

Plant Propagation Protocol for *Salix petrophila*

ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/SAPE18.pdf>

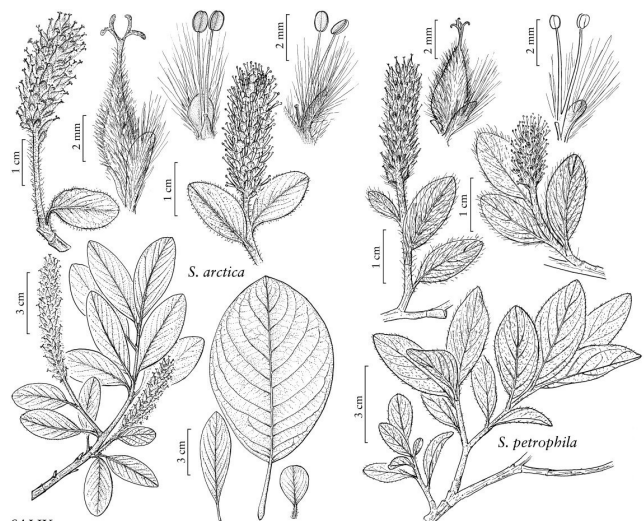


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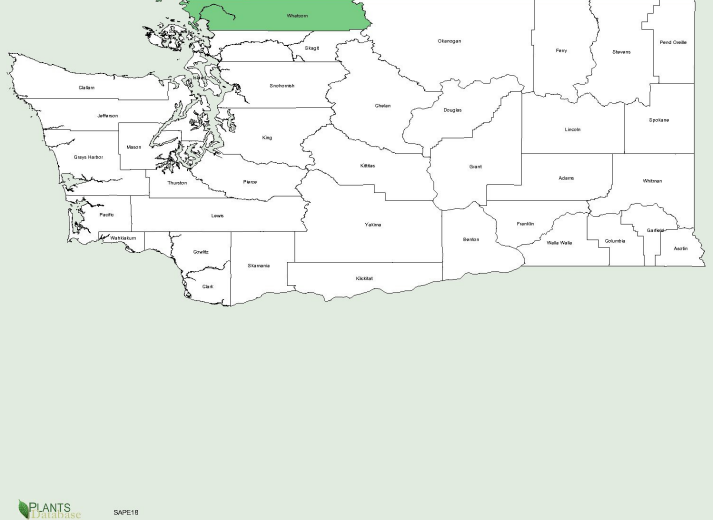
SALIX
eFloras.org⁷

TAXONOMY

Plant Family	
Scientific Name	Salicaceae
Common Name	Willow Family
Species Scientific Name	
Scientific Name	<i>Salix petrophila</i> Rydb. ¹⁴
Varieties	None
Sub-species	None
Cultivar	None
Common Synonym(s)	<i>Salix arctica</i> Pall. var. <i>caespitosa</i> (Kennedy) L. Kelso ¹⁴ <i>Salix arctica</i> Pall. var. <i>graminifolia</i> (E.H. Kelso) L. Kelso ¹⁴ <i>Salix arctica</i> Pall. ssp. <i>petraea</i> (Andersson) Å. Löve & D. Löve & Kapoor ¹⁴ <i>Salix arctica</i> Pall. var. <i>petrophila</i> (Rydb.) L. Kelso ¹⁴ <i>Salix arctica</i> Pall. var. <i>petraea</i> (Andersson) Bebb ¹⁴ <i>Salix brownei</i> (Andersson) Bebb var. <i>petraea</i> ¹⁴ <i>Salix caespitosa</i> Kennedy ¹⁴ <i>Salix petrophila</i> Rydb. var. <i>caespitosa</i> (Kennedy) C.K. Schneid. ¹⁴
Common Name(s)	alpine willow ¹⁴ , rocky mountain willow ¹
Species Code (as per USDA Plants database)	SAPE18 ¹⁴

GENERAL INFORMATION

Geographical range	<p style="text-align: center;">North American Range¹⁵</p> 
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	 <p style="text-align: center;">Washington State Range¹⁵</p>
Ecological distribution	Alpine tundra. ¹ Found in North America, Europe, Asia. ⁷ Grows in subalpine and alpine ecosystems across Canada and down in Rocky Mountain, Cascade, and Sierra Nevada mountain ranges. ⁷
Climate and elevation range	1670-4000m elev. ¹ Can be found at sea level to 700m at lower latitudes, but not found below 3,350m in New Mexico. ⁷ Typically grows with annual precip of 27-115in, hardiness zones 5b to 6b, summer highs of 58°F-70°F and winter lows of 10°F-20°F. ⁴
Local habitat and abundance	Dry meadows, rocky tundra, and some moist sites such as edges of snowfields. ⁷ Grows best in moist to dry gravelly soil. ¹¹ In lower latitudes such as New Mexico, it is obligate wetland species, but in higher latitudes it grows equally well in wet and dry sites. ⁷ Found with other <i>Salix</i> sp., frequently <i>S. nevilis</i> (snow willow) ⁷ and <i>S. brownii</i> ¹⁰ . Mutualistic association with ectomycorrhizal fungi. ⁷ Commonly used as food for caribou, musk oxen, reindeer, arctic hares, and other arctic herbivores. ^{9,13} Critical host plant of caterpillars of endangered species <i>Boloria improba</i> . ¹²
Plant strategy type / successional stage	
Plant characteristics	Deciduous prostrate shrub >10cm tall but up to 50cm in Pacific Northwest ⁷ . Dioecious, separate male and female plants. ⁷ Flowers are erect catkins. ⁷ Frequently

