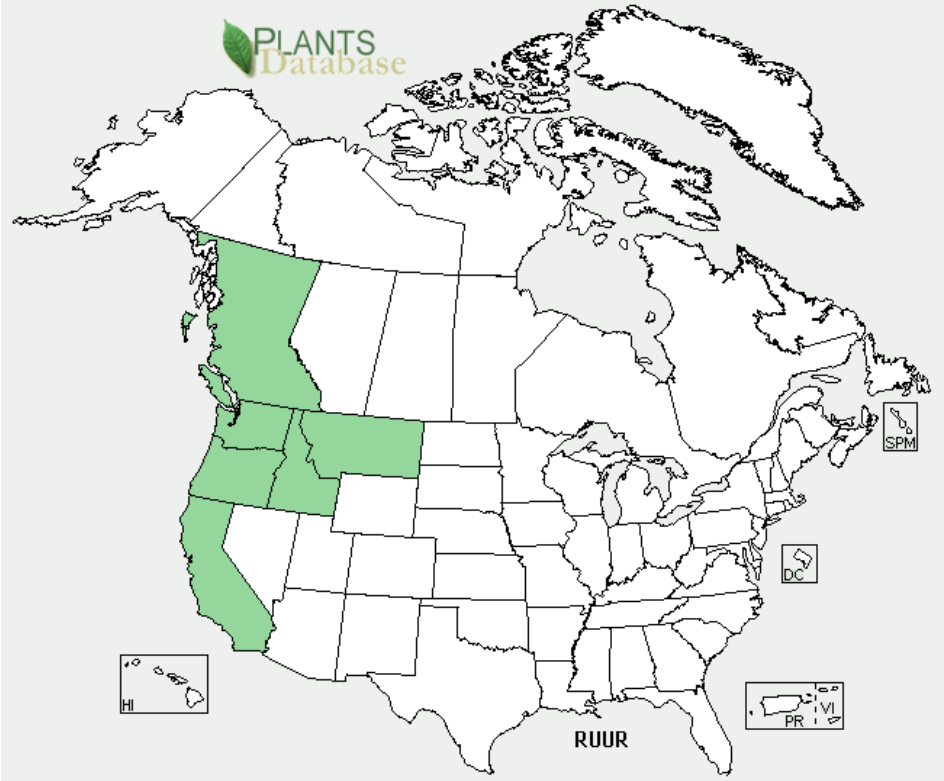
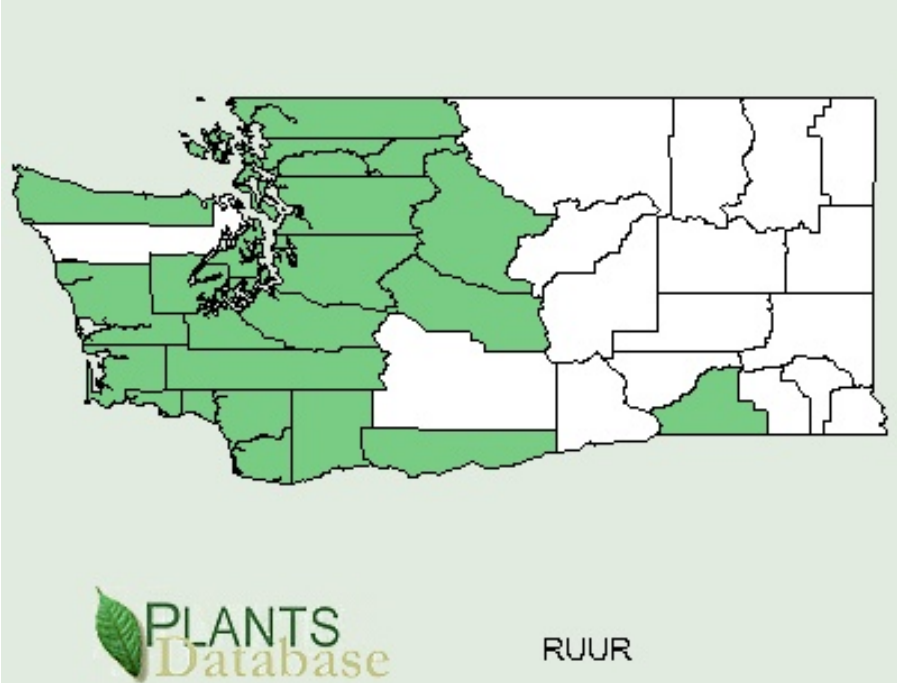
Plant Propagation Protocol for *[Rubus ursinus]*
ESRM 412 – Native Plant Production

