Plant Propagation Protocol for *Kalmia microphylla*

ESRM 412 – Native Plant Production

URL: https://courses.washington.edu/esrm412/protocols/2023/KAMI.pdf

Fig. 1

North American Distribution

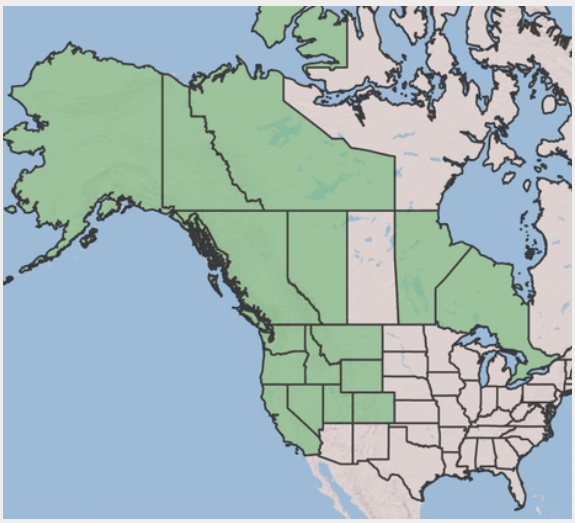

Fig. 2

Pacific Northwest Distribution

Fig. 3

TAXONOMY	
Plant Family	
Scientific Name	Ericaceae
Common Name	Heath family
Species Scientific Name	
Scientific Name	*Kalmia microphylla* (Hook.) A. Heller
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonyms	*Kalmia microphylla* ssp. *Occidentalis* *Kalmia microphylla* var. *Occidentalis* *Kalmia occidentalis* *Kalmia polifolia ssp. Microphylla* *Kalmia polifolia ssp. Occidentalis* *Kalmia polifolia var. microphylla*
Common Names	Alpine laurel, bog laurel, swamp laurel, western bog-laurel
Species Code	KAMI

GENERAL INFORMATION	
Geographical Range	USA: AK , CA , CO , ID , MT , NV , OR , UT , WA , WY Canada: AB , BC , ON[4]
Ecological Distribution	Distributed across alpine meadows, wetlands, and bogs from the coast to higher elevations in the mountains[2].
Climate and Elevation Range	Found in tundra and boreal climates[1], with elevations ranging from 1500 to 3500m in California and 900 to 2200m in Alberta, British Columbia, and Washington[5].
Local Habitat and Abundance	Grows best in wet to very wet soil, has limited tolerance to calcium carbonate, and is shade intolerant. As of 2015, it is categorized as Least Concerned by the IUCN Red List of Threatened Species[1].
Plant Strategy Type / Successional Stage	Stress tolerator, late successional (undisturbed bogs)[8].
Plant Characteristics	A perennial evergreen shrub characterized by leathery, oblong-lanceolate to linear-elliptic opposite leaves with an entire margin. Stems are typically 10-50 cm tall with 1-2 cm long leaves. Flowers are deep pink to red in a several-headed inflorescence, with a deeply lobed 5-parted calyx, 5-parted corolla, shallow bowl-shape, 10 stamens, and anthers that are recessed in the grooves of the corolla in the bud. Produces a 5-celled woody capsule as the fruit. Flowers from June to September[6].
PROPAGATION DETAILS	
Ecotype	Subalpine stream bank, Sperry Chalet, at an elevation of 2035m[7].
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Container (plug)
Stock Type	800ml container
Time to Grow	Two years

