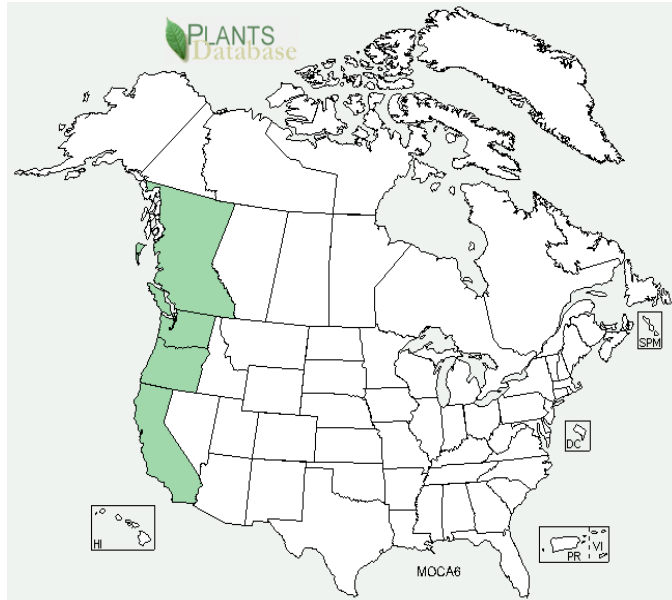


## Plant Propagation Protocol for Pacific Wax Myrtle

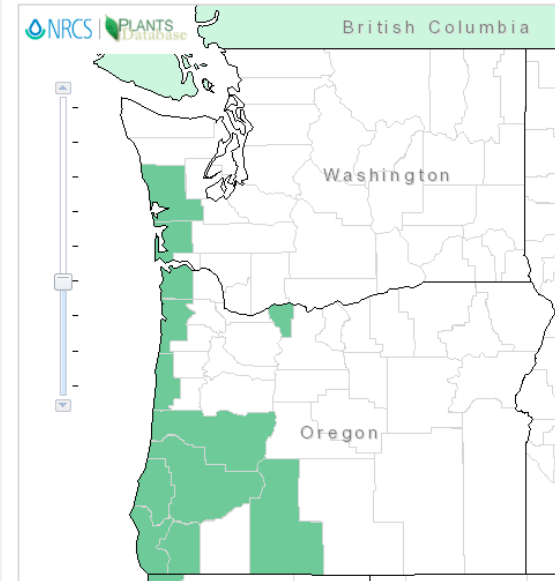
ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/MOCA6.pdf>

North America Distribution



Washington and Oregon Distribution



Source: USDA PLANTS Database

### TAXONOMY

Plant Family	
Scientific Name	Myricaceae
Common Name	Bayberry family
Species Scientific Name	
Scientific Name	<i>Morella californica</i> (Cham.) Wilbur
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	<i>Gale californica</i> (Cham. & Schltld.) Green <i>Myrica californica</i> (Cham. & Schltld.)
Common Name(s)	California wax myrtle, Pacific wax myrtle, California bayberry, Pacific bayberry
Species Code (as per USDA Plants database)	MOCA6

<b>GENERAL INFORMATION</b>	
Geographical range	Native to California, Oregon, Washington, and British Columbia
Ecological distribution	Sandy, moist areas <sup>2</sup> Coastal dunes and scrub habitats <sup>1</sup> . Can occur in wetlands <sup>2</sup>
Climate and elevation range	Moist hills near coastlines, can be in elevations from 3 feet – 4145 feet <sup>2</sup> . Can be less than 150 meters if near coast or greater than 500 meters if inland <sup>1</sup>
Local habitat and abundance	Appears in canyons and hill slopes of coastal regions from the Santa Monica Mountains of Los Angeles County up as far north as British Columbia <sup>9</sup> .
Plant strategy type / successional stage	Drought tolerant, prefers more acidic soils. <sup>9</sup> Fire resistant <sup>6</sup> . Is a nitrogen fixer <sup>5</sup> .
Plant characteristics	Evergreen shrub 2-6 meters tall. Leaves are simple alternate, and elliptic <sup>3</sup> . Fruit are purple seeded berries coated with white wax <sup>9</sup> . Flowers are monoecious and pollinated by wind.
<b>PROPAGATION DETAILS</b>	
<b>Seed Propagation</b>	
Ecotype	
Propagation Goal	Plant
Propagation Method	Seed
Product Type	Container
Stock Type	
Time to Grow	
Target Specifications	Minimum root depth of 20 inches <sup>9</sup> .
Propagule Collection Instructions	Ripe drupes can be collected by using hands to strip the branches or by shaking the branches onto a collection sheet <sup>8</sup> .
Propagule Processing/Propagule Characteristics	Seeds weigh 22,000 seeds per pound <sup>9</sup> . Seeds can be stored for long period of time if done in the proper conditions <sup>9</sup> (6-10% moisture <sup>8</sup> and low temperatures)
Pre-Planting Propagule Treatments	Remove wax from seed by abrasion or warm water soak. Following this, seeds require cold stratification for about 90 days at 5° C to overcome dormancy <sup>8</sup> .
Growing Area Preparation / Annual Practices for Perennial Crops	Seeds should be placed in seed trays or containers when ripe. Once they are large enough they can be transferred to individual containers with peaty soil <sup>10</sup> . Soil texture should be medium to coarse <sup>9</sup>