North America



Washington State



TAXONOMY	
Family Names	
Family Scientific Name:	Rosaceae
Family Common Name:	Rose Family
Scientific Names	
Genus:	*Rubus*
Species:	*ursinus*
Species Authority:	Cham. & Schltdl.
Variety:	*sirbenus* (L.H. Bailey) J.T. Howell *ursinus*
Sub-species:	1. *macropetalus* 2. *ursinus*
Cultivar:	
Authority for Variety/Sub-species:	1. (Douglas ex Hook.) Roy L. Taylor & MacBryde 2. Cham. & Schltdl.
Common Synonym(s) (include full scientific names (e.g., *Elymus glaucus* Buckley), including variety or subspecies information)	Subspecies *Rubus ursinus* Cham. & Schltdl. ssp. *macropetalus* (Douglas ex Hook.) Roy L. Taylor & MacBryde – California blackberry Subspecies *Rubus ursinus* Cham. & Schltdl. ssp. *ursinus* – California blackberry Variety *Rubus ursinus* Cham. & Schltdl. ssp. *ursinus* var. *sirbenus* (L.H. Bailey) J.T. Howell – California blackberry Variety Rubus ursinus Cham. & Schltdl. ssp. *ursinus* var. *ursinus* – California blackberry
Common Name(s):	California Blackberry, Dewberry, Trailing Blackberry (11).
Species Code (as per USDA Plants database):	RUUR
The above information was provide from the USDA website (1).	

GENERAL INFORMATION	
Geographical range (distribution maps for North America and Washington state)	USA: CA, ID, MT, OR, WA. CANADA: BC. It is particularly common from the Cascades to the Pacific Coast extending through southern California into Mexico. (7) R. ursinus is found from Oregon to Lower California, in waste places, fields, and canyon (2)
Ecological distribution (ecosystems it occurs in, etc):	Common and often abundant on disturbed sites, thickets and dry, open forest at low to middle elevations; behaves as a weed in some suburban and rural areas. (5)
Climate and elevation range	Sea level along the Pacific Coast to middle elevations farther inland. (7) Below 3,000 feet elevation. (2)
Local habitat and abundance; may include commonly associated species	Wide spread throughout the Puget Sound basin in all vegetative communities. (9, 11)
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	Trailing blackberry is a vigorous competitor It is particularly well represented following catastrophic disturbance in Douglas-fir forests of the Pacific Northwest, and readily established on mudflows and other harsh microsites following the eruption of Mount St. Helens. Suppressed by canopy closure. (15)
Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc)	Subshrub, Perennial. (1) Trailing to 5 m or more long armed with slender, curved, unflattened prickles; floral canes erect, up to 50 cm tall (7,6) Deciduous, with 2 leaflets 3-7cm long, dark green toothed. (7,4) White or pink flower(up to 4 cm across, flat topped) (7,4)

PROPAGATION DETAILS The following is a vegetative propagation. (2)	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from):	Tennessee Valley, California (2)
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plant (2)
Propagation Method (Options: Seed or Vegetative):	Vegetative
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Container (plug)
Stock Type:	Deepot 40
Time to Grow (from seeding until plants are ready to be outplanted):	

Target Specifications (size or characteristics of target plants to be produced):	Height: N/A Caliper: N/A Root System: Firm plug in container.
Propagule Collection (how, when, etc):	Hardwood cuttings are collected between and December 15th and January 31st. Cutting diameter is 1/8 inch. Cutting length is 15 inches including at least 15 nodes.
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	Cuttings are kept moist and cool prior to treatment. 327000 seeds per pound1
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	Cuttings are dipped in a mild bleach solution for 30 seconds. Cuttings are re cut to 5 inch lengths of 4 nodes each. Cuttings are treated with Hormex (3000 ppm IBA) rooting powder and struck in flats containing 3:1 perlite/vermiculite. 100 Cuttings are struck 3 inches deep per flat. % Rooting: 70%
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Fully Controlled Greenhouse. Flats are kept in the greenhouse and watered with an automatic mist system until roots are fully developed. Flats are placed on a heated bench.

