| TAXONOMY | |
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| Plant Family | |
| Scientific Name | Salicaceae |
| Common Name | Willow Family |
| Species Scientific Name | |
| Scientific Name (A full scientific name consists of *Genus*, *epithet*, and authority- e.g., *Elymus glaucus* Buckley. Protocols are prepared for species, which may include multiple varieties, sub-species, and/or cultivars.) | *Salix vestita* Pursh |
| Varieties (those varieties that are recognized in the USDA Plants database; report name and authority for each variety) | *Erecta*, *vestita, humilior, psilophylla* |
| Sub-species (those sub-species that are recognized in the USDA Plants database; report name and authority for each sub-species) | *Leiolepis* |
| Cultivar | |
| Common Synonym(s) (include full scientific names, including variety or subspecies information) | Common synonyms of the plant are *"Salix leiolepis"*, "*Salix fernaldii*", "*Salix reticulata* var. *vestita*", and "*Salix vestita* Pursh var. *erecta* Andersson" (USDA, n.d.). |
| Common Name(s) | Rock Willow |
| Species Code (as per USDA Plants database) | Its code is "SALVES", and according to USDA Plants Database, its symbol is "SAVE" (USDA, n.d.). |
| **GENERAL INFORMATION** | |
| Geographical range (distribution maps for North America and Washington state) | *S. vestita* occurs from southern British Columbia and Alberta to Manitoba, Washington, northeastern Oregon, Ontario, Nova Scotia, Nunavut, Newfoundland, and central Montana in meadows, talus and scree near or above treeline. Conclusively, it can be said that it is native to lower 48 states and Canada (USDA, n.d.). |

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| Ecological distribution (ecosystems it occurs in, etc) | It is found in sheltered valleys having good protection from snow in winter. It is able to grow best in damp depressions, and can be more or less prostrate. |
| Climate and elevation range | The climate type of this species need further studies as it has not been evaluated in detail or it shows variability in different climates. Its elevation range is from approximately 100 meters to more than 2000 meters. |
| Local habitat and abundance (may include commonly associated species) | It is found in abundance in the moist to dry open forests, rocky streamsides, and moist meadows in the upper montane (coniferous forest) and subalpine zones, rarely in the alpine zone. Its natural habitat is woodland (35%-60% covers). |
| Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional) | It is early seral (successional) stages of streamsides and is a great competitor. |
| Plant characteristics (life form (shrub, grass, forb), longevity, key characteristics, etc.) | *Salix vestita* is a shrub having average height of 20 cm to 1.5 m. Its plants are not colonial. Bloom time of its flowers is from May to June, and its flowers are green or brown in color. Branchlets are also yellow to gray-brown in color. Its branches are flexible at base. It is compaction tolerant in nature. |
| **PROPAGATION DETAILS (Report one type of propagation in section; duplicate section as needed for multiple types of propagation)** | |
| Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from) | Its ecotypes are Talus slopes and Highline trail. |
| Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules) | Plants |
| Propagation Method (Options: Seed or Vegetative) | Vegetative |
| Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.)) | Container (plug) |
| Stock Type | 800 ml containers |

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| Time to Grow (from seeding until plants are ready to be outplanted) | 1 year |
| Target Specifications (size or characteristics of target plants to be produced) | Stock Type in this protocol is container cutting.<br><br>Height: 18 cm<br><br>Caliper: 7 mm<br><br>Root Systems are firmly plugged in 800 ml containers. |
| Propagule Collection Instructions (how, when, etc) | Vegetative propagation system for this plant is Pre-Rooting. Moreover, kind of cutting for this plant is summer softwood tip cuttings (Native Plant Network, 2008). |
| Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc) | Cuttings are usually kept moist. These are placed under refrigeration before pre-treatment. |
| Pre-Planting Propagule Treatments (cleaning, storage, dormancy treatments, etc) | Cuttings of the plant are 10 cm in length with 1 cm in caliper. Surface pathogens are removed by placing the cuttings in a fungicide bath for 2 minutes.<br><br>Cuttings were than treated with about 1000 ppm liquid IBA, and struck in the mistbed with minimum 2 nodes under the surface of the rooting medium. Cuttings are stuck in the mistbed with warmth from the bottom, and pre-rooted for 2 to 4 weeks before its transplantation to the container.<br><br>Rooting percentage is 76% to 98%.<br><br>*Salix vestita* has the ability to grow from either hardwood or softwood cuttings. It has latent predeveloped root initials in the stem. Initial rooting starts in one week (Native Plant Network, 2008). |
| Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc) | The open-air mistbed automatically mist after every 6 seconds with interval coming after 6 minutes. Misting, more than this frequency, can result in rotting of stem and leaves. However, misting frequency can be changed according to the outdoor temperature as well as conditions of wind. Bottom heat is kept constant at about 21C with warming cables about 12cm beneath |

