

## Plant Propagation Protocol for *Viola macloskeyi*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2021/VIMA2.pdf>



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### TAXONOMY

Plant Family	
Scientific Name	Violaceae
Common Name	Violet Family
Species Scientific Name	
Scientific Name	<i>Viola macloskeyi</i> Lloyd
Varieties	<i>Viola blanda</i> var. <i>macloskeyi</i> (Lloyd) Jeps. [10]
Sub-species	<i>Viola macloskeyi</i> Lloyd ssp. <i>macloskeyi</i> <i>Viola macloskeyi</i> Lloyd ssp. <i>pallens</i> (Banks ex Ging) M.S. Baker [12] <i>Viola blanda</i> Willd. subsp. <i>macloskeyi</i> (Lloyd) A.E. Murray [7]
Cultivar	N/A
Common Synonym(s)	<i>Viola pallens</i> (Banks ex. DC.) Brainerd [7]

Common Name(s)	Small White Violet, Macloskey's Violet, Smooth White Violet [7], White Mountain Violet, Northern White Violet [14], Wild White Violet [15]
Species Code (as per USDA Plants database)	VIMA2 [12]

**GENERAL INFORMATION**

Geographical range



*Viola macloskeyi* present in areas shown in green. Map courtesy of USDA [12].



*Viola macloskeyi* present in counties shown in green. Map courtesy of Mark Turner Photographics [9].

Ecological distribution	Prefers wet and boggy environments [4]. Found in forests and wetlands (specifically fens and meadows) [15].
Climate and elevation range	Prefers moist to wet soil in mostly shady locations [13]. Elevation: 3,300-11,200 feet [8]
Local habitat and abundance	Sporadically found throughout northwestern North America. Commonly found near wetlands and streambanks [11]. Commonly associated with <i>Viola nephrophylla</i> [7] and <i>Viola canadensis</i> [6].
Plant strategy type / successional stage	Stress-tolerator, competitor, creeping (disperses stolons late in the season to spread and form patches) [14].
Plant characteristics	Perennial herb/forb that can grow up to 5 inches. During flowering season (April/May) solitary white bearded flowers will bloom off leafless stems. It has a moderately fast growth rate; however, it has a short lifespan [7].
<b>PROPAGATION DETAILS: SEED</b>	
Ecotype	N/A
Propagation Goal	Plants, seeds
Propagation Method	Seed [11,14]
Product Type	Container [plug]
Stock Type	Container [plug]
Time to Grow	3 months
Target Specifications	Seedlings must be 15-20 cm tall and have a well-established root system.
Propagule Collection Instructions	Collect fruits from mature plants after flowering period (which usually ends mid-spring) and separate seeds from fruit capsules. Dry seeds and store in a cool, moist environment [13].
Propagule Processing/Propagule Characteristics	Approximately 470,000 seeds per pound [5]. Dry seeds have a shelf life of 6 months under cool conditions (5 °C), after that they will fail to germinate [3].
Pre-Planting Propagule Treatments	Before planting, seeds should be cleaned and stratified for three weeks (at 16-21°C in 65-70 percent humidity) to break dormancy [1].
Growing Area Preparation / Annual Practices for Perennial Crops	Media should be a well-mixed loam with a balanced pH (6.0-7.3) [12]. Containers should be cone-shaped so proper root establishment can take place.
Establishment Phase Details	Media should be well watered as <i>Viola macloskeyi</i> requires plenty of water for proper establishment. Seedlings should also receive plenty of shade [5].
Length of Establishment Phase	60 days [13]
Active Growth Phase	After establishment phase, <i>Viola macloskeyi</i> are typically outplanted. They will still need consistent water and shade [5].
Length of Active Growth Phase	21 days
Hardening Phase	<i>Viola macloskeyi</i> plants will begin to increase in surface area as they prepare for winter. Sending out stolons near the end of the season (September/October), they will try to become as large as possible to