Establishment Phase (from seeding to germination):	Planting Method: Transplanting Cuttings. Time to Transplant: 70 days. Cuttings are transplanted to individual containers 2"x10" tubes (Deepot 40) containing standard potting mix of peat moss, fir bark, perlite, and sand. Cuttings are placed in the shadehouse. Transplant Survival averages 70%.
Length of Establishment Phase:	(N/A)
Active Growth Phase (from germination until plants are no longer actively growing):	(N/A)
Length of Active Growth Phase:	(N/A)
Hardening Phase (from end of active growth phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter):	(N/A)
Length of Hardening Phase:	(N/A)
Harvesting, Storage and Shipping (of seedlings):	(N/A)

Length of Storage (of seedlings, between nursery and outplanting):	(N/A)
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	(N/A)
Other Comments (including collection restrictions or guidelines, if available):	(N/A)
PROPAGATION DETAILS **The following is a seed propagation by Betty Young. (16)**	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from):	Marin County, California

Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plants
Propagation Method (Options: Seed or Vegetative):	Seed
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Container (plug)
Stock Type:	Treeband #5
Time to Grow (from seeding until plants are ready to be outplanted):	
Target Specifications (size or characteristics of target plants to be produced):	Height: N/A Caliper: N/A Root System: Firm plug in container.
Propagule Collection (how, when, etc):	Seeds are collected between June 15th and August 15th. Mature fruits are black. Seed is tan at maturity.

Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	327000 seeds per pound1
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	Seed Cleaning: Mash berries through a sieve; strain to remove pulp and wash seeds and dry. Storage Conditions: Seeds are kept dry and stored in a refrigerator. Soak seeds overnight in fresh water. Stratify in peat moss in the refrigerator for 3 months.
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Fully Controlled Greenhouse. Sowing Method: Transplanting Germinants. 6 grams of seeds are sown per flat containing Sunshine Mix #4 Aggregate Plus (peat moss, perlite, major and minor nutrients, gypsum, and dolomitic lime). Seeds are mixed with media to sow and are surface sown. Flats are watered in with an automatic mist and irrigation system. Seeds are sown on August 1st. % Germination: 50%
Establishment Phase (from seeding to germination):	Seeds germinate 14 days after sowing. Seedlings are transplanted 14 days after germination to individual containers 2"x2"x5" tubes (Treeband #5) containing standard potting mix of peat moss, fir bark, perlite, and sand. Transplant Survival averages 75%.
Length of Establishment Phase:	28 days.
Active Growth Phase (from germination until plants are no longer actively growing):	Keep seedlings in the greenhouse to prevent scab. Fertilize with Nutricote NPK (13-13-13) 3 months after transplanting. Prune back to 3 nodes when shoot height exceeds container height.
Length of Active Growth Phase:	N/A

Hardening Phase (from end of active growth phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter):	
Length of Hardening Phase:	
Harvesting, Storage and Shipping (of seedlings):	
Length of Storage (of seedlings, between nursery and outplanting):	
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	
Other Comments (including collection restrictions or guidelines, if available):	

