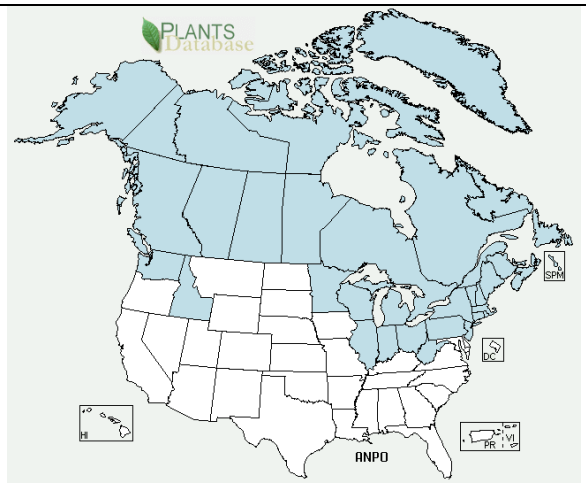
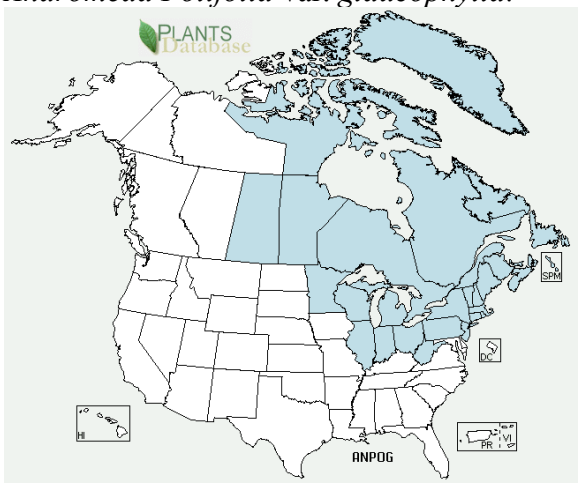
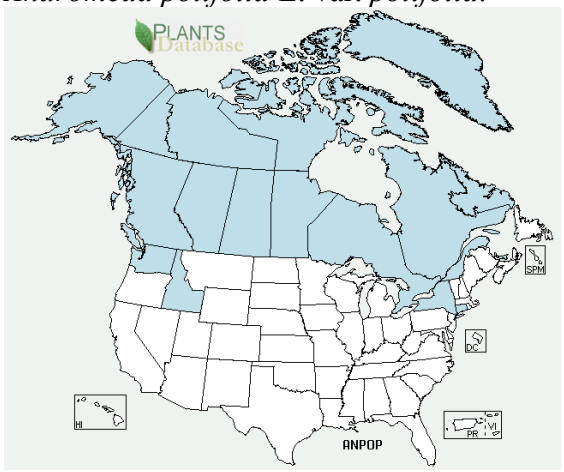
Plant Propagation Protocol for *Andromeda polifolia L.*
ESRM 412 – Native Plant Production
Protocol URL: https://courses.washington.edu/esrm412/protocols/ANPO.pdf

TAXONOMY	
Plant Family	
Scientific Name	*Ericacea,* (USDA)
Common Name	Heath family, (USDA)
Species Scientific Name	
Scientific Name	*Andromeda polifolia L.,* (USDA)
Varieties	*Andromeda polifolia* var. *glaucophylla* (Link) DC *Andromeda polifolia* L. var. *polifolia,* (USDA)
Sub-species	N/A
Cultivar	'**Grandiflora**' '**Blue Ice**' - Intense slate blue leaf color. Popular in the trade. **'Nana'** - Dwarf habit, perhaps no taller than 18" (Brand), (Robson, Richter and Filbert)
Common Synonym(s)	For var. *polifolia:* *Andromeda polifolia* L. var. *concolor* B. Bolvin For var. *glaucophylla:* *Andromeda glaucophylla* Link var. *iodandra* Fernald *Andromeda glaucophylla* Link *Andromeda glaucophylla* Link var. *iodandra* Fernald (USDA)
Common Name(s)	Bog Rosemary (USDA)
Species Code (as per USDA Plants database)	ANPO
GENERAL INFORMATION	
Geographical range	"Native to northern and central Europe, northern Asia, and North America, where its range extends from Newfoundland and Labrador to Manitoba, south to New Jersey, Indiana, and Minnesota" (Oregon State University). Native Introduced Absent/Unreported *Andromeda Polifolia*:

	 *Andromeda Polifolia* var. *glaucophylla:*  *Andromeda polifolia* L. var. *polifolia:*  Image Credits: USDA (Washington State distribution map unavailable.)
Ecological	Found in bogs, fens, and swamps with dappled shade and acid or very acid

distribution	soils as well as boggy subalpine meadows in Alaska and the Queen Charlotte Islands. (Alaback, Antos and Goward), (Plants For A Future)
Climate and elevation range	Prefers cool temperatures with low humidity, peaty to sandy soil bogs, sun to light shade, hearty in USDA Zone 6 – 2, elevation 6m – 1695m, circumboreal. (Hitchcock and Cronquist), (Kilinkenber), (Oregon State University), (Brand), (Plants For A Future)
Local habitat and abundance	Associated with**:** Black Spruce (Picea mariana), Tamarack (Larix laricina), Bog Birch (Betula pumila), Leatherleaf (Chamaedaphne calyculata), Bog Laurel (Kalmia polifolia), Large Cranberry (Vaccinium macrocarpon), Small Cranberry (Vaccinium oxycoccus)Wild Calla or Water Arum (Calla palustris), Wool Fruited Sedge (Carex lasiocarpa), Round Leaf Sundew (Drosera rotundifolia), Cotton Sedge (Eriophorum vaginatum),Purple Pitcher Plant (Sarracenia purpurea), and Sphagnum Moss (Sphagnum spp.) ground cover (Rook). "Flowers are visited by a number of insects (but often few individuals), most commonly by Apis mellifera, the Bumblebees Bombus affinis, B. fervida, B. impatiens, B. terricola, B. vagans, and Andrena. Flies and butterflies visit but probably do not pollinate the flowers (Rook)."
Plant strategy type / successional stage	Cannot tolerate drought (Rook).
Plant characteristics	**Overall:** slow growing, low evergreen shrub with creeping rootstock/rhizomes. Usually limited branching with upright stems. 1- 2 ft tall and 2 – 3 ft wide. **leaves**: linear to oblong, simple, alternate, 1.5 – 3.5 cm long with short petiole, entire margin revolute with sharp tip, blue-green to dark green above, whitish beneath. **flowers**: small, white to pink, 5-lobed, ~6mm globose to urn-shaped, nodding, 2 – 8 per terminal clusters (umbels);  **Photo Credit: Oregon State University** **fruit**: sub-globose to obovoid, 5 segment, small brown capsule. , no ornamental value (Robson, Richter and Filbert), (Alaback, Antos and Goward), (Oregon

	State University) (Brand)
Other Comments	Andromedotoxin can be released from this plant if leaves are boiled. If ingested it lowers blood pressure and can cause breathing problems, dizziness, cramps, vomiting and diarrhea (Alaback, Antos and Goward). To avoid releasing the toxin, you can brew the leaves in a jar in the sun (Plants For A Future).
PROPAGATION DETAILS	
Propagation by Seed	
Ecotype	Not specified
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container
Stock Type	Pot
Time to Grow	◊ 12+ months (Plants For A Future) ◊ Fall to Spring (Robson, Richter and Filbert).
Target Specifications	15+ cm tall (Plants For A Future)
Propagule Collection Instructions	◊ Collect seeds after capsules ripen (Robson, Richter and Filbert).
Propagule Processing/Propagule Characteristics	◊ Seeds may require cold stratification to break dormancy (Rook). ◊
Pre-Planting Propagule Treatments	◊ Un-germinated seeds sown in flats showed heavy germination after exposure to some cold (Dirr and Heuser, Jr.).
Growing Area Preparation / Annual Practices for Perennial Crops	◊ Using acid compost in the greenhouse, surface sow, or just barely cover seed and place in shade in February/March (Plants For A Future). ◊ Plant in flats of moist acidic potting soil outside (Robson, Richter and Filbert). ◊ Separate out young seedlings into individual pots as soon as possible. Keep well-ventilated as they are prone to "damp-off" (Plants For A Future). ◊ Acidic soil with plenty of moisture in full sun to part shade (Robson, Richter and Filbert). ◊ Requires constantly moist, peaty to sandy, acidic soil (Rook). ◊ Not adaptable, difficult to grow (Rook).
Establishment Phase Details	Usual germination is 1 – 2 months in 12^{o}C (Plants For A Future).
Length of Establishment Phase	Not specified

