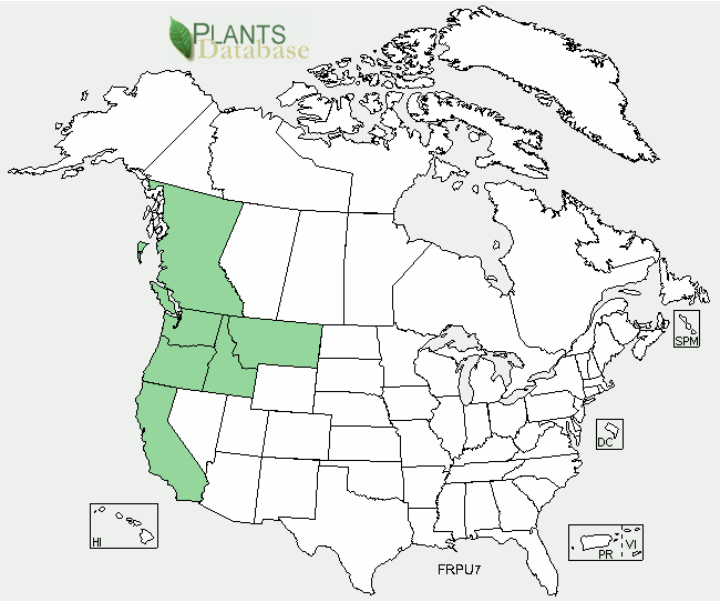
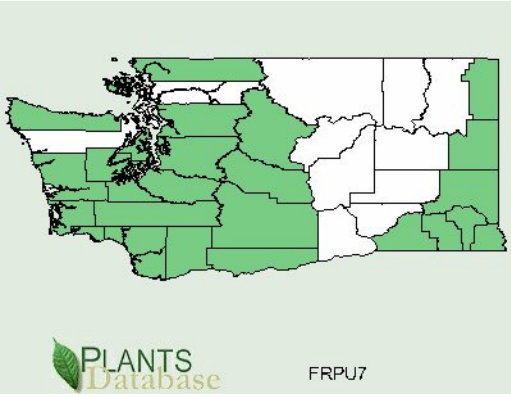
Plant Propagation Protocol for Frangula purshiana

ESRM 412 – Native Plant Production





Source: USDA

TAXONOMY	
Family Names	
Family Scientific Name:	Rhamnaceae
Family Common Name:	Buckthorn family
Scientific Names	
Genus:	*Frangula Mill.*
Species:	*Frangula purshiana*
Species Authority:	(DC.) Cooper
Variety:	*Frangula (Rhamnus) purshiana* var. “arbucula” (Kruckeberg)
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym(s)	RHPU *Rhamnus purshiana* DC.
Common Name(s):	Cascara buckthorn, Pursh’s buckthorn, cascara sagrada, bearberry, chittam bark, coffee-tree
Species Code	FRPU7
GENERAL INFORMATION	
Geographical range	**USA:** CA, ID, MT, OR, WA **CAN:** BC
Ecological distribution	This species is largely found in forested mountains at low elevations and in moist canyons, swamps, and bottomlands, often favoring southern exposure in these conditions. (Habeck), (Pojar, Mackinnon) *Frangula purshiana* has also been found in prairie communities,

	and can be found growing in river floodplains. (Habeck) It tolerates wet to dry soils, and is very tolerant of shady conditions. (Habeck), (Pojar, Mackinnon)
Climate and elevation range	Most commonly found at low to middle elevations, particularly on low mountain slopes. (Pojar, Mackinnon) (Habeck)
Local habitat and abundance; may include commonly associated species	Most commonly occurring west of the Cascades, *Frangula purshiana* is found throughout western Washington, including the Olympic peninsula, and the Puget Sound region. (Pojar, Mackinnon) (Habeck) While widespread, this species is not abundant. Plant associations include red alder and vine maple; it is also associated with cedar, hemlock, white fir, and Douglas fir forests. (Pojar, Mackinnon), (Habeck)
Plant strategy type / successional stage	Commonly found as an understory plant in second growth forests, this species can be considered a long lived invader species, as well as a secondary colonizer. (Habeck) In fire ecology *Frangula purshiana* is considered a survivor species due to its ability to regenerate from the remaining root crown after fire damage. (Habeck)
Plant characteristics	Slow growing, deciduous, long lived shrub or tree growing up to 33 feet tall in shady conditions. West of the Cascades plants display a single trunk growth habit, reaching 20-35 feet tall. (Habeck), (USDA)
PROPAGATION DETAILS	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from):	Hardwood cuttings taken from Lane County OR. (Darris)
Propagation Goal	Plants
Propagation Method	Propagation by seed is recommended. (Darris) Vegetative methods: Cuttings and layering. Hardwood cuttings can be taken in September and October, (Rose) and grown in a greenhouse or other controlled environment with marginal to poor results, 0-22% success rate (Darris), therefore softwood cuttings are recommended. (Toenyan) When layering, plants can be salvaged if less than 4 feet high. (Darris)
Product Type (plug), Bareroot	Container (plug), Bareroot (field grown) (Baskin), (USDA)
Stock Type:	1 gallon container
Time to Grow	Sources did not indicate time frame
Target Specifications	1 gallon container plant with vigorous foliage and a well developed root ball; or a bareroot plant with a well developed root system.
Propagule Collection	Collect seeds 2 weeks before they ripen (and are eaten