INFORMATION SOURCES	
References (full citations):	1. “Conservation Plant Characteristics." USDA. 16 Apr 2009 <http://plants.usda.gov/java/charProfile?symbol=RUUR>. 2. "Protocol Information." Golden Gates National Park. 16 Apr 2009 <http://www.nativeplantnetwork.org/network/view.asp?protocol_id=721>. 3. KOZLOFF, E. N. (2005). Plants of western Oregon, Washington & British Columbia. Portland, Or, Timber Press. 4. LEIGH, M. (1999). Grow your own native landscape: a guide to identifying, propagating & landscaping with western Washington native plants. Olympia, Wash, Native Plant Salvage Project, Washington State University Cooperative Extension, Thurston County. 5. MACKINNON, A., POJAR, J., & ALABACK, P. B. (2004). Plants of the Pacific Northwest coast: Washington, Oregon, British Columbia & Alaska. Vancouver, Lone Pine Pub. Columbia & Alaska. Redmond, Wash, Lone Pine Pub. 6. ROBSON, K. A., RICHTER, A., & FILBERT, M. (2008). Encyclopedia of northwest native plants for gardens and landscapes. Portland, Or, Timber Press. 7. ROSE, R., CHACHULSKI, C. E. C., & HAASE, D. L. (1998). Propagation of Pacific Northwest native plants. Corvallis, Oregon State University Press. 8. “Trailing Blackberry." Native Plant Guide. King County. 16 Apr 2009 <http://green.kingcounty.gov/GoNative/Plant.aspx?Act=view&PlantID=77&PhotoID=426>. 9. Hitchcock, C. Leo and Cronquist, Arthur. Flora of the Pacific Northwest. 1998. University of Washington Press, Seattle and London. 10. Leigh, Michael. Grow Your Own Native Landscape. 1999. Washington State University Cooperative Extension – Thurston County, WA. 11. Pojar, Jim and McKinnon, Andy, eds. Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia and Alaska. 1994.

	Lone Pine Press, British Columbia. 12. Potash, Laura and Aubry, Carol. Mt. Baker-Snoqualmie National Forest Native Plant Notebook. 1997. North Cascades Institute. Sedro-Woolley WA. 13. Rose, Robin, Chachulski, Caryn and Haase, Diane. Propagation of Pacific Northwest Native Plants. 2000. Oregon State University Press, Corvallis. 14. USDA, NRCS. 2002. The PLANTS Database, Version 3.5 (http://plants.usda.gov) National Plant Database Center, Baton Rouge, LA 70874-4490 USA. 15. USDA Forest Service Fire Effects Information System (FEIS) database. http://www.fs.fed.us/database/feis/plants/ 16. "Protocol Information." Golden Gate National Parks. 5 Jun 2009 <http://www.nativeplantnetwork.org/network/view.asp?protocol_id=688>.
Other Sources Consulted (but that contained no pertinent information) (full citations):	
Protocol Author (First and last name):	
Date Protocol Created or Updated (MM/DD/YY):	

2003 Protocol:
Species

Trailing blackberry, *Rubus ursinus* Cham. & Schlect. spp. *macropetalus* (Dougl. ex. Hook) Taylor & Mac Bride (Rosaceae)

Trailing blackberry is a low-growing, trailing or climbing, native evergreen shrub growing to 5-6 m in length with densely prickled stems that are greenish-glaucous when young but turn red-brown at maturity. Leaves alternate, pinnately compound with 3 (occasionally 5) doubly serrate leaflets 3 – 7 cm long. Flowers dioecious, white, up to 4 cm wide and borne in clusters of 2 – 15 flowers on branch ends, fruits red when immature, shiny black when ripe, 2.5 cm long aggregate of drupelets. (1, 3, 7)

NB: The stems of most blackberries are biennial. Sterile first-year stems, known as primocanes, develop from buds at or below the ground surface and produce only leaves. Lateral branches, or floricanes, develop in the axils of the primocanes during the second year and bear both leaves and flowers. (7)