Active Growth Phase	Not specified
Length of Active Growth Phase	Not specified
Hardening Phase	Overwinter in greenhouse for at least the first winter (Plants For A Future).
Length of Hardening Phase	Not specified
Harvesting, Storage and Shipping	Not specified
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	Outplanting in early summer (Plants For A Future).
Other Comments	Andromedotoxin can be released from this plant if leaves are boiled. If ingested it lowers blood pressure and can cause breathing problems, dizziness, cramps, vomiting and diarrhea (Alaback, Antos and Goward). To avoid releasing the toxin, you can brew the leaves in a jar in the sun (Plants For A Future).
Propagation by cuttings	
Ecotype	Not specified
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Container
Stock Type	Pot
Time to Grow	◊ 12+ months (Hills) ◊ 15 months (Plants For A Future)
Target Specifications	"saleable or plantable size" (Hills)
Propagule Collection Instructions	◊ Collect cuttings of non-flowing wood, with or without heal, from February to June. Pot in peaty soil and grow in shade frame (Hills). ◊ 5 – 7 cm of half-ripe wood should be cut July/August and grown in shade frame (Plants For A Future).
Propagule Processing / Propagule Characteristics	Not specified
Pre-Planting Propagule Treatments	◊ Var. *glaucophylla* successfully rooted when treated with "8800 ppm IBA-talc plus thiram, polytent" using November to early December cuttings (Dirr and Heuser, Jr.).
Growing Area Preparation /	◊ Acidic soil with plenty of moisture in full sun to part shade (Robson, Richter and Filbert).

Annual Practices for Perennial Crops	◊ Requires constantly moist, peaty to sandy, acidic soil (Rook). ◊ Not adaptable, difficult to grow (Rook).
Establishment Phase Details	Not specified
Length of Establishment Phase	Not specified
Active Growth Phase	Not specified
Length of Active Growth Phase	Not specified
Hardening Phase	Not specified
Length of Hardening Phase	Not specified
Harvesting, Storage and Shipping	Not specified
Length of Storage	Not specified
Guidelines for Outplanting / Performance on Typical Sites	Not specified
Propagation by Layering	
Ecotype	Not specified
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Division
Stock Type	Field
Time to Grow	18 months (Plants For A Future)
Target Specifications	Not specified
Propagule Collection Instructions	◊ Layering in August requires digging up and replanting the plants slightly deeper 6 – 12 months earlier so that buried branches will root to form new plants that can be divided in early spring. This should be done in a semi-shaded area (Plants For A Future). ◊ Nick stems and bend so the nick is below the soil surface; hold in place until roots form (Robson, Richter and Filbert).
Propagule Processing/Propagule Characteristics	Not specified
Pre-Planting Propagule Treatments	Not specified
Growing Area	Not specified

Preparation / Annual Practices for Perennial Crops	
Establishment Phase Details	Not specified
Length of Establishment Phase	Not specified
Active Growth Phase	Not specified
Length of Active Growth Phase	Not specified
Hardening Phase	Not specified
Length of Hardening Phase	Not specified
Harvesting, Storage and Shipping	Not specified
Length of Storage	Not specified
Guidelines for Outplanting / Performance on Typical Sites	Not specified
INFORMATION SOURCES	
References	• Alaback, Paul, et al. Plants of the Pacific Northwest Coast, Washington, Oregon, British Columbia & Alaska. Ed. Jim Pojar and Andy MacKinnon. Vancouver: Lone Pine Publishing, 1994. • Brand, Mark. Andromeda polifolia. Mark Brand. 20 April 2014 <http://www.hort.uconn.edu/plants/a/andpol/andpol1.html>. • Dirr, Dr. Michael A. and Dr. Charles W. Heuser, Jr. A Reference Manual of Woody Plant Propagation: From Seed to Tissue Culture. Portland: Timber Press, Inc., 2006. • Hills, Lawrence D. The Propagation of Alpines. Second Edition. London: Faber and Faber Limited, 1959. • Hitchcock, C.Leo and Arthur Cronquist. Flora of the Pacific Northwest. Seattle: University of Washington Press, 1976. • Kilinkenber, Brian. Andromeda polifolia. 2013. Lab for Advanced Spacial Analysis, Department of Geography, University of British Columbia, Vancouver. 21 April 2014 <http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Andromeda%20polifolia>. • Oregon State University. Landscape Plants - Images, Identification and Information. Department of Horticulture. 20 April 2014

