and are surface sown into flats.<sup>2</sup></li> <li>2. Deepot 16 (D16)- 14-days after germination, seedlings are transplanted to individual (2" dia. x 7" deep) containers containing standard potting media.<sup>2</sup></li> <li>3. Deepot 40 (D40)- Indicated Stock type.<sup>2</sup></li> </ol>
Establishment Phase Details	<p>Seeds are sown May 1<sup>st</sup> following the pre-planting propagule treatment described above. Germinants are mixed with media and are surface sown in flats containing Sunshine® Mix #4 Aggregate Plus (6 g/flat). Flats are then watered in with mist and an automatic irrigation system.<sup>2</sup></p> <p>Seedlings germinate 14-days after sowing.<sup>2</sup></p> <p>Percent of Germination is 25%.<sup>2</sup></p>
Length of Establishment Phase	1 month <sup>2</sup>
Active Growth Phase	<p>Seedlings are transplanted 14-days after germination to individual containers and soil described above.<sup>2</sup></p> <p>Transplant Survival averages 75%.<sup>2</sup></p>
Length of Active Growth Phase	January to early summer. <sup>12</sup>
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	<p>Outplanting conditions should include well-drained soils in sun to part shade. Plant must have afternoon shade in hot, dry sites. Hot winds will scorch the leaves. <sup>3</sup></p> <p><i>G. elliptica</i> will tolerate arid conditions, low fertility, sandy soils, and a wide range of pH values. <sup>5</sup></p>
<b>PROPAGATION DETAILS</b>	
Ecotype	Unknown
Propagation Goal	Cuttings
Propagation Method	Vegetative

Product Type	Container
Stock Type	Deepot 16 <sup>2</sup>
Time to Grow	6 to 8 weeks <sup>5</sup>
Target Specifications	Rooted cuttings
Propagule Collection Instructions	Tip nodal cuttings of wavyleaf silktassel are collected in late summer through November. <sup>5</sup>
Propagule Processing/Propagule Characteristics	Cuttings should range from 8 to 18 cm. (3 to 4 in) long. <sup>5</sup>
Pre-Planting Propagule Treatments	Basally treat cuttings with 0.8% indole butyric acid (IBA). <sup>5</sup>
Growing Area Preparation / Annual Practices for Perennial Crops	Growth medium must be well drained and only misted during the day. <sup>5</sup>
Establishment Phase Details	Following IBA treatment, cuttings are bottom-heated at 20 to 21 °C. <sup>5</sup>  It is difficult to achieve economic rooting percentages unless selection of cutting material, and porosity and hygiene of the rooting medium are carefully controlled. <sup>5</sup>
Length of Establishment Phase	<i>G. elliptica</i> should successfully root within 6 to 8 weeks. <sup>5</sup>
Active Growth Phase	Silktassels are sensitive to root disturbance when actively growing, so dormant potting is recommended; however, they will not tolerate high fertility in the potting compost. <sup>5</sup>
Other Comments	Vegetative propagation of <i>G. Elliptica</i> is possible but less successful than growing from seed. In order to achieve successful rooting percentages, selection of cutting material, and porosity and hygiene of the rooting medium must be carefully controlled. <sup>5</sup>

### **INFORMATION SOURCES**

References	<p><sup>1</sup> United States Department of Agriculture. (2014). <i>Garrya elliptica Douglas ex Lindl.</i> [Map]. PLANTS Database National Plant Data Team Greensboro, (NC): United States Department of Agriculture, Natural Resources Conservation Service. <a href="https://plants.usda.gov/home/plantProfile?symbol=GAEL">https://plants.usda.gov/home/plantProfile?symbol=GAEL</a></p> <p><sup>2</sup> Young, B. (2001). <i>Garryaceae (Garrya)</i>. Native Plant Network Propagation Protocol Database [Internet]. San Francisco, (CA): US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources. <a href="https://nnp.rngr.net/nnp/propagation/protocols/garryaceae-garrya-609/?searchterm=garrya">https://nnp.rngr.net/nnp/propagation/protocols/garryaceae-garrya-609/?searchterm=garrya</a></p>
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- <sup>7</sup> Sullivan, S.K. (2021). *Distribution for Garrya elliptica* [Map]. WildflowerSearch.org
- <sup>8</sup> Oregon Flora. (2021). *Coast Silk Tassel: Garrya elliptica*. Corvallis, (OR): Oregon State University Herbarium, Dept. of Botany & Plant Pathology, <https://oregonflora.org/taxa/garden.php?taxon=5278>
- <sup>9</sup> Harris, S. (n.d.). *Garrya elliptica* Lindl. ex Dougl. (*Garryaceae*). Oxford Plants 400. Oxford, (UK): University of Oxford. <https://herbaria.plants.ox.ac.uk/bol/plants400/Profiles/GH/Garrya>
- <sup>10</sup> Dahling, G. (1978). SYSTEMATICS AND EVOLUTION OF GARRYA. *Contributions from the Gray Herbarium of Harvard University*, (209), 1-104. <http://www.jstor.org/stable/41764821>

	<p><sup>11</sup> Reynolds, H.G., &amp; Alexander R.R. (1974). Garrya, silktassel. <i>Seeds of woody plants in the United States</i> (No. 450). Washington, (DC): USDA Forest Service: 420–421</p> <p><sup>12</sup> Reeve, Roger M. (1942). Structure and Growth of the Vegetative Shoot Apex of Garrya Elliptica Dougl. <i>American Journal of Botany</i>, 29(9), 697-711.</p> <p><sup>13</sup> Breene, P. (2021). [Garrya elliptica: Plant habit, winter flowering] [Photograph]. <i>Landscape Plants</i>. Corvallis (OR). Oregon State University, College of Agricultural Sciences. <a href="https://landscapeplants.oregonstate.edu/plants/garrya-elliptica">https://landscapeplants.oregonstate.edu/plants/garrya-elliptica</a></p> <p><sup>14</sup> Carr, D.C. (1988, January, 20). [Garrya elliptica Lindley: UC Davis Arboretum] [Photograph]. <i>Oregon Flora Image Project</i>. Davis (CA). <a href="http://www.botany.hawaii.edu/faculty/carr/ofp/gar_ell.htm">http://www.botany.hawaii.edu/faculty/carr/ofp/gar_ell.htm</a></p>
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