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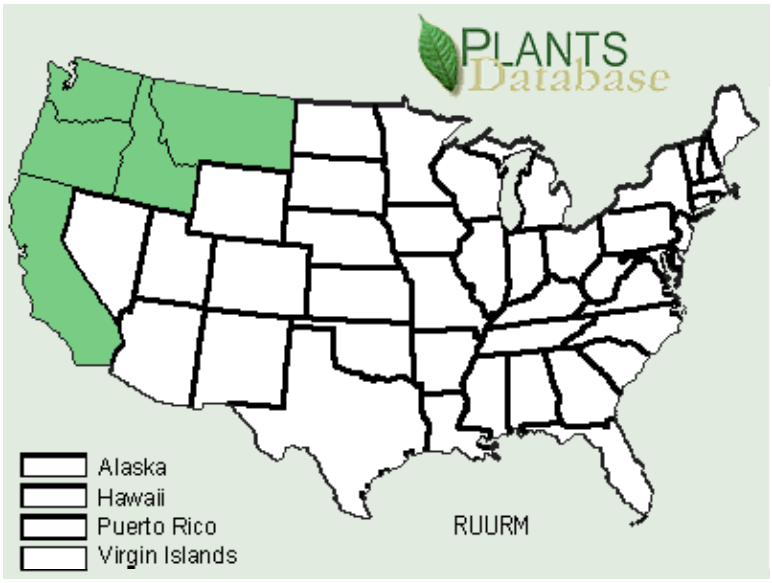
Range

Trailing blackberry grows from British Columbia to northern California and eastward to central Idaho. It is particularly common from the Cascades to the Pacific Coast extending through southern California into Mexico. The subspecies *macropetalus* occurs from British Columbia and Idaho southward into northern California. (1, 3, 7)



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Climate, elevation

Sea level to mid elevations in coastal maritime climates and from low elevations to mid elevations in interior continental climates (1, 3, 7)

Local occurrence

Wide spread throughout the Puget Sound basin in all vegetative communities. (1, 3)

Habitat preferences

The trailing blackberry occurs across a wide range of sites from warm, open areas, dense woodlands, prairies, clearings, waste places, and canyons. It can often be invasive in disturbed urban and suburban areas. Trailing blackberry frequently assumes prominence on sites which have been burned or logged and on river terraces or gravel bars dominated by red alder (*Alnus rubra*). (7)

Trailing blackberry and *Rubus* spp. in general grow well on a variety of barren, infertile soils tolerating a wide range of soil texture and pH but requiring adequate soil moisture for good growth. Trailing blackberry appears to be tolerant of periodic flooding by brackish or fresh water. (7)

Plant strategy type/successional stage

Trailing blackberry is a vigorous competitor which commonly invades disturbed sites created by logging, fire, or other types of disturbance. It is particularly well represented following catastrophic disturbance in Douglas-fir forests of the Pacific Northwest, and readily established on mudflows and other harsh microsites following the eruption of Mount St. Helens. Trailing blackberry typically increases rapidly on disturbed sites, persisting until suppressed by canopy closure. It occurs in stands of all ages but reaches greatest abundance in early seral communities. Although primarily an early seral species, trailing blackberry can sometimes persist in low densities as a residual species in mature forest communities. Trailing blackberry was observed in initial post-disturbance, early immature, late immature, mature, and old growth stands in coniferous forests of southwestern British Columbia. This shrub increases rapidly and can dominate the herbaceous layer as early as 2 to 5 years after disturbance. In many western hemlock-western red cedar or Douglas-fir forests of the Pacific Northwest, this shrub remains dominant for at least 20 years after disturbance. Trailing blackberry is present in red alder communities, which on certain upland sites, appear to represent early seral stages of western hemlock forests. Where these communities occur along streambanks, periodic flooding can maintain species such as salmonberry and red alder in long-lived, disclimax situations. Trailing blackberry is considered a major dominant in early successional stages of these communities. (7)

Associated species

Trailing blackberry grows as an understory species with Pacific silver fir (*Abies amabilis*), Sitka spruce (*Picea sitchensis*), Douglas-fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), bigleaf maple (*Acer macrophyllum*), and red alder (*Alnus rubra*). Trailing blackberry also occurs in many West Coast riparian communities dominated by willows (*Salix* spp.) or cottonwoods (*Populus* spp.) as a codominant with salmonberry (*Rubus spectabilis*) and thimbleberry (*Rubus parviflorus*). Common understory associates include Oregon oxalis (*Oxalis oregana*), sweetscented bedstraw (*Galium triflorum*), elderberry (*Sambucus* spp.), and other blackberries, raspberries, or brambles (*Rubus* spp.). (7)