	increase their hardiness for winter [14]. These stolons can be cut to separate daughter plants [5].
Length of Hardening Phase	6-7 months
Harvesting, Storage and Shipping	Seedlings should be kept in moist shady conditions with low temperatures (9-13°C).
Length of Storage	Seedlings can be stored for up to 6 months under specific conditions (see above).
Guidelines for Outplanting / Performance on Typical Sites	Healthy <i>Viola macloskeyi</i> will spread via stolons near the end of the season. Leaves are deciduous and will fall off at the end of the season, but the rest of the plant will lie dormant over winter [8]. Approximately 3 months of elapsed time between planting and flowering.
Other Comments	N/A
<b>PROPAGATION DETAILS: CUTTINGS</b>	
Ecotype	N/A
Propagation Goal	Plants, cuttings
Propagation Method	Vegetative [11,14]
Product Type	Container [plug]
Stock Type	Container [plug]
Time to Grow	3 months
Target Specifications	Seedlings must be 15-20 cm tall and have a well-established root system.
Propagule Collection Instructions	Cuttings should be taken from mature <i>Viola macloskeyi</i> with stolons near the end of the season (September/October).
Propagule Processing/Propagule Characteristics	Cuttings can only survive in specific conditions (see below) for up to 4 months, after that their germination rates greatly diminish.
Pre-Planting Propagule Treatments	Cuttings can be stored in cold (between 0-4°C), dark, and moist (between 60-70 percent humidity) conditions for up to 4 months. The sooner the cuttings are planted the higher the germination rate [2]. Before planting, cuttings should soak in water for 5 days to break dormancy and urge root growth.
Growing Area Preparation / Annual Practices for Perennial Crops	Media should be a well-mixed loam with a balanced pH (6.0-7.3) [12]. Containers should be cone-shaped so proper root establishment can take place.
Establishment Phase Details	Media should be well watered as <i>Viola macloskeyi</i> requires plenty of water for proper establishment. Seedlings should also receive plenty of shade [5].
Length of Establishment Phase	60 days [13]
Active Growth Phase	After establishment phase, <i>Viola macloskeyi</i> are typically outplanted. They will still need consistent water and shade [5].
Length of Active Growth Phase	21 days

Hardening Phase	<i>Viola macloskeyi</i> plants will begin to increase in surface area as they prepare for winter. Sending out stolons near the end of the season (September/October), they will try to become as large as possible to increase their hardiness for winter [14]. These stolons can be cut to separate daughter plants [5].
Length of Hardening Phase	6-7 months
Harvesting, Storage and Shipping	Seedlings should be kept in moist shady conditions with low temperatures (9-13°C).
Length of Storage	Seedlings can be stored for up to 6 months under specific conditions (see above).
Guidelines for Outplanting / Performance on Typical Sites	Healthy <i>Viola macloskeyi</i> will spread via stolons near the end of the season. Leaves are deciduous and will fall off at the end of the season, but the rest of the plant will lie dormant over winter [8]. Approximately 3 months of elapsed time between planting and flowering.
Other Comments	N/A