	by birds), from July to early September (Darris), when berries are purplish black. (Leigh) Take softwood cuttings in September and October (Rose).* Begin layering plants in early spring (Rose) (Darris).
Propagule Processing/Propagule Characteristics	This species yields 12,300 seeds per pound. (USDA) Seed longevity guidelines are not yet established, yet it is suspected that seeds may be kept for several years if kept properly, in sealed containers and at low temperatures (Youngblood). Specific temperature ranges, and guidelines for relative humidity levels for storage are not indicated. Softwood cuttings have extremely short longevity, and should be planted in propagation material as soon as possible after harvesting. (Rose)
Pre-Planting Propagule Treatments	Seeds should be cleaned by macerating them in water; fruit pulp and chaff may then be floated off. Cold moist stratification is required at 1-5 ˚C for 12-16 weeks. (Baskin), (Rose)* Germination occurs with an alternating 30D/20N C temperature cycle. (Baskin)
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Moistened soil is required for seeds and cuttings (Rose). Seeds are sown outdoors in the fall, preferably in a cold frame at a depth of as little as 3mm deep (Youngblood) and up to 2.5cm deep (Rose)*. Germination was found to be greater in light, (Baskin) suggesting that shallower seed depth may result in higher germination rates. Minimum planting density is 300 seeds per acre; maximum planting density is 700 seeds per acre.* (USDA) Sow seeds so they do not touch. (Leigh)
Establishment Phase	Sources did not indicate time frame
Length of Establishment Phase:	Long (USDA)
Active Growth Phase	Slow; through spring and summer (USDA)
Length of Active Growth Phase:	Long (USDA)
Hardening Phase	Sources did not indicate time frame
Length of Hardening Phase:	Sources did not indicate time frame. However, if sown in outdoor beds or cold frames, hardening phase could be expected to be relatively short.
Harvesting, Storage and Shipping	Sources did not indicate
Length of Storage (of seedlings,	Sources did not indicate time frame or conditions
Guidelines for Outplanting/ Performance on Typical Sites	Sources did not indicate guidelines for outplanting, or bloom time after outplanting. Expected growth in 20 years is 20 feet. (USDA)
Other Comments	This species is a National Wetland Indicator (USDA), and displays medium fire tolerance (Habeck).
INFORMATION SOURCES	
References	See list below
Other Sources	See list below
Protocol Author	Lisa Z. Haglund

Date Protocol Created or Updated	04/20/10

* Indicates information included from a previous version of this protocol; see Appendix a - pg. 9

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Appendix a:

Plant Data Sheet

Species (common name, Latin name)

Cascara buckthorn, *Rhamnus purshiana*

Range

From southern B.C. to western Montana and down to central California (Rose)

Climate, elevation

Generally a moist –site indicator, 0 to 900m (Tirmenstein) (Rose)

Local occurrence (where, how common)

Southern Puget Sound region down to southern Washington (Pojar)

Habitat preferences

Canyons, bottomlands, and lower mountain slopes, Prefers moist, well drained soils and quite tolerant of shade (Rose) (Leigh)

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

Long lived invader species (Tirmenstein)

Associated species

Abies concolor, Tsuga heteophylla, Pseudotsuga menziesii, Acer spp., *Gultheria shallon, Berberis* spp., *Rubus nivalis* (Tirmenstein)

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

Seed and vegetative (Rose)

Collection restrictions or guidelines

Fruit ripens from July through September. Collect fruit two weeks before it fully ripens, Separate seed by macerating with water and floating off pulp. Hardwood cuttings can be taken in September and October (Rose)

Seed germination (needs dormancy breaking?)

Cold stratify at 1-5 ˚C for 90-115 days if planted in spring (Rose)

Recommended seed storage conditions

Store in sealed containers at 5˚C; longevity unknown (Rose)

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

Sow seed outdoors in fall; layering can be done in the early spring (Rose)

Soil or medium requirements (inoculum necessary?)

Moist soil (Tirmenstein)

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

Nursery grown seedlings work best. Seedlings under four feet tall may be salvaged (Leigh)

Recommended planting density

Sow 2.5 cm deep with shading. Minimum density per acre=300; maximum density per acre=700 (Rose) (Vegspec)

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

Plant in full shade and in moist soil conditions; supplemental watering may be required (Tirmenstein)

Normal rate of growth or spread; lifespan

Slow rate of growth, mature height=35 ft (Vegspec)

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