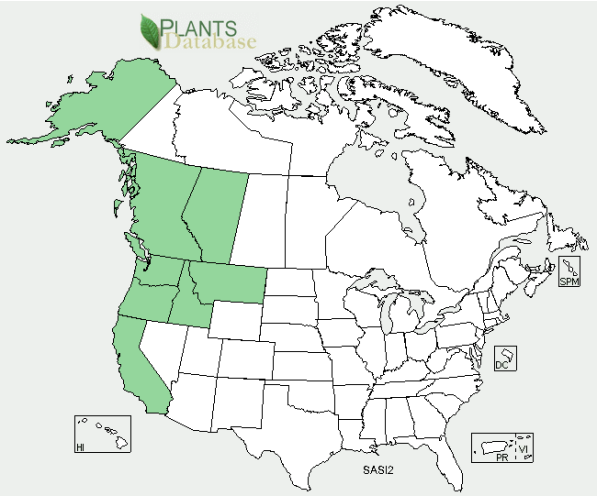
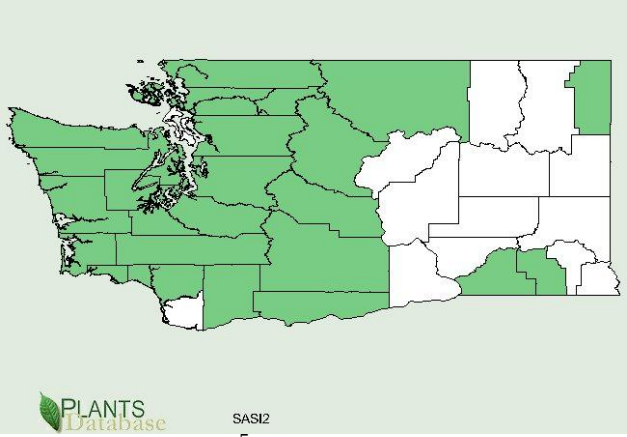
Plant Propagation Protocol for *Salix sitchensis*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/*SASIS2.pdf*

Distribution in North America



Distribution in WA State



Source: USDA PLANTS Database[5]

TAXONOMY	
Plant Family	
Scientific Name	Salicaceae
Common Name	Willow family
Species Scientific Name	
Scientific Name	*Salix sitchensis* Sanson ex Bong
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	*Salix sitchensis* Sanson ex Bong. var. *denudata* (Andersson) Andersson *Salix sitchensis Sanson* ex Bong. var. *parviflora* (Jeps.) Jeps. *Salix coulteri* Andersson *Salix cuneata* Nutt. *Salix sitchensis* Sanson ex Bong. var. *ralphiana* (Jeps.) Jeps. *Salix sitchensis* Sanson ex Bong. var. *congesta* (Andersson) Andersson[4]
Common Name(s)	Sitka willow, Satin willow, Silky willow[9] Coulter willow[11]
Species Code (as per USDA Plants database)	SASIS2
GENERAL INFORMATION	
Geographical range	**USA** (AK, CA, ID, MT, OR, WA), **CAN** (AB, BC)