Establishment Phase Details	Seeds should be sown during autumn when they are ripe in a cold frame <sup>10</sup> .
Length of Establishment Phase	Germination can exceed 100 days <sup>4</sup>
Active Growth Phase	The maximum height it can reach is 33 feet <sup>2</sup> . Flowering occurs from May-June <sup>8</sup>
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	Planting density per acre should be 700-1700 <sup>9</sup> .
Other Comments	
<b>PROPAGATION DETAILS</b>	
<b>Cuttings Method as Explained by Sachs, deBie, and Isle<sup>7</sup></b>	
Ecotype	Branches for cuttings were taken from native Pacific wax myrtle stands near Fort Bragg, California
Propagation Goal	Plants (formation of root initials in cutting)
Propagation Method	Vegetative
Product Type	Plug
Stock Type	
Time to Grow	8-12 weeks
Target Specifications	Rooting begins to take place at bottom of the cutting
Propagule Collection Instructions	Terminal cuttings should be collected in April and should be struck into soil within four days. Collect hardwood cuttings between November 1 <sup>st</sup> and January 31 <sup>st</sup> <sup>10</sup> .
Propagule Processing/Propagule Characteristics	Cuttings should be approximately 6 inches long with 4-6 leaves. Make sure to perform terminal softwood cuttings for best results. Do not wait longer than four days to strike cuttings because they may no longer be viable
Pre-Planting Propagule Treatments	For maximum rooting, terminal cuttings should be treated with 0.8% indole butyric acid (IBA) before being struck into soil.
Growing Area Preparation /	Cuttings can be struck 4 inches deep into deepot 40 containers <sup>10</sup> . These should be placed in shaded greenhouse with a supply of bottom heat to try

Annual Practices for Perennial Crops	and maintain a soil temperature of about 70°F. Be sure to periodically mist.
Establishment Phase Details	After 4-6 weeks of striking, you may transfer cuttings to high humidity polyethylene box for an additional 4-6 weeks to promote axillary bud and root growth. Terminal cuttings taken from April should display rooting within 8-12 weeks
Length of Establishment Phase	8-12 weeks
Active Growth Phase	Under greenhouse conditions, plants should grow 2-3 ft in 3 months. In natural systems, active growth occurs during the spring and summer <sup>3</sup> .
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	
Length of Storage	Cuttings must be transplanted within 40 days <sup>10</sup>
Guidelines for Outplanting / Performance on Typical Sites	There is a 60% average for transplant survival <sup>10</sup> . Flowering occurs in March-April <sup>1</sup> .
Other Comments	
<b>INFORMATION SOURCES</b>	
References	<p><sup>1</sup>Allan J. Bornstein 2017. <i>Morella californica</i>, in Jepson Flora Project (eds.) <i>Jepson eFlora</i>, <a href="http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=80350">http://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=80350</a></p> <p><sup>2</sup>"California Wax Myrtle." Calscape. California Native Plant Society, <a href="http://calscape.org/Morella-californica-()">http://calscape.org/Morella-californica-()</a></p> <p><sup>3</sup>Giblin, David. "Morella californica." WTU Herbarium Image Collection - Burke Museum, Burke Museum of Natural History &amp; Culture, <a href="http://biology.burke.washington.edu/herbarium/imagecollection.php?Page=introduction.php">biology.burke.washington.edu/herbarium/imagecollection.php?Page=introduction.php</a>.</p> <p><sup>4</sup>Kruckeberg, Arthur R. Gardening with native plants of the Pacific Northwest. Vancouver: Greystone, 2012. Print.</p> <p><sup>5</sup>"Myrica californica - Cham." PFAF. Plants for a Future, n.d. Web. <a href="http://www.pfaf.org/user/plant.aspx?LatinName=Myrica%2Bcalifornica">http://www.pfaf.org/user/plant.aspx?LatinName=Myrica%2Bcalifornica</a>.</p>



