
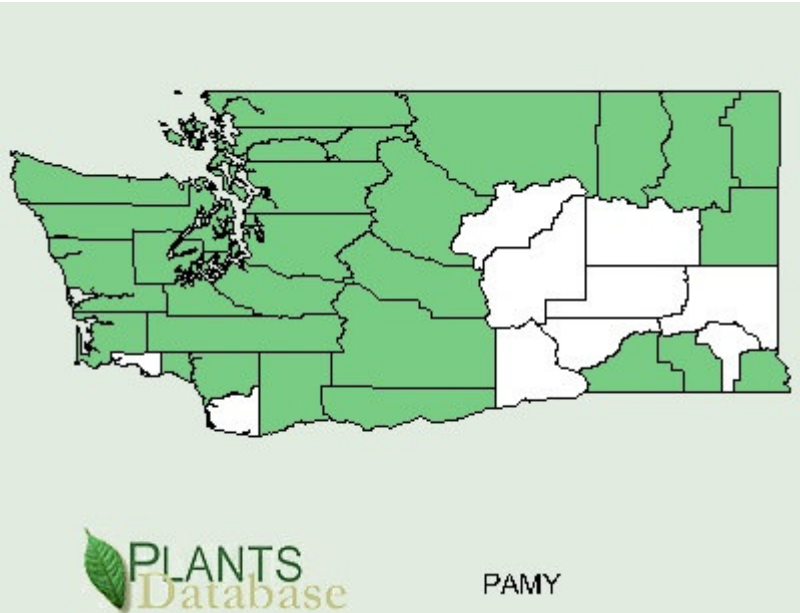


## Plant Propagation Protocol for *Paxistima myrsinites*

ESRM 412 Spring 2009 – Native Plant Production

<b>TAXONOMY</b>	
<b>Family Names</b>	
Family Scientific Name:	Celastraceae (USDA Plants Database)
Family Common Name:	Staff-tree Family (Krukeburg) Bittersweet Family (Wick)
<b>Scientific Names</b>	
Genus:	<i>Paxistima</i> (USDA)
Species:	<i>myrsinites</i> (USDA)
Species Authority:	Raf. (USDA)
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym(s)	<i>Pachistyma myrsinites</i> (USDA), Mountain Lover, Oregon Box, Myrtle Boxwood (Krukeberg), Mountain Boxwood (Wick)
Common Name(s):	Oregon Boxleaf (USDA)
Species Code (as per USDA Plants database):	PAMY
<b>GENERAL INFORMATION</b>	

<p>Geographical range</p>	  <p>(USDA)</p>
<p>Ecological distribution</p>	<p>Occurs in dense woods, and open rocky places (Krukeberge) <i>Paxistima</i> prefers edge habitat, and the moist to fairly dry coniferous forests at low to mid elevations. (Robson)</p>
<p>Climate and elevation range</p>	<p>Ranges from sea level to almost timberline (Krukeberg), along the coast to the Rocky mountains from British Columbia to California. (Spurr)</p>
<p>Local habitat and abundance; may include</p>	<p>Prefers dryer slopes east of the crest of the Cascades, in open woods, ridge tops, or rocky glades. (Krukeberge) Grows well in partial shade, with well drained moist/fairly dry soils.</p>

commonly associated species	<i>Paxistima</i> can tolerate the dry shade under big trees along the edges of the Cascades. (Robson)
Plant strategy type / successional stage	Compact habit, adaptability to different levels of sun, and hardiness allow for <i>Paxistima</i> to spread at low levels of the forest. (Spurr)
Plant characteristics	<i>Paxistima</i> is a perennial shrub that grows to an average height of 3 feet, and equal width. The leaves are serrated, small, opposite, approximately 2.5 cm long and oblong in shape. It has small maroon flowers that bloom from mid-spring to mid-summer. (Robson)
<b>PROPAGATION DETAILS</b>	
Ecotype	The seed tested came from the open slopes of a Douglas fir forest, Fish Creek, at 1100m elevation. (Wick)
Propagation Goal	Plants (Wick)
Propagation Method	Vegetative (Wick)
Product Type	Container (Plug) (Wick)
Stock Type:	800ml containers (Wick)
Time to Grow	16 months (Wick)
Target Specifications	The target stocktype would be a container cutting, with a height of 15cm and a caliper of 5mm. The root system would ideally be a firm plug in 800ml containers. (Wick)
Propagule Collection	Propagules are collected through the vegetative propagation method pre-rooting. The types of cuttings are softwood stem cuttings which are collected in late may from field plants in full to partial sun exposure. The cuttings are collected either before, or just after flowering. (Wick)
Propagule Processing/ Propagule Characteristics	The cuttings were kept moist and refrigerated before being pre-treated. (Wick)
Pre-Planting Propagule Treatments	After being cut into 15-20cm lengths the cuttings were re-cut at the base removing 1/3 of the basal leaves and treated with a 2 minutes Domain fungicide bath. They were then treated with 2/3000 ppm of an IBA rooting hormone and struck with a minimum of 2 nodes below the rooting medium surface. (Wick)
Growing Area Preparation / Annual Practices for Perennial Crops	Cover mistbed with shade cloth and set to apply a mist at 6 second intervals every 6 minutes. You want to make sure you don't over-mist causing leaf or stem rot. Use bottom heat, in this case heating cables 12 cm underneath the rooting medium of 50% perlite and 50% sand. (Wick)