May be collected as:

Vegetative: Rooted root crown suckers, rooted branch nodes and semi-hardwood cuttings may all be collected from trailing blackberry for propagation (4, 7)

Seed: (~ 9 x 10^5 seeds/kg) fruits ripe when black and juicy, July through September. Macerate fruit in water with a blender. Add extra water to float off pulp and nonviable seeds. Several changes of water will yield cleaner seed. (4, 7)

Seedbank: The seeds of most blackberries remain viable for at least several years after being buried in the soil or duff although the precise length of viability has not been determined for the trailing blackberry. (7)

Collection restrictions or guidelines

Not cited in literature however typical conservative collection methods for genetic integrity and minimal ecosystem impact apply.

Seed germination

Trailing blackberry seeds have a hard, impermeable coat and dormant embryo; consequently, germination is often slow. Most blackberries require, as a minimum, warm stratification at 86 to 68° F (30 to 20°C) for 90 days, followed by cold stratification at 36 to 41° F (2 to 5° C) for an additional 90 days. These conditions are frequently encountered naturally as seeds mature in summer and remain in the soil throughout the cold winter months. Laboratory tests indicate that exposure to sulfuric acid solutions or sodium hyperchlorite prior to cold stratification can enhance germination. Sow seed that has been stratified and scarified in the spring can cover with 3 – 5 mm of soil. (4, 7)

Seed life

Not cited in literature however the persistence of *Rubus* spp. in the soil seedbank for several years might indicate long seed life under controlled conditions.

Recommended seed storage conditions

Not cited in literature however typical low temp, low humidity conditions may apply.

Propagation recommendations

For seed see germination recommendations above. For vegetative propagation rooted semi-hardwood cuttings and stem node pieces should be transplanted as soon as possible to avoid root rot. Otherwise standard vegetative propagation techniques apply. (4, 5, 7)

Soil or medium requirements

None cited in literature. Standard rooting and germination medium probably adequate.

Installation form

Not specifically noted in literature. Well rooted one year old nursery plants or field collected salvage plants or well-rooted branch node sprouts most likely will be successful. Direct seeding in the summer may also work.

Recommended planting density

Suggested planting densities range from 163 to 1100/ha. 50% survival has been reported for large plantings. Trailing blackberry has been promoted as a site stabilizing species and in this case higher planting densities may be preferable. Trailing blackberry is also a vigorous grower and competitor and therefore should probably be planted in very low densities for diversity enhancement. (6, 7)

Care requirements after installed

Not cited in literature but watering transplants during droughty periods is recommended.

Normal rate of growth or spread; lifespan

Trailing blackberry has a rapid growth rate and relatively short life span of unspecified length. (6)

Sources cited

(1) Hitchcock, C. Leo and Cronquist, Arthur. Flora of the Pacific Northwest. 1998. University of Washington Press, Seattle and London.

(2) Leigh, Michael. Grow Your Own Native Landscape. 1999. Washington State University Cooperative Extension – Thurston County, WA.

(3) Pojar, Jim and McKinnon, Andy, eds. Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia and Alaska. 1994. Lone Pine Press, British Columbia.

(4) Potash, Laura and Aubry, Carol. Mt. Baker-Snoqualmie National Forest Native Plant Notebook. 1997. North Cascades Institute. Sedro-Woolley WA.

(5) Rose, Robin, Chachulski, Caryn and Haase, Diane. Propagation of Pacific Northwest Native Plants. 2000. Oregon State University Press, Corvallis.

(6) USDA, NRCS. 2002. The PLANTS Database, Version 3.5 (http://plants.usda.gov) National Plant Database Center, Baton Rouge, LA 70874-4490 USA.

(7) USDA Forest Service Fire Effects Information System (FEIS) database. http://www.fs.fed.us/database/feis/plants/

Data compiled by

Rodney Pond 05.24.03

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