	See above
Ecological distribution	Sitka willow is found on or near lake shores, wetland margins, forest edges, wet openings, and clearings.[9] Shade intolerant.[10]
Climate and elevation range	35-60 in of rain a year and at least -18°F.[10] 0-400 m elevation[2]
Local habitat and abundance	Redwood Forest, Mixed Evergreen Forest, wetland-riparian communities.[11] Common in the Pacific Northwest.[14]
Plant strategy type / successional stage	Early seral (successional) stages of stream bank and floodplain.[5]
Plant characteristics	Plumas Sitka willow is a medium to large shrub that grows to a height of 10 to 23 ft depending on the site. Mature shrubs that are well spaced and grown in full sun are typically multi-stemmed, open, and predominately upright in form. The leaves are smooth or slightly wavy along the margins, two to four times as long as they are wide, dull green above, and covered with dense, silvery hairs beneath. They are alternate and deciduous, falling by mid to late November.[1]
PROPAGATION DETAILS (USDA NRCS National Plant Data Center. *Sitka Willow Salix Sitchensis Sanson Ex Bong*. Rep. USDA, 03 June 2003. Web. 22 Apr. 2014.)	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Bareroot or container
Stock Type	
Time to Grow	
Target Specifications	6-30 ft tall[1]
Propagule Collection Instructions	Seeds ripen in late Spring, and are not dormant. Seeds must be collected as soon as the fruits ripen, as indicated by the capsule turning from green to yellow May- July.[7] Seeds should be surface sown as soon as they are ripe.[4] Seeds can be collected by leaving out a container to collect natural seed rain in the spring. The cavities are then weeded to one stem per cavity and grown and stored in the same manner as other nursery seedlings.[13]
Propagule Processing/Propagule Characteristics	Seeds are viable for a few days; maximum storage is 4-6 weeks, with more than 10 days being unadvisable.
Pre-Planting Propagule Treatments	Seeds are not dormant. Room temperature storage is acceptable, but not advisable. Seeds do not need to be cleaned. Prior to planting, competing vegetation should be minimized by localized scalping of the soil surface or spot treating with an approved herbicide. Apply herbicides according to label instructions and in areas

	where the contamination of surface water and wildlife are not threatened.[1]
Growing Area Preparation / Annual Practices for Perennial Crops	Density of 6 ft or more recommended for rooted plants.[8] Soil should be kept moist until seedlings are well established.[4]
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	
Length of Storage	About 16 months, as Autumn is the desired outplanting season
Guidelines for Outplanting / Performance on Typical Sites	Seedlings should be outplanted in Autumn, and will not flower until May.
Other Comments	Seeds must be collected as soon as the fruits ripen, as indicated by the capsule turning from green to yellow in late spring / early summer (May-July).[7] Seeds must be surface sown as soon as they are ripe.[4]
PROPAGATION DETAILS (USDA, and NRCS. "'Plumas' Sitka Willow." *Plant Materials Program.* USDA NRCS Corvallis Plant Materials Center, Corvallis, Oregon, 2013. Web. 22 Apr. 2014.)	
Ecotype	
Propagation Goal	Plants
Propagation Method	Cuttings
Product Type	Bareroot or container
Stock Type	
Time to Grow	
Target Specifications	
Propagule Collection Instructions	Cuttings as short as 6 inches with at least two nodes will root readily year round in moist potting media under greenhouse or outdoor conditions, but hardening off and winter dormant periods must be observed. Treatment with rooting hormone is unnecessary; *Salix sitchensis* has success rooting 90-100% of the time without hormones.[9] Fall and winter are the preferred seasons for harvesting and planting.
Propagule Processing/Propagule Characteristics	Use dormant stock such as unrooted hardwood cuttings, containerized rooted cuttings, or bareroot plants.
Pre-Planting Propagule Treatments	Prior to planting, competing vegetation should be minimized by localized scalping of the soil surface or spot treating with an approved herbicide. Apply herbicides according to label instructions and in areas

	where the contamination of surface water and wildlife are not threatened.[1]
Growing Area Preparation / Annual Practices for Perennial Crops	Density of 6 ft or more recommended for rooted plants.[8] Moist soil needed. Cuttings can be directly outplanted if desired. Sitka willow should be planted in the fall once the rainy season commences and the root zone is moist. Winter is the next best season in areas with a milder climate, followed by early spring. Use dormant stock such as unrooted hardwood cuttings, containerized rooted cuttings, or bareroot plants. For direct planting on revegetation sites, cuttings (slips, live stakes) should be 18 to 30 inches long and at least ½ inch in diameter. Make a pilot hole with a steel bar or water drill and insert or tap two thirds or more of the length of the cutting into the soil. However, at least two nodes (buds) should remain exposed above ground. Tamp the soil firmly around each slip to remove air pockets. Larger and longer material (such as live poles and live posts) can be used in places where competing vegetation is tall or planting depth must be increased to reach reliable moisture.
Establishment Phase Details	
Length of Establishment Phase	
Active Growth Phase	Rapid growth rate until height of 6-30 ft
Length of Active Growth Phase	
Hardening Phase	Cuttings are already able to withstand the Winter season (it is a preferred planting time) so hardening phase is not required to be completed by a specific time of year.
Length of Hardening Phase	
Harvesting, Storage and Shipping	
Length of Storage	Nursery not necessary.
Guidelines for Outplanting / Performance on Typical Sites	Plant into permanent position in Autumn.[12] For direct planting on revegetation sites, cuttings (slips, live stakes) should be 18 to 30 inches long and at least ½ inch in diameter.[1] Flowering occurs in May.[11] Requires moist soil but is often planted in riparian areas and requires little if any care. To maintain a view, you can cut them down by half their height without significant harm to the plants.[2]
Other Comments	Can be susceptible to certain insect pests such as aphids, scales, willow leaf gall sawfly, and poplar borers, as well as the leaf disease powdery mildew.
INFORMATION SOURCES	

