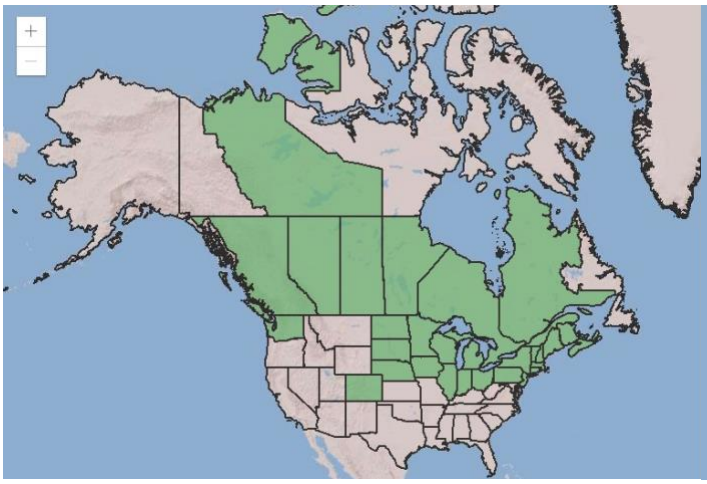
Plant Propagation Protocol for *Salix petiolaris*
ESRM 412 – Native Plant Production
URL: https://courses.washington.edu/esrm412/protocols/2021/SAPE5.pdf



North American distribution

Pacific Northwest distribution

Source: USDA Plants Database

TAXONOMY	
Plant Family	
Scientific Name	Salicaceae
Common Name	Willow family
Species Scientific Name	
Scientific Name	*Salix petiolaris* Sm.
Varieties	*Salix petiolaris* Sm. var. *angustifolia* Andersson *Salix petiolaris* Sm. var. *gracilis* (Andersson) Andersson *Salix petiolaris* Sm. var. *rosmarinoides* (Andersson) C.K. Schneid. *Salix petiolaris* Sm. var. *subsericea* Andersson
Sub-species	No sub-species
Cultivar	N/A
Common Synonym(s)	*Salix gracilis* Andersson *Salix gracilis* Andersson var. *rosmarinoides* *Salix gracilis* Andersson var. *textoris* Fernald *Salix neoforbesii* Toepffer *Salix sericea* Marshall var. *subsericea* (Andersson) Rydb. *Salix* ×*subsericea* (Andersson) C.K. Schneid.
Common Name(s)	Meadow willow, skeleton-leaf willow
Species Code (as per USDA Plants database)	SAPE5

GENERAL INFORMATION	
Geographical range	*S. petiolaris* is distributed across Canada, Northeastern United States, and the Pacific Northwest.[1] See above for the distribution map for across North America and the Pacific Northwest.
Ecological distribution	*S. petiolaris* is often found in wide-open spaces with a moist soil, such as a meadow, field, swamp, marsh, bog, lakeshore[2], disturbed habitat, or wetland margin.[4]
Climate and elevation range	Sunny, warm, and moist climates. Elevation ranges from 10 – 2700 meters above sea level.[3]
Local habitat and abundance	Tolerates most soils, but prefers moist soils with sun exposure.[5,6]
Plant strategy type / successional stage	Tolerates stress, weedy/colonizer.[6]
Plant characteristics	*Salix petiolaris* is a dioecious, deciduous tree 1-6 meters in height. It has red-brown or violet stems, with leaves 5-9 times long as they are wide and often pubescent.[6] The leaves are simple and can have toothed edges or have smooth margins. The leaves have relatively long petioles compared to other willow species – hence the name *petiolaris.* The bark is thin, grey, and smooth.[4] The flowers are in the form of catkins. Male and female catkins are about ½ to 1 inch long, with somewhat loosely packed, yellow-tipped flowers. The fruit is a yellow-green capsule that is pear shaped and about ½ cm in length. The fruit splits in two when mature, releasing the cottony seed.[5]
PROPAGATION DETAILS As provided by Morrison et. al., 2009 for the production of *Salix spp.*[7] No information available about *Salix petiolaris,* but most or all of the following information likely applies, as *Salix* species are deciduous, woody shrubs or trees that prefer similar conditions.	
Ecotype	Northern Idaho
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Container (plug)
Stock Type	336 ml containers
Time to Grow	0
Target Specifications	Height: 41 cm Firm root plug
Propagule Collection Instructions	1-year old rooted cuttings in an established stooling bed. Wait one growing season to collect microcuttings.
Propagule Processing/Propagule Characteristics	After cutting in the field, whips are inspected for disease and cut into 7.5 cm lengths in a storehouse. Material up to 13 mm in diameter can be used if good buds are present. Cut material is placed in a 1.5 mil sealed plastic bag and stored in refrigerated storage with a temperature of 1 degree C.