	<p><sup>6</sup>"Pacific wax myrtle." Native Plant Guide. King County, <a href="https://green2.kingcounty.gov/gonative/Plant.aspx?Act=view&amp;PlantID=28">https://green2.kingcounty.gov/gonative/Plant.aspx?Act=view&amp;PlantID=28</a></p> <p><sup>7</sup>Sachs, Roy M., Jack deBie, and Raymond W. Isle. "Propagation of California Wax Myrtle: ...A valuable native shrub or tree for highway landscaping." <i>California Agriculture</i> 19.12 (1965): 10-11.</p> <p><sup>8</sup>Service, United States. Forest, F T Bonner, and R P Karrfalt. <i>The Woody Plant Seed Manual</i>. U.S. Department of Agriculture, Forest Service, 2008. Web. Agriculture Handbook.</p> <p><sup>9</sup>USDA, NRCS. 2017. The PLANTS Database (<a href="http://plants.usda.gov">http://plants.usda.gov</a>, 24 April 2017). National Plant Data Team, Greensboro, NC 27401-4901 USA.</p> <p><sup>10</sup>Young, Betty. 2001. Propagation protocol for production of Container (plug) <i>Morella californica</i> (Cham. &amp; Schlecht.) Wilbur plants Deepot 40; San Francisco, California. In: Native Plant Network. URL: <a href="http://NativePlantNetwork.org">http://NativePlantNetwork.org</a> (accessed 2017/04/24). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources.</p>
Other Sources Consulted	<p>"Myrica californica." UC Master Gardener Program of Sonoma County. University of California , n.d. Web. <a href="http://sonomamg.ucanr.edu/Plant_of_the_Month/Myrica_californica/">http://sonomamg.ucanr.edu/Plant_of_the_Month/Myrica_californica/</a>.</p> <p>"Myrica californica Pacific Wax Myrtle." Washington Native Plant Society: Starflower Image Herbarium. Washington Native Plant Society, 8 Nov. 2007. Web. <a href="http://www.wnps.org/landscaping/herbarium/pages/myrica-californica.html">http://www.wnps.org/landscaping/herbarium/pages/myrica-californica.html</a>.</p>
Protocol Author	Zainab Junejo
Date Protocol Created or Updated	06/05/17

\*This protocol has been revised from a previous protocol compiled in 2005 which is attached below

# *Morella californica*

a.k.a. "*Myrica californica*"

California wax-myrtle/Pacific wax-myrtle/Pacific bayberry



Source: <http://www.calflora.net/bloomingplants/californiawaxmyrtle.html>



Source: <http://www.geo.arizona.edu/palynology/pid00047.html>

## Range

Along the western U.S. coast from southern California to Gray's Harbor, Washington. An isolated population also exists on the west coast of Vancouver Island. (2)



Source: <http://www.cnr.vt.edu/dendro/dendrology/syllabus/maps>

## Climate, elevation:

- coastal climates with rainfall between 40 and 70" (5)
- elevation below 500' (1)

## Local occurrence (where, how common)

It can commonly be found in:

- coastal sage scrub community
- chaparral community (1)

**Habitat preferences**

The California wax-myrtle prefers sunny stabilized dunes or canyons and moist slopes. (1,3)

**Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)**

California wax-myrtle tolerates high salinity. It is intolerant of shade, fire and drought.

**Associated species**

*Gaultheria shallon* (salal), *Vaccinium ovatum* (California huckleberry), *Rhododendron macrophyllum* (Pacific rhododendron), *Rubus ursinus* (California blackberry), *Baccharis pilularis* (coyotebrush), *Pinus contorta* var. *contorta* (lodgepole pine), *Pseudotsuga menziesii* (Douglas fir)

**May be collected as: (seed, layered, divisions, etc.)**

The plant may be collected as seeds or cuttings. Layering is also effective, and is less time-consuming. (3)

**Collection restrictions or guidelines**

Seed collection should be done in the fall. (3)

The blue-grey berries are collected as late as January in warmer climates.

Hardwood cuttings may be taken between November 1<sup>st</sup> and January 31<sup>st</sup>. (4)

**Seed germination (needs dormancy breaking?)**

Seeds require 3 months stratification. The waxy coating should be removed prior to stratification by soaking clean seeds overnight. Germination may take more than 100 days. (3)

**Seed life (can be stored, short shelf-life, long shelf-life)**

Seeds may be stored.

**Recommended seed storage conditions**

Store with waxy coating in dark, dry conditions.

**Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)**

Seed germination requires cold stratification. If time is a factor, layering is a much faster propagation method.

**Soil or medium requirements (inoculum necessary?)**

It prefers a peaty, slightly acidic soil. (3)

Soil texture should be medium to coarse. (5)

Soil pH should be between 6.0 and 7.5.

**Installation form (form, potential for successful outcomes, cost)**

Not specified.

**Recommended planting density**

Planting density per acre should be between 700 and 1700. (5)

### **Care requirements after installed (water weekly, water once etc.)**

Soil should be kept moist.

### **Normal rate of growth or spread; lifespan**

Growth is moderate and its lifespan is long. (5)

### **Sources cited**

1. <http://www.calflora.net/bloomingplants/californiawaxmyrtle.html>
2. Pojar, Jim, Mackinnon, Andy. Plants of the Pacific Northwest Coast. Canada: Lone Pine, 1994.
3. Kruckeberg, A.R. Gardening with Native Plants. University of Washington, Seattle, WA, 1982.
4. <http://www.nativeplantnetwork.org/>
5. <http://plants.usda.gov/>

**Data compiled by:** Julia Walker, 5/28/2005