References	See below
Protocol Author	Katherine Hartke
Date Protocol Updated	04/22/2014

References

[1]USDA, and NRCS. "'Plumas' Sitka Willow." *Plant Materials Program.* USDA NRCS Corvallis Plant Materials Center, Corvallis, Oregon, 2013. Web. 22 Apr. 2014.

[2]Sound Native Plants <http://www.soundnativeplants.com>

[3]Pojar, Jim and Markinnon, Andy. 1994. Plants of The Pacific Northwest Coast Washington, Oregon, British Columbia & Alaska. B.C Forest Service, Research Program.

[4]"*Salix sitchensis* Sanson ex Bong." *PLANTS Database*. United States Department of Agriculture, n.d. Web. 20 Apr. 2014.

[5] Bishop, John. "EFFECT OF HERBIVORES ON SITKA WILLOW AND ASSOCIATED PLANT AND ANIMAL COMMUNITIES AND SOILS." *Mount St Helens Science and Learning Center*. Washington State University, May 2013. Web. 22 Apr. 2014.

[6]USDA Forest Service <http://www.fs.fed.us/r5/rsl/projects/classification/ncoast-veg-descript.shtml>

[7]Young, James and Young, Cheryl. 1992. Seeds of Woody Plants in the United States. Dioscorides Press, Portland, Or.

[8]WA Dept. of Ecology, Controlling Erosion Using Vegetation: Plant Selection Guide <http://www.ecy.wa.gov/programs/sea/pubs/93-30/table3.html#sitkawillow2>

[9]USDA NRCS National Plant Data Center. *Sitka Willow Salix Sitchensis Sanson Ex Bong*. Rep. USDA, 03 June 2003. Web. 22 Apr. 2014.

[10]"Conservation Plant Characteristics for Salix Sitchensis." PLANTS Database. USDA, n.d. Web. 22 Apr. 2014.

[11]"Salix Sitchensis Bong." Calflora. Consortium of Calif. Herbaria, n.d. Web. 22 Apr. 2014.

[12]PFAF. "Salix Sitchensis - Sanson. Ex Bone." *Plants for a Future.* N.p., n.d. Web. 22 Apr. 2014.

[13]DeLong, Craig, and Paul Sanborn. *Management of Sitka Alder and Willow: A Strategy to Minimize Loss of Habitat and Maximize Benefit to Long Term Soil Productivity.* Rep. no. PG-22. Forest Resources and Practices Team - Prince George Forest Region, Mar. 2000. Web. 22 Apr. 2014.

[14]"Common Trees of the Pacific Northwest." *Willows (Salix).* Oregon State University, n.d. Web. 22 Apr. 2014.

Other Sources Consulted

Gerwing, Travis G. "Reproductive Ecology of the Sitka Willow (Salix Sitchensis)."*Google Books*. University of Northern British Columbia, 2009. Web. 22 Apr. 2014.

USGShttp://esp.cr.usgs.gov/data/atlas/little/salisitc.pdf

Original publication being revised:

Sitka willow, Salicaceae *Salix sitchensis* Sanson ex Bong

Description
A shrub or small tree 6 – 23’ tall often found along rivers and streams and used in riparian restoration projects.

