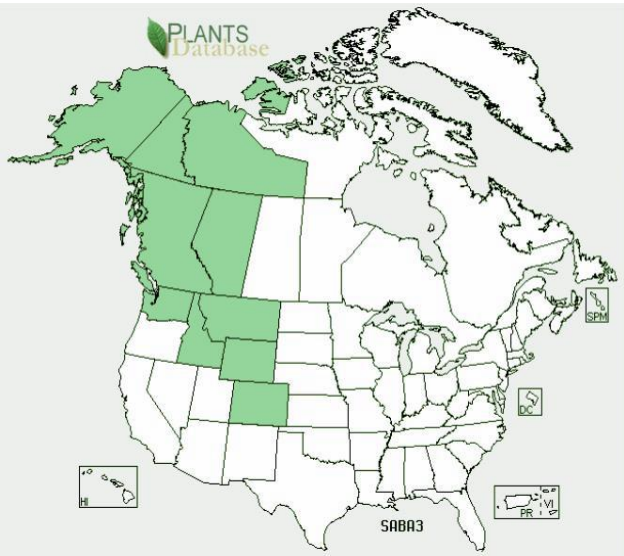
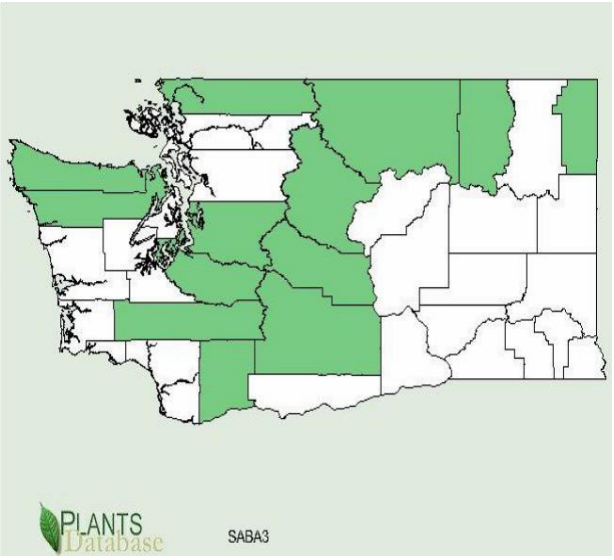
Plant Propagation Protocol for *Salix barclayi*
ESRM 412 – Native Plant Production
http://courses.washington.edu/esrm412/protocols/SABA3.pdf

North America Distribution



Washington State Distribution



Source: USDA PLANTS Database

TAXONOMY	
Family Names	
Scientific Name	Salicaceae
Common Name	Willow Family
Scientific Names	
Genus:	*Salix*
Species:	*barclayi*
Species Authority	Andersson
Varieties:	
Sub-species:	
Cultivar:	
Common Synonyms	*Salix barclayi* Andersson var. *conjuncta* (Bebb) C.R. Ball ex C.K. Schneid. *Salix barclayi* Andersson var. *angustifolia* (Andersson) Andersson ex C.K. Schneid. *Salix regelii* Andersson *Salix hoyeriana* Dieck *Salix conjuncta* Bebb *Salix pyrolifolia* Andersson var. *hoyeriana* (Dieck) Dippel
Common Name(s)	Barclay's Willow, Barclay's Mountain Willow, Mountain Willow
Species Code (as per USDA Plants database)	SABA3

GENERAL INFORMATION	
Geographical range	From northern southeast Alaska west to Prince William Sound and south to Mt. Adams, Washington. [1] See maps above for distribution in North America and Washington State.
Ecological distribution	*Salix barclayi* is found in wetlands, high elevation thickets, gravelly benches, lakesides, fresh alluvial and morainal soils, riversides and open forests; scattered at low to alpine elevations.[1]
Climate and elevation range	From low to high altitudes in the mountains (at around 2000m) usually forming thickets by lakes and streams [2,3] Found in the Arctic and Hudsonian zone within Alaska. [4]
Local habitat and abundance	Very similar climate, appearance, ecological distribution and geographical range as *Salix commutata*. *S. commutata* and *S. barclayi* hybrids are common in the wild. [1] Often grows with *S. commutata.* [2]
Plant strategy type / successional stage	Species tends to be early successional. Occasionally develops in moderately acidic moist soils but cannot survive strongly acidic, alkaline or saline soils. [5]
Plant characteristics	An erect shrub, 1-3 meters high, that tends to be slender. [3] The most common bush willow in Alaska. Deciduous, oblong-obovate toothed leaves with pubescence below, and ovate toothed stipules. [6] Willows are dioecious plants with apetalous, wind pollinated flowers known as 'catkins'.[5] Catkins come out with the leaves on leafy peduncles. [2] Most distinguishable features are its yellowish-green wooly twigs. Often found with rounded galls due to insect damage. [1]
PROPAGATION DETAILS	
Propagation Goal	Plants and Cuttings
Propagation Method	Vegetative. Hardwood or softwood cuttings. Willows root so readily by either stem or root cuttings that there is little need to use other methods. [7]
Product type	Cuttings
Stock Type	Wild
Time to Grow	Can be directly rooted as live stakes in the field, with no mist, during the spring or fall. Hardwood cuttings planted in early spring root promptly. [7,8]
Target Specifications	4-30 inches [7]
Propagule Collection Instructions	Can take cuttings any time of year. Softwoods, under mist, root in high percentage. Hardwood cuttings can be collected and prepared for insertion from November to March at any time, after leaf fall, provided they are well ripened. [7,9]