Establishment Phase	Good root systems are generated in approximately 6 or 7 weeks (Wick)
Length of Establishment Phase:	7 weeks (Wick)
Active Growth Phase	After germination, the cuttings are removed from the mistbed, potted in 800ml containers, irrigated, and moved to a shadehouse for 4 weeks before being moved into full sun for the rest of the growing season. (Wick)
Length of Active Growth Phase:	16 weeks (Wick)
Hardening Phase	Reduce irrigation in September and October, and leach plants with clear water once before winterization. (Wick)
Length of Hardening Phase:	5 weeks (Wick)
Harvesting, Storage and Shipping (of seedlings):	The total time to harvest is 16 months, with a harvest date in September. Ideal storage conditions would be overwintering in an outdoor nursery under insulation. (Wick)
Length of Storage	5 months (Wick)
Guidelines for Outplanting / Performance on Typical Sites	Recommended outplanting date would be in either spring or fall, with an outplanting survival rate after 5 years of 78%. (Wick)
Other Comments	When collected, seeds are oval shaped and dark brown proving maturity. Removal of the thin, whitish coating is required prior to stratification. Seed longevity is a minimum of 10 years. (Wick)
<b>INFORMATION SOURCES</b>	
References:	<p>Kruckeberg, Arthur R. <u>Gardening with native plants of the Pacific Northwest an illustrated guide</u>. Seattle: University of Washington P, 1982.</p> <p>“<i>Paxistima myrsinites</i>”. <u>Plants Database</u>. USDA Natural Resource Conservation Service. University of Washington, Seattle. 1 June 2009  <a href="http://www.plants.usda.gov/java/nameSearch?keywordquery=paxistima+myrsinites&amp;mode=sciname&amp;submit.x=0&amp;submit.y=0">http://www.plants.usda.gov/java/nameSearch?keywordquery=paxistima+myrsinites&amp;mode=sciname&amp;submit.x=0&amp;submit.y=0</a></p>

	<p>Robson, Kathleen A., Alice Richter, and Marianne Filbert. <u>Encyclopedia of Northwest Native Plants for Gardens and Landscapes</u>. Portland: Timber P, 2008.</p> <p>Spurr, Joy. <u>Wild shrubs finding and growing your own</u>. Seattle: Pacific Search P, 1978.</p> <p>Wick, Dale; Johnson, Kathy; Luna, Tara; Evans, Jeff; Hosokawa, Joy. 2008. Propagation protocol for vegetative production of container <i>Paxistima myrsinites</i> (Pursh) Raf. plants (800 ml containers); USDI NPS - Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: <a href="http://www.nativeplantnetwork.org">http://www.nativeplantnetwork.org</a> (accessed 1 June 2009). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.</p>
Other Sources Consulted	<p>Courtright, Gordon. <u>Trees and shrubs for temperate climates</u>. Portland, Or: Timber P, 1988.</p> <p>A., Grant, John. <u>Trees and shrubs for Pacific Northwest gardens</u>. Portland, Or: Timber P, 1990.</p> <p>Leigh, Michael. <u>Grow Your Own Native Landscape: A Guide to Identifying, Propagating, and Landscaping with Western Washington Native Plants</u>. Thurston County: Native Plant Salvage Project, 1999.</p> <p>United States. Surface Water Management Division. King County Department of Public Works. <u>Northwest Native Plants: Identification and Propagation for Revegetation and Restoration Projects</u>. Seattle: University of Washington P, 1994.</p>
Protocol Author	Tess Paganelli
Date Protocol Created or Updated (MM/DD/YY):	June 3, 2009

## Plant Data Sheet

### Species

Oregon boxwood, *Paxistima myrsinites* (Pursh) Raf.