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Other Sources Consulted	• Chicago Botanic Garden. Chicago Botanic Garden. 20 April 2014 <http://www.chicagobotanic.org/>.
Protocol Author	Amanda Pole
Date Protocol Created or Updated	Protocol Updated 04/22/14, 06/09/14 See appendix for original protocol by Joy Woo (05/08/06)

Appendix:

Image from Oregon State University[6]

Plant Data Sheet: Bog Rosemary (*Andromeda polifolia*)

Range
Bog rosemary is a circumboreal species ranging from Alaska to Labrador, and south to Washington and Idaho. It can also be found in northern and central Europe and northern Asia.[5],10

Climate, elevation
Bog rosemary prefers cool, temperate climates, and low to subalpine elevations of 6 to 1695 meters.[4],6,8

Local occurrence (where, how common)
Bog rosemary may be found in Washington bogs, fens, and swamps.[8]

Habitat preferences
Bog rosemary prefers sun to light shade in the acid environment of bogs, fens, and swamps.[6],8

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)
N/A

Associated species
Bog rosemary may be found living among black spruce (*Picea mariana*), tamarack (*Larix laricina*), bog birch (*Betula pumila*), leatherleaf (*Chamaedaphne calyculata*), bog laurel (*Kalmia polifolia*), large cranberry (Vaccinium macrocarpon), small cranberry (*Vaccinium oxycoccus*) wild calla (*Calla palustris*), wool fruited sedge (*Carex lasiocarpa),* round leaf sundew (*Drosera rotundifolia*), cotton sedge (*Eriophorumvaginatum*), purple pitcher plant (*Sarracenia purpurea)*, and sphagnum moss (*Sphagnum* spp.).[9]

May be collected as: (seed, layered, divisions, etc.)
Bog rosemary may be collected as seed, cuttings, and divisions.[7]

Collection restrictions or guidelines
Sow bog rosemary seeds in February and March, collect cuttings in November and December, and collect divisions in early spring.[1],7

Seed germination (needs dormancy breaking?)
To break bog rosemary seed dormancy, perform cold stratification for 1-2 months at 12°C. It has been observed that seeds sown in June produce sporadic germination, whereas those returned to the cold then to warm result in heavy germination.[1],7

Seed life (can be stored, short shelf-life, long shelf-life)
Information on seed life was unavailable.

Recommended seed storage conditions
Information on seed storage conditions was unavailable.

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)
Seeds and cuttings are recommended for the propagation of bog rosemary. Sown seeds can be planted after two years growth. Softwood cuttings collected in November and December will take root within 4-5 weeks or can be grown and then planted in about a year.[1],2,3

Soil or medium requirements (inoculum necessary?)
Bog rosemary needs permanently moist, acid soil, so finely milled peat will work for sowing seeds.[2] For cuttings use 8000ppm IBA-talc plus thiram.[1]

Installation form (form, potential for successful outcomes, cost)
Seedlings and cuttings are recommended installation forms for bog rosemary. Seedlings may be planted in early summer once they reach 15cm in height, but they should overwinter in a greenhouse. Cuttings planted in summer will take root in approxiamately 15 months.[7]

Recommended planting density
It is recommended that bog rosemary be planted at 24-36 inch (60-90 centimeters) intervals.[11]

Care requirements after installed (water weekly, water once etc.)
Plant in permanently moist soil.[2]

Normal rate of growth or spread; lifespan
Bog rosemary reaches may reach 16 inches (40 centimeters) in height.[2]

Sources cited
(1) Dirr, Michael A. and Charles W. Heuser, Jr. The Reference Manual of Woody Plant Propagation. From Seed to Culture. Varsity Press, Athens, GA, 1987.
(2) Heuser, Charles W., Jr., PhD. The Complete Book of Plant Propagation. Reed International Books Limited, 1997.

(3) Hills, Lawrence D. The Propagation of Alpines. Theophrastus (Sakonnet), 1976.
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(6) Oregon State University, Department of Horticulture. http://www.oregonstate.edu/dept/Idplants/. Retrieved April 12, 2006.
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Data compiled by (student name and date)
Joy Wood 5/8/06