Propagule Processing/Propagule Characteristics	Cuttings 4-10" and ½"-1" thick with at least 2 nodes. Apply basal cut just below the node; mallet, heel and straight are the most common cutting techniques used. [7,9]
Pre-Planting Propagule Treatments	If storage is needed, cuttings should be wrapped in moist burlap or plastic bags, with moist sawdust, peat or newspaper and stored at 2° C. [10] Due to willows having a rooting percentage of 90-100%, rooting hormones are not needed. Applied Ethylene at 10mg/liter (ppm) causes root formation on stem and leaf tissues as well as development of pre-existing latent roots on the stem. Soaking cuttings in hot or cold water was found to stimulate root development. If gibberellic acid is applied after root primordial is initiated it will inhibit adventitious bud and root formation. Application of auxin can help with root initiation because it regulates ethylene.[7]
Growing Area Preparation / Annual Practices for Perennial Crops	Can be live staked directly in growing area. Will do best in well-prepared beds that were lightly packed with a roller. [11] As stated earlier it will not do well in highly acidic, alkaline or saline soils. Softwood cuttings are very successful in a peat: perlite medium. [8]
Establishment Phase Details	Cuttings, 4-10" long and ½"-1" thick are initially stuck in the field close to each other during spring or fall. [9]
Length of Establishment Phase	1 year [9]
Active Growth Phase	Shrub will continue to grow throughout its life. Growth will substantially slow down once it reaches 3 meters.
Length of Storage	Can be outplanted immediately
Guidelines for Outplanting / Performance on Typical Sites	Does best in high elevation and moist moderately fertile soil. With age *Salix barclayi* will develop a prominent white flower bloom.[1]
Other Comments	First collected on Kadiak Island in Alaska in 1839 by the British botanical collector George Barclay. [6] One of the easiest, least expensive plants to propagate. In Willows, if the stem remains on the tree, latent root primordial can remain dormant, embedded in the inner bark for years.[7] Can have success propagating from seed but is not recommended due to the ease in which propagation is accomplished with cuttings. [8]
INFORMATION SOURCES	
Protocol Author	Michael Bradshaw
Date Protocol Created or Updated: April 21, 2014	

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[1] Pojar, Jim, A MacKinnon, and Paul B. Alaback. *Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia &Alaska*. Redmond, Wash: Lone Pine Pub, 1994. pp. 87 Print.

[2] Piper, Charles V, and R K. Beattie. *Flora of the Northwest Coast: Including the Area West of the Summit of the Cascade Mountains, from the Forty-Ninth Parallel South to the Calapooia Mountains on the South Border of Lane County, Oregon*. Lancaster, Pa: Press of the New era printing company, 1915. pp 116. Print.

[3] Ireland, Orlin L. *Plants of the Three Sisters Region, Oregon Cascade Range*. Eugene: Museum of Natural History, University of Oregon, 1968. Print.

[4] Schopmeyer, C S. *Seeds of Woody Plants in the United States*. Washington: Forest Service, U.S. Dept. of Agriculture, 1974. pp. 746-749 Print.

[5] Piper, Charles V. *Flora of the State of Washington*. Washington: Govt. Print. Off, 1906. pp 215. Print.

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[7] Hartmann, Hudson T, and Dale E. Kester. *Plant Propagation: Principles and Practices*. New Delhi: Prentice-Hall, 1975.Print.

[8] Robson, Kathleen A, Alice Richter, and Marianne Filbert. *Encyclopedia of Northwest Native Plants for Gardens and Landscapes*. Portland, Or: Timber Press, 2008. pp. 479-480. Print.

[9] Dirr, Michael, and Charles W. Heuser. *The Reference Manual of Woody Plant Propagation: From Seed to Tissue Culture : a Practical Working Guide to the Propagation of Over 1100 Species, Varieties, and Cultivars*. Athens, Ga: Varsity Press, 1987. pp.320-321. Print.

[10] Potash, Laura L, and Carol A. Aubry. *Native Plant Notebook: Mt. Baker-Snoqualmie National Forest*. Sedro-Woolley, WA: North Cascades Institute, 1997. Print.

[11] Schopmeyer, C S. *Seeds of Woody Plants in the United States*. Washington: Forest Service, U.S. Dept. of Agriculture, 1974. Print.

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