## Range

Occurs from British Columbia and Alberta south to Mexico and east through the Rocky Mountains. (FEIS database)

## Climate, elevation

Oregon boxwood is a cool-season, evergreen shrub that grows at highly variable elevations from sea level to subalpine regions. Elevations range from 1200 m (3950 ft) to 3353 m (11000 ft). (FEIS database)

### Local occurrence

Oregon boxwood is a dominant shrub in many forested and shrubland community types throughout western North America. Locally, it occurs in coniferous forests, rocky openings or on dry mountain slopes from low to mid elevations. (Pojar and MacKinnon 1994)

## Habitat preferences

Very wide tolerance for environmental conditions: grows in sun or shade; grows from sea-level to subalpine; and grows in dry or moist soils.

## **Plant strategy type/successional stage**

Oregon boxwood can be a colonizer or increase cover after disturbances by root sprouting. It is generally considered to be a climax, dominant shrub in most vegetation types in which it occurs and is an indicator species of dry to moist, cool sites with well-drained soils. (FEIS database)

## **Associated species**

Some associates of Oregon boxwood include Engelmann spruce (*Picea engelmannii*), Douglas-fir (*Pseudotsuga menziesii*), subalpine fir (*Abies lasiocarpa*), white fir (*A. concolor*), red fir (*A. magnifica*), hemlock (*Tsuga* spp.), western redcedar (*Thuja plicata*), lodgepole pine (*Pinus contorta*), Gambel oak (*Quercus gambelii*), golden chinquapin (*Chrysolepis chrysophylla*), Port-Orford-cedar (*Chamaecyparis lawsoniana*), quaking aspen (*Populus tremuloides*), Rocky Mountain maple (*Acer glabrum*), mountain snowberry (*Symphoricarpos oreophilus*), bunchberry dogwood (*Cornus canadensis*), huckleberry (*Vaccinium* spp.), mallow ninebark (*Physocarpus malvaceus*), lupine (*Lupinus* spp.), mountain sweetroot (*Osmorhiza chilensis*), queencup beadlily (*Clintonia uniflora*), heartleaf arnica (*Arnica cordifolia*), columbine (*Aquilegia* spp.) groundsel (*Senecio* spp.), meadowrue (*Thalictrum* spp.), and pinegrass (*Calamagrostis rubescens*). (FEIS database)

## **May be collected as:**

Can be propagated from seeds or vegetatively by cuttings or layering. (FEIS database; Wick, et al. 2001)

## **Collection restrictions or guidelines**

Fruiting period is June through September. Softwood cuttings can be taken in the spring when juvenile growth is becoming slightly rigid (the timing will vary depending on elevation and seasonal variation). (FEIS database)

## **Seed germination**

Seed dormancy can be broken by a period of after-ripening or by a period of cool, moist stratification for several months. (Wick, et al. 2001)

### **Seed life**

Up to 10 years. (Wick, et al. 2001)

## **Recommended seed storage conditions**

Cool, moisture controlled storage conditions.

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

Seeds can be successfully germinated and grown in containers for outplanting. Softwood cuttings are also very successful. Wick, et al. (2001) used soilless rooting media, 2000-3000 ppm IBA rooting hormone and supplied bottom heat and top misting during rooting.

Soil or medium requirements (inoculum necessary?)

For cuttings, one study used peat, perlite and vermiculite for rooting after an application of rooting hormone. (Wick, et al. 2001)

In the wild, Oregon boxwood occurs on variable soils from well-drained, shallow, gravelly soils, to clay and silt loams, and cobbly clay. (FEIS database)

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

Container grown cuttings or seedlings are most successful for restoration plantings. Transplants can be installed in spring or fall. (Wick, et al. 2001)

## **Recommended planting density**



3' to 5' centers.

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

Water regularly at least during the summer following installation. On sunny or very dry sites, water regularly for 2 growing seasons following installation.

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

**Oregon boxwood is a low growing shrub, reaching 0.3-1 m (1-3 feet) at maturity. Continual lateral vegetative spreading is common.**

## **Sources cited**

FEIS database: Accessed on 4/29/03,  
<http://www.fs.fed.us/database/feis/plants/shrub/paxmyr/>

Wick, Dale; Johnson, Kathy; Luna, Tara; Evans, Jeff; Hosokawa, Joy. 2001. Propagation protocol for vegetative production of container Paxistima myrsinites (Pursh) Raf. plants (800 ml containers); Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org>

(accessed 29 April 2003). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

Data compiled by (student name and date): Anne Andreu