Pre-Planting Propagule Treatments	Three days before striking, begin soaking the cuttings in a running water bath. Keep in the shade. To be an acceptable cutting for striking, it must have a healthy-looking bud within the top 2.5 cm, and a second bud somewhere on the cutting.
Growing Area Preparation / Annual Practices for Perennial Crops	Cuttings are struck into 336 ml containers filled with equal parts *Sphagnum* peat moss and vermiculite medium. Then, the medium is saturated and allowed to drain to field capacity. Containers are placed in a polycarbonate-roofed, open-sided growing structure in which traveling boom irrigation is used.
Establishment Phase Details	Begin fertilizing with Peters Conifer Starter as soon as leaves begin appearing. Cuttings are fertilized two times per week.
Length of Establishment Phase	2 weeks
Active Growth Phase	After 2 weeks, apply Peters Excel Cal-Mag to supply 114 ppm N two times per week. During growing season, cuttings are pruned 3 to 4 times: once shoots reach 20-25 cm, prune them to 15-20 cm; allow to grow another 15 cm, then remove half of the new growth; repeat the process as needed. The last pruning occurs in early September to prune the cuttings to about 41 cm.
Length of Active Growth Phase	4 weeks
Hardening Phase	Every other week until mid-August, the cuttings receive 1 dose of Peters Professional Conifer Finisher to supply 24 ppm N. Then, alternate Finisher with CAN-17 at 77 ppm N for the twice-weekly fertilization. The cuttings are exposed to mostly ambient temperature because of the open-sided growing structure, so the leaves change color and drop in mid-October. Stop fertilization when the leaves drop.
Length of Hardening Phase	12 weeks
Harvesting, Storage and Shipping	After the leaves have dropped, extract the rooted cuttings by hand and place inside a 1.8 L plastic bag with 5 in each bag. To seal the bag, a self-locking plastic tag labelled with the species name is used. Height is not a factor in determining acceptability of plants. Rather, they must have a firm root system, shoot diameter greater than 6 mm, and a healthy-looking stem. 25 bags of seedlings are placed inside a stack-and-nest tote box. Totes are then stacked inside the cooler kept at 1 degree C.
Length of Storage	4 to 5 months
Guidelines for Outplanting / Performance on Typical Sites	No information available
Other Comments	Using small cuttings ensures that less stooling bed area is required – which in turn reduces the amount of area, labor, and maintenance necessary.

	Vegetative propagation is much more effective than seed propagation because the viability window of seeds for *Salix petiolaris* is only a few days in early spring.[6]
INFORMATION SOURCES	
References	See below
Other Sources Consulted	See below
Protocol Author	Jane FitzGerald
Date Protocol Created or Updated	06/07/2021

References:

[1]*Plants 3*, plants.sc.egov.usda.gov/home/plantProfile?symbol=SAPE5.

[2]"Plant Database." *Lady Bird Johnson Wildflower Center - The University of Texas at Austin*, www.wildflower.org/plants/result.php?id_plant=SAPE5.

[3]*Salix Petiolaris in Flora of North America @ Efloras.org*, www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242417202.

[4]"Salix Petiolaris Sm." *Native Plant Trust: Go Botany*, gobotany.nativeplanttrust.org/species/salix/petiolaris/.

[5]"Salix Petiolaris (Meadow Willow)." *Minnesota Wildflowers*, www.minnesotawildflowers.info/shrub/meadow-willow.

[6]*Pfaf Plant Search*, pfaf.org/user/Plant.aspx?LatinName=Salix%2Bpetiolaris.

[7]Morrison, Susan J.; Wenny, Dave L.; Dumroese, Kasten. 2009. Propagation protocol for production of Container (plug) *Salix spp.* L. plants 336 ml (20.5 cu. in) containers; USDA Forest Service, Southern Research Station Moscow, Idaho. In: Native Plant Network. URL: http://NativePlantNetwork.org (accessed 2021/05/03). US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources.

Other Sources Consulted:

Argus, George W. "SALIX (SALICACEAE) DISTRIBUTION MAPS AND A SYNOPSIS OF THEIR CLASSIFICATION IN NORTH AMERICA, NORTH OF MEXICO." *Harvard Papers in Botany*, vol. 12, no. 2, 2007, pp. 335–368. *JSTOR*, www.jstor.org/stable/41761866. Accessed 3 May 2021.

Meilleur, A., Véronneau, H. & Bouchard, A. RESEARCH: Shrub Propagation Techniques for Biological Control of Invading Tree Species. *Environmental Management* **21,** 433–442 (1997). https://doi-org.offcampus.lib.washington.edu/10.1007/s002679900040

Zalesny Jr, Ronald S., et al. "Propagating Native Salicaceae for Afforestation and Restoration in New York City's Five Boroughs." *Native Plants Journal (University of Wisconsin Press)*, vol. 15, no. 1, Spring 2014, pp. 29–41. *EBSCOhost*, doi:10.3368/npj.15.1.29.