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| | the rooting medium, which is half sand and half perlite. Mistbed is protected by shadecloth at the time of rooting. After potting of cuttings, they are taken to an open-air shadehouse for about one month. They are then shifted to full sun in the open-air nursery and are irrigated and watered with Rainbird automatic irrigation method during early morning until containers are completely leached (Native Plant Network, 2008).<br><br>Average developing season of the nursery is from the April after the melting of snow to the mid of October. |
| Establishment Phase Details (from seeding to germination) | Time of transplantation is from 2 to 4 weeks of rooting. Cuttings of the plant that were pre-rooted are moved out of mistbed after proper formation of root systems (Native Plant Network, 2008). |
| Length of Establishment Phase | 8 weeks |
| Active Growth Phase (from germination until plants are no longer actively growing) | After lifting of cuttings from the mistbed, they are placed in the 800 ml containers. In this case, growing medium is about 70% milled sphagnum peat, vermiculite, and perlite in the ratio of 6:1:1, and about 30% sand with "Osmocote controlled release fertilizer" and "Micromax fertilizer" at the rate of about 2 grams of Osmocote and about 1 gram of Micromax in a container (Native Plant Network, 2008).<br><br>Cuttings are irrigated after potting of the plant and put in the shadehouse for about one month.<br><br>After its productiong in the shadehouse, plants are taken to full sun in the open-air nursery. |
| Length of Active Growth Phase | Its length of active growth phase is 8 weeks. |
| Hardening Phase (from end of active growth phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter) | Irrigation is usually decreased from September to October. Plants are given eventual irrigation before the start of winterization. |
| Length of Hardening Phase | Its length of hardening phase is about 4 weeks. |
| Harvesting, Storage and Shipping (of seedlings) | Its overall time of harvest is 1 year. Its harvest date is in July. Its storage conditions are overwinter in |

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| | open-air nursery under nonconducting foam as well as snow. |
| Length of Storage (of seedlings, between nursery and outplanting) | 5 months |
| Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering) | Its outplanting site is Logan Pass, Glacier National Park, MT. On the other hand, its outplanting date is July and August after snowmelt (Native Plant Network, 2008).. |
| Other Comments (including collection restrictions or guidelines, if available) | This plant is dwarf in nature, and due to this thing, it can easily be damaged by foot traffic, grazing, and livestock trampling.<br><br>It is pollinated by solitary mining bees live on the ground. |
| **INFORMATION SOURCES** | |
| References (full citations) | Native Plant Network. (2008). *Propagation protocol for vegetative production of container Salix vestita Pursh plants (800 ml containers)*. Retrieved from http://www.nativeplantnetwork.org/network/ViewProtocols.aspx?ProtocolID=175<br><br>USDA (n.d.) *Salix vestita Pursh*. Retrieved from http://plants.usda.gov/core/profile?symbol=save |
| Other Sources Consulted (but that contained no pertinent information) (full citations) | Aiken et al. (2007). Flora of the Canadian Arctic Archipelago. Retrieved from http://nature.ca/aaflora/data/www/wlsave.htm<br><br>Department of Geography UBC (2014). E-Flora BC: Electronic Atlas of the Flora of British Columbia. Retrieved from http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Salix%20vestita<br><br>Native Plant Database (n.d.). *Plant Detail – Salix vestita*. Retrieved from http://nativeplants.evergreen.ca/search/view-plant.php?ID=02131#characteristics |
| Protocol Author (First and last name) | Xinyi Zhao |
| Date Protocol Created or Updated (MM/DD/YY) | 04/26/2015 |