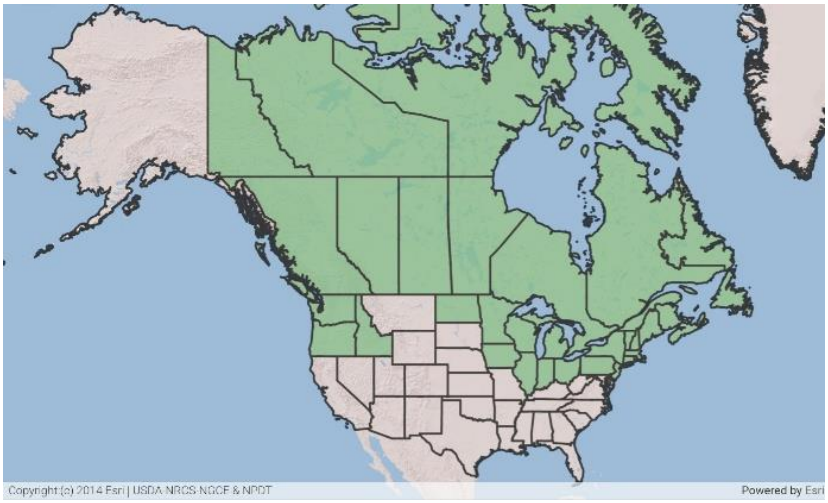
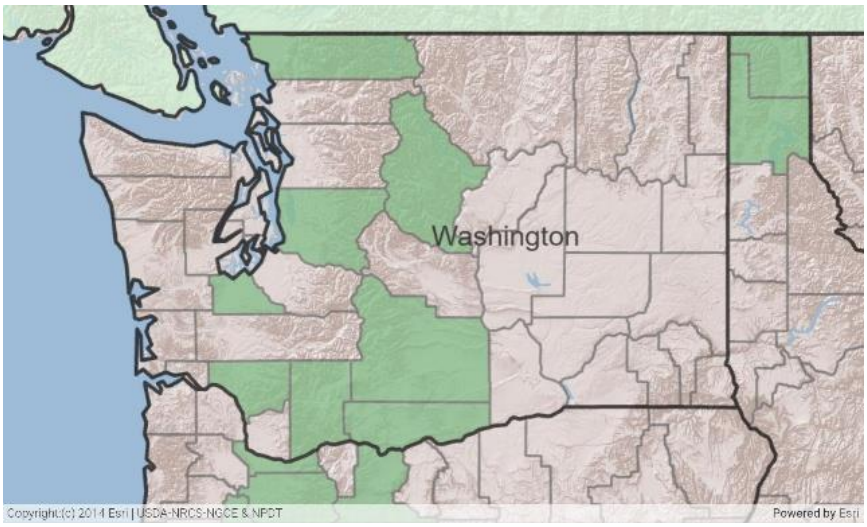
Plant Propagation Protocol for *Salix Pedicellaris*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/2023/SAPE2.pdf

USDA Plant Databas

TAXONOMY	
Plant Family	
Scientific Name	*Salix*
Common Name	Willow family (Salicaceae)
Species Scientific Name	
Scientific Name	*Salix pedicellaris* Pursh[8]
Varieties	
Sub-species	
Cultivar	
Common Synonym(s)	*Salix fuscescens* Andersson var. *hebecarpa* Fernald *Salix hebecarpa* (Fernald) Fernald *Salix myrtilloides* L. var. *hypoglauca* *Salix myrtilloides* L. var. *pedicellaris* (Pursh) Andersson *Salix pedicellaris* Pursh var. *hypoglauca* Fernald *Salix pedicellaris* Pursh var. *tenuescens* Fernald[8]
Common Name(s)	bog willow, willow

Species Code (as per USDA Plants database)	SAPE2
GENERAL INFORMATION	
Geographical range	Ranges from northern United States from west to east coast and up into much of Canada. Bog willow is native to the state of Washington and is found primarily in the western side of the state where the climate is more moist.[8]  USDA Plant Database  USDA Plant Database