### INFORMATION SOURCES

References	<p>[1] <i>Aquatic Dicotyledons of North America: Ecology, Life History, and Systematics</i>, by Donald H. Les, CRC Press, Taylor &amp; Francis Group, 2018.</p> <p>[2] “Dormant Cuttings.” <i>Habitat Restoration and Stream Bank Protection - Alaska.gov</i>, <a href="http://www.adfg.alaska.gov/static/lands/habitatrestoration/streambankprotection/pdfs/csbs_dormantcut.pdf">www.adfg.alaska.gov/static/lands/habitatrestoration/streambankprotection/pdfs/csbs_dormantcut.pdf</a>. Web. Accessed 25 May 2021.</p> <p>[3] “Genus: Viola.” <i>Alpine Garden Society</i>, <a href="http://encyclopaedia.alpinegardensociety.net/plants/Viola">encyclopaedia.alpinegardensociety.net/plants/Viola</a>. Web. Accessed 25 May 2021.</p> <p>[4] Herbarium, Burke Museum. “<i>Viola macloskeyi</i>.” <i>Burke Herbarium Image Collection</i>, <a href="http://biology.burke.washington.edu/herbarium/imagecollection/taxonmap.php?Taxon=Viola%20macloskeyi&amp;SourcePage=taxon">http://biology.burke.washington.edu/herbarium/imagecollection/taxonmap.php?Taxon=Viola%20macloskeyi&amp;SourcePage=taxon</a>. Web. Accessed 25 May 2021.</p> <p>[5] <i>Native Seed Production Manual for the Pacific Northwest</i>, by Amy Bartow, USDA-NRCS Corvallis Plant Materials Center, 2015, pp. 126–133.</p> <p>[6] <i>Plants of the Pacific Northwest Coast</i>, by A. MacKinnon et al., Partners Publishing, 2016, p. 202.</p>
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	<p>[7] R. John Little 2012, <i>Viola macloskeyi</i>, in Jepson Flora Project (eds.) <i>Jepson eFlora</i>, <a href="https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=48239">https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=48239</a>, accessed on May 25, 2021. Web. Accessed 25 May 2021.</p> <p>[8] “Small White Violet, <i>Viola Macloskeyi</i>.” <i>California Native Plant Society</i>, <a href="https://calscape.org/Viola-macloskeyi-()">calscape.org/Viola-macloskeyi-()</a>. Web. Accessed 25 May 2021.</p> <p>[9] Turner, Mark. “<i>Viola Macloskeyi</i>: Macloskey Violet.” <i>Wildflowers of the Pacific Northwest</i>, <a href="http://www.pnwflowers.com/flower/viola-macloskeyi">www.pnwflowers.com/flower/viola-macloskeyi</a>. Web. Accessed 25 May 2021.</p> <p>[10] “<i>Viola Macloskeyi</i> F.E. Lloyd - The Plant List.” <i>The Plant List - A Working List for All Plant Species</i>, <a href="http://www.theplantlist.org/tpl1.1/record/tro-33800427">www.theplantlist.org/tpl1.1/record/tro-33800427</a>. Web. Accessed 25 May 2021.</p> <p>[11] “<i>Viola Macloskeyi</i> Lloyd.” <i>E-FLORA BC: ELECTRONIC ATLAS OF THE FLORA OF BRITISH COLUMBIA</i>, <a href="http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Viola%2Bmacloskeyi">linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Viola%2Bmacloskeyi</a>. Web. Accessed 25 May 2021.</p> <p>[12] “<i>Viola Macloskeyi</i> Lloyd.” <i>USDA</i>, <a href="http://plants.usda.gov/home/plantProfile?symbol=VIMA2">plants.usda.gov/home/plantProfile?symbol=VIMA2</a>. Web. Accessed 25 May 2021.</p> <p>[13] “<i>Viola Macloskeyi</i> Var. <i>Pallens</i> (Small White Violet).” <i>Minnesota Wildflowers</i>, <a href="http://www.minnesotawildflowers.info/flower/small-white-violet">www.minnesotawildflowers.info/flower/small-white-violet</a>. Web. Accessed 25 May 2021.</p> <p>[14] “<i>Viola Macloskeyi</i>.” <i>Lady Bird Johnson Wildflower Center - The University of Texas at Austin</i>, <a href="http://www.wildflower.org/plants/result.php?id_plant=VIMA2">www.wildflower.org/plants/result.php?id_plant=VIMA2</a>. Web. Accessed 25 May 2021.</p> <p>[15] “<i>Viola Macloskeyi</i>.” <i>North Carolina Extension Gardener Plant Toolbox</i>, <a href="http://plants.ces.ncsu.edu/plants/viola-macloskeyi/">plants.ces.ncsu.edu/plants/viola-macloskeyi/</a>. Web. Accessed 25 May 2021.</p>
Other Sources Consulted	N/A
Protocol Author	Megan Beik

Date Protocol Created or Updated	5/25/2021
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