	hybridizes with other <i>Salix</i> sp and may be hard to identify ¹ . Typically propagated by native bees and various butterflies ⁴ or wind ¹ . Plants typically live 60-85 years, oldest known specimen was 236 years old. ⁷
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PROPAGATION DETAILS

Propagation Goal	Plants
Propagation Method	Vegetative (primary method of propagation)
Product Type	Cuttings
Stock Type	
Time to Grow	1 year. ^{15(*)} ⁶
Target Specifications	Roots fill 1gal container. ^{15(*)}
Propagule Collection Instructions	Collect cuttings from wild after leaves have fallen off but before buds begin to grow, in late fall-early winter. (*) ¹⁵ Collect from both male and female plants.
Propagule Processing/Propagule Characteristics	Collect only from last year's growth with stems from 3/8-5/8in in diameter that have healthy, undamaged buds.(*) ¹⁵
Pre-Planting Propagule Treatments	Store in plastic sealed bags at 28-30°F. Before rooting, cut stems to 4-6in long sections with a minimum of 2 buds per stem.(*) ¹⁵
Growing Area Preparation / Annual Practices for Perennial Crops	Plant in 50% perlite/50% sand media, under mist-bench covered with shade cloth. ⁶
Establishment Phase Details	Water 1-2 times per week, preferably from overhead sprinklers(*) ¹⁵ or mist-bench ⁶ . Can use bottom-heating at 21°C. ⁶
Length of Establishment Phase	4-6 weeks. ⁶ Keep under shadecloth for 4 weeks while roots are established. ⁶
Active Growth Phase	Can re-plant into containers of 70% 6:1:1 sphagnum peat, perlite, and vermiculite and 30% sand. ⁶ Keep in shaded area for 4 weeks, then move to full sun. ⁶
Length of Active Growth Phase	8 weeks. ⁶
Hardening Phase	Reduce frequency of watering in September to prepare for winter. ⁶
Length of Hardening Phase	8 weeks. ⁶
Harvesting, Storage and Shipping	Can be shipped in containers. ⁶
Length of Storage	5 months. ⁶
Guidelines for Outplanting / Performance on Typical Sites	Outplanting survival after 3 years: 100%. ⁶ Cutting back the plants in the first winter will help promote vigorous and dense growth during the second spring after outplanting. ³

PROPAGATION DETAILS

Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container.
Stock Type	

Time to Grow	Unknown
Target Specifications	Fully-developed roots with first true leaves fully-opened. ⁶
Propagule Collection Instructions	Collect in late august to early September, when seed is light tan color and seed capsules are open. ⁶
Propagule Processing/Propagule Characteristics	Seeds/Kg: approx. 22,000,000/ kg. ⁶ Seed can be stored for at least 1 year at 0°C. ⁶
Pre-Planting Propagule Treatments	Seeds have physiological dormancy. Requires 30 day stratification, germinates at 25°C. ^{7,9} Seeds can be directly sown on soil surface in the fall and break dormancy by 5-month cold-moist stratification. ⁶
Growing Area Preparation / Annual Practices for Perennial Crops	Sow in flats on surface of seeding mix type medium. ⁶
Establishment Phase Details	Seeds germinate in late spring over a 1-month period. ⁶
Length of Establishment Phase	6 months. ⁶
Active Growth Phase	Transfer from flats to growing pots once first true leaves emerge. ⁶
Length of Active Growth Phase	Unknown
Hardening Phase	Reduce frequency of watering in September to prepare for winter. ⁶
Length of Hardening Phase	8 weeks. ⁶
Harvesting, Storage and Shipping	Can be shipped in containers. ⁶
Length of Storage	5 months. ⁶
Guidelines for Outplanting / Performance on Typical Sites	Cutting back the plants in the first winter will help promote vigorous and dense growth during the second spring after outplanting. ³
Other Comments	Female plants may outcompete male plants in more moist, fertile, and sheltered sites. ¹² Since willows readily hybridize, it may be hard to distinguish which of the multiple creeping willows one has, thus <i>S. arctica</i> and <i>S. petrophila</i> are frequently mixed up, and in fact the classification of these arctic willows is not clearly defined. ² Both <i>S. arctica</i> and <i>S. petrophila</i> are sometimes considered the same species. ⁷ When marked with (*), indicates data relevant to generalized <i>Salix</i> sp, or to closely related species such as <i>S. nevilis</i> , and not specific to <i>S. petrophila</i> . Care should be taken to test data before using widely.
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Other Sources Consulted	None
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