Ecological distribution	Occur on land that remains wet year round.[6] Found in wetlands, swamps, bogs, fens, shores of lakes and rivers.[5]
Climate and elevation range	North American Atlantic and Rocky Mountain regions climates support *Salix pedicellaris.*[1] It lives within an elevation of between 7 and 2140 meters, averaging at 995.[2]
Local habitat and abundance	Common species observed growing naturally among *Salix pedicellaris* include *Carex aquatilis, Carex canescens, Eriophorum vaginatum, Polytrichum strictum* and *Pohlia nutans*.[7]
Plant strategy type / successional stage	Bog willow is not tolerant of drought or dry soil.[8] Salix are early successional species, they are usually well adapted to disturbances.[2]
Plant characteristics	*Salix pedicellaris* is a perennial, deciduous shrub (wildflower.org) growing up to 5 feet tall.[4] Blooms from April on through July and reproduces through seed and vegetatively. Forms hybrids between *pedicellaris* and *athabascensis*, among other willow species, are common.[2]
PROPAGATION DETAILS **Hoag, J. C. (2007). How to Plant Willows and Cottonwood for Riparian Restoration. USDA-Natural Resources Conservation Service.[3]**	
Ecotype	Willow cuttings collected from commercial nurseries and native stands near riparian sites.
Propagation Goal	Cuttings
Propagation Method	Vegetative
Product Type	Deciduous hardwood willow cuttings
Stock Type	Stem cutting, pole cutting
Time to Grow	Varying growth length.
Target Specifications	New growth, riparian restoration.
Propagule Collection Instructions	Collection cuttings between late fall and early spring, just before buds begin to break. Always ensure permission for harvest of cuttings from public or private land owner.
Propagule Processing/Propagule Characteristics	Cuttings should be at least approximately ¾ inches in diameter. Highest survival rates occur in cuttings up to 2-3 inches in diameter. And should be around 3-5 inches in diameter when outplanted in rocky terrain. Establishment success increased when cuttings are taken from live, dormant willows.

	Presoaking willow cuttings water can enhance growth period and establishment success in early roots and shoot formation.
Pre-Planting Propagule Treatments	Ensure at least 3 to 4 buds are above ground when staking (anchoring into soil) cuttings. No less than half of the total length of the cutting should be underground.
Growing Area Preparation / Annual Practices for Perennial Crops	Can be planted as live poles, vertical bundles, or clumps.
Establishment Phase Details	Plant/stake cuttings in locations where they have a low chance of being uprooted or eroded out of place during establishment. High and alternating water tables should be considered.
Length of Establishment Phase	Soak cuttings for at least 24 hours before planting. Best if presoaked in water for 10 to 14 days before outplanting.
Active Growth Phase	Spring through late summer active growth phase.
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	Cuttings can be harvested through late fall and winter to be stored at 33-40 F in a large cooling device. Storage facility must be dark, cool, and moist for entire duration.
Length of Storage	Can be stored until ready to plant. Planting time for willow cuttings is most successful during dormant periods.
Guidelines for Outplanting / Performance on Typical Sites	Best planted in areas where the rehabilitation time frame is long enough to allow the cuttings to become established and stable. Upper bank and floodplain areas near the transition zone of riparian areas are best for willow cutting outplanting.
Other Comments	This study uses non-specific willow species, study aims to test restoration progress of riparian willows. Propagation cuttings are so successful, use of seed is negligible for growing Salix species.
INFORMATION SOURCES	

References	[1]Argus, G. W. (2007). Salix (Salicaceae) distribution maps and a synopsis of their classification in North America, north of Mexico. *Harvard Papers in Botany*, *12*(2), 335–368. https://doi.org/10.3100/1043-4534(2007)12[335:ssdmaa]2.0.co;2 [2]Department of Geography UBC, UBC Herbarium. (n.d.). *Electronic Atlas of the Flora of British Columbia*. Introduction to Vascular Plants . http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Salix%2Bpedicellaris [3]Hoag, J. C. (2007). How to Plant Willows and Cottonwood for Riparian Restoration. USDA-Natural Resources Conservation Service. https://www.nrcs.usda.gov/plant-materials/publications/search [4]*Plant database*. Lady Bird Johnson Wildflower Center - The University of Texas at Austin. (n.d.). https://www.wildflower.org/plants/result.php?id_plant=SAPE2 [5]*Salix pedicellaris - bog willow*. Native Plant Trust: Go Botany. (n.d.). https://gobotany.nativeplanttrust.org/species/salix/pedicellaris/ [6]Savage, J. A., & Cavender-Bares, J. M. (2011). Contrasting drought survival strategies of sympatric willows (genus: Salix): consequences for coexistence and habitat specialization. *Tree Physiology*, *31*(6), 604-614 [7]Strack, M., Keith, A. M., & Xu, B. (2014). Growing season carbon dioxide and methane exchange at a restored peatland on the Western Boreal Plain. *Ecological Engineering*, *64*, 231-239 [8]USDA plants database. (n.d.). https://plants.usda.gov/home/plantProfile?symbol=SAPE2
Other Sources Consulted	Fernald, M. L. (1909). Salix pedicellaris and its variations. *Rhodora*, *11*(128), 157-162 *Salix pedicellaris*. Salix pedicellaris - Useful Temperate Plants. (n.d.). https://temperate.theferns.info/plant/Salix+pedicellaris
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