Range
Western N. America - Alaska to California, east to Montana.(2)

Climate, elevation
Sitka willow can be found at low to middle elevations (0–400 m). (3,4)

Local occurrence (where, how common)
Sitka willow is the most common willow in Puget Sound area. (4) Abundant along rivers and streams. (5)

(1)

Habitat preferences
Found mainly on rich mucky or other moist soils on the banks of streams and in low moist ground. 2 Prefers sunny locations but will tolerate some shade. (6)

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)
Early seral (successional) stages of stream bank and floodplain. (7)

Associated species
Riparian species: Aspen and cottonwoods (Populus spp.) Gooseberry and Currant (Ribes spp.), Blackberry and other edible berries (Rubus spp.), Sedges (Carex spp.) and numerous grasses and forbs. (8)

May be collected as: (seed, layered, divisions, etc.)
Seed, Cuttings (6)

Collection restrictions or guidelines
Seeds must be collected as soon as the fruits ripen, as indicated by the capsule turning from green to yellow in late spring / early summer (May-July).(9) Seeds must be surface sown as soon as they are ripe. (6)

Seed germination (needs dormancy breaking?)
Willow seeds have no dormancy and germinate within twelve to twenty-four hours after falling on moist ground. (6)

Seed life (can be stored, short shelf-life, long shelf-life)
Seeds are viable for only a few days and the maximum storage period is four to six weeks with germination rates dropping off fast after ten days at room temperature. (6)

Recommended seed storage conditions
Seedbeds must be kept moist until seedlings are well established. (6)

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)
Willow is easily propagated by hardwood cuttings and have a rooting percentage of ninety to one hundred percent without the use of rooting hormones. Cuttings can be collected and prepared for insertion when they are well ripened, from November to March. Cuttings seven to ten inches long and a half to one inch thick are initially stuck in the ground at close spacing and lifted after one year (6).

Soil or medium requirements (inoculum necessary?)

Sitka willow requires moist or wet soil. It prefers acid and neutral soils. (2)

Installation form (form, potential for successful outcomes, cost)
Cuttings of mature wood of the current year's growth can be planted straight into their permanent position in the autumn. (2)

Recommended planting density
6'+ spacing for rooted plants. (10)

Care requirements after installed (water weekly, water once etc.)
Requires moist soil but is often planted in riparian areas and requires little if any care. To maintain a view, you can cut them down by half their height without significant harm to the plants. (4)

Normal rate of growth or spread; lifespan
Height: 6 to 30'. *Spread*: to 25'. (10) *Growth rate*: Rapid, *Vegetative Spread Rate*: Slow
Lifespan: Moderate (11)

Sources cited

(1) USGS <http://esp.cr.usgs.gov/data/atlas/little/salisitc.pdf>
(2) Plants For A Future database: <http://www.ibiblio.org/pfaf/cgi-bin/arr_html?Salix+sitchensis>
(3) Veins of Life Watershed Society:
<http://volws.bc.ca/resources/Plants/plant_descriptions_photos/Trees.htm>
(4) Sound Native Plants <http://www.soundnativeplants.com>
(5) Pojar, Jim and Markinnon, Andy. 1994. Plants of The Pacific
Northwest Coast Washington, Oregon, British Columbia & Alaska. B.C Forest Service, Research Program.
(6) Moore, Lincoln M. USDA, NRCS, Plant
Guide: <http://www.plants.usda.gov/plantguide/pdf/cs_sasi2.pdf#search='Sitka%20Willow%20propagation'>
(7) University of Nottingham, School of Geography:
<http://www.geog.nottingham.ac.uk/~thorne/riverbank/mainpar2.html>
(8) USDA Forest Service <http://www.fs.fed.us/r5/rsl/projects/classification/ncoast-veg-descript.shtml>
(9) Young, James and Young, Cheryl. 1992. Seeds of Woody Plants in the United
States. Dioscorides Press, Portland, Or.
(10) WA Dept. of Ecology, Controlling Erosion Using Vegetation: Plant Selection Guide
<http://www.ecy.wa.gov/programs/sea/pubs/93-30/table3.html#sitkawillow2>
(11) NRCS: Plant's Database <http://plants.usda.gov/cgi_bin/plant_attribute.cgi?symbol=SASI2>
Photos courtesy of Dendrology at Virginia Tech.

Data compiled by:

Thane Hill, June 1st, 2005