Target Specifications	Stocktype: container cutting Height: 7 cm Caliper: 5mm Root system: firm plug in 800ml pot
Propagule Collection Instructions	How: cuttings are selected from stems that were buried in duff (decaying organic matter accumulated on the forest floor) When: collect cuttings in early September
Propagule Processing/Propagule Characteristics	Prior to pretreatment, cuttings are kept moist and refrigerated
Pre-Planting Propagule Treatments	Perform a heel cutting so that cuttings are 6 centimeters in length, branched, and contain a portion of older tissue at the base. Use a 4000ppm liquid IBA treatment. Heat the bottom to 22°C to enhance rooting in the mist bed. Because the leaves are semi-evergreen, it is best to place the cutting in a high humidity chamber rather than mist. For the rooting media, use a mixture of peat and perlite.
Growing Area Preparation / Annual Practices for Perennial Crops	Fall cuttings are placed in trays containing a rooting medium consisting of a 50-50 mix of peat and perlite. These trays are then kept in a greenhouse on a heated propagation mat, and receive misting once daily.
Establishment Phase Details	20% is expected after 4 to 5 months during this phase.
Length of Establishment Phase	4 to 5 months
Active Growth Phase	During the spring, cuttings are removed from their original location and transplanted into pots. However, it takes until the fall of the second year for the cuttings to develop strong, well-established roots.
Length of Active Growth Phase	16 weeks
Hardening Phase	Prior to overwintering, the plants are thoroughly irrigated.
Length of Hardening Phase	8 weeks
Harvesting, Storage, and Shipping	Total Time to Harvest: 2 years Harvest Date: September of the second year. Storage Conditions: plants are stored in an outdoor nursery for 5 months, where they are protected from the elements by an insulating cover and snow.

Length of Storage	5 months
Guidelines for Outplanting / Performance on Typical Sites	N/A
Other Comments	Juvenility plays a significant role in the ability of other Kalmia species to form roots. Specifically in *Kalmia latifolia*, cuttings that are double wounded at the base and treated with 8000 to 10,000ppm IBA have been shown to improve rooting percentages. This treatment warrants further investigation for its potential to induce root growth in *Kalmia microphylla*.
INFORMATION SOURCES	
References	See below
Other Sources Consulted	Fig. 1: June 7, 2010, Gerald D. Carr. Image of *Kalmia microphylla* near a small bog north east of Parish Lake, Oregon. http://www.botany.hawaii.edu/faculty/carr/ofp/kal_mic.htm Fig. 2 and Fig. 3: *Kalmia microphylla* (Hook.) A. Heller. (n.d.). United States Department of Agriculture. https://plants.usda.gov/home/plantProfile?symbol=KAMI Bailey, L. H. (1949). Manual of Cultivated Plants Most Commonly Grown in the Continental United States and Canada. Macmillan Company.
Protocol Author	Anabelle Manrique
Date Protocol Updated	May 3, 2023

1. Kalmia microphylla (2015, May 18). The IUCN Red List of Threatened Species. https://www.iucnredlist.org/species/64316798/67729922

2. Kalmia microphylla (Alpine laurel) | Native Plants of North America. (2023, April 3). Lady Bird Johnson Wildflower Center. https://www.wildflower.org/plants/result.php?id_plant=KAMI

3. Kalmia microphylla (Hook.) A. Heller. (n.d.). Consortium of Pacific Northwest Herbaria. https://www.pnwherbaria.org/data/results.php?DisplayAs=WebPage&ExcludeCultivated=Y&GroupBy=ungrouped&SortBy=Year&SortOrder=DESC&SearchAllHerbaria=Y&QueryCount=1&IncludeSynonyms1=Y&SciName1=Kalmia%20microphylla&Zoom=4&Lat=45&Lng=-125&PolygonCount=0

4. Kalmia microphylla (Hook.) A. Heller. (n.d.). United States Department of Agriculture. https://plants.usda.gov/home/plantProfile?symbol=KAMI

5. Kalmia microphylla in Flora of North America @ efloras.org. (n.d.). Flora of North America. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250065670

6. Knoke, D., & Giblin, D. (n.d.). Kalmia microphylla. Burke Herbarium Image Collection. https://www.burkeherbarium.org/imagecollection/taxon.php?Taxon=Kalmia%20microphylla

7. Luna, Tara; Evans, Jeff; Wick, Dale. 2008. Propagation protocol for production of Container (plug) Kalmia microphylla (Hook) Heller plants 800 ml containers; USDI NPS - Glacier National Park West Glacier, Montana. In: Native Plant Network. URL: https://NativePlantNetwork.org. US Department of Agriculture, Forest Service, National Center for Reforestation, Nurseries, and Genetic Resources.

8. Plant Strategies - Rain Forests. (2023, March 3). Ecology Center. https://www.ecologycenter.us/rain-forests/plant-strategies.html