Template - Plant Propagation Protocol
ESRM 412 – Native Plant Production
JD Bakker
Spring 2007

TAXONOMY	
Family Names	
Family Scientific Name:	*Liliaceae*
Family Common Name:	Lily
Scientific Names	
Genus:	*Maianthemum*
Species:	*Dilatatum*
Species Authority:	(Wood) Nelson and McBride
Common Synonym(s)	
Genus, Species, and Species Authority	*M. bifolium ssp. kamtschaticum* (J.F. Gmel. ex Cham.) E. Murr. *M. bifolium var. kamtschaticum* (J.F. Gmel. ex Cham.) Trautv. & C.A. Mey *M. kamtschaticum*(J.F. Gmel. ex Cham.) Nakai
Species Code (as per USDA Plants database):	MADI
GENERAL INFORMATION	
General Distribution (geographical range (states it occurs in), ecosystems, etc):	Western North American forb, distributed more in the Pacific than the Cordilleran region. Occurs in cool mesothermal climates on very moist to wet nitrogen rich soils. Characteristic of alluvial floodplain forests. (Klinka et al, 1989) Alaska to northern California, east through British Columbia and northern Idaho. (Was recently excluded from the Yukon, Alaska flora. (Cody et al, 2003) Disjunct population occurs in Asia on the Kamtchatka peninsula in E. Russia to Japan. (Flora of N. America website)
Climate and elevation range	Submontane to sub alpine. It's occurrence decreases with increasing elevation and continentality. (Klinka et al, 1989)
Local habitat and abundance; may include commonly associated species	Scattered to plentiful in coniferous and broad-leaved forests on water-receiving and water collecting sites. Commonly found on stream edge sites, flood plains, and sites affected by ocean spray. Grows with *Blechnum spicant, Polystichum munitim, Tiarella trifoliata, Troutvetteria caroliniensis, and Lysichiton americanum*. (Klinka et al, 1989)
Plant strategy type / successional stage	Aggressive carpeter. (Krukeberg, 1982) Clonal rhizomatous herb which can form large patches of continuous cover. (Wilson et al, 2005)
PROPAGATION DETAILS	
Propagation Goal:	plants
Propagation Method :	Seed or vegetative
Product Type :	container
Stock Type:	plug

Time to Grow :	Seed: Two years (Potash and Aubry, 1997) Vegetative: one growing season
Target Specifications :	Product should have own root system and at least one leaf.
Propagule Collection (how, when, etc):	Seed: Berries mature from late July-September. Watch for the disappearance of green color from stem end. Propagaiton from seed would be desirable if genetic diversity is sought, i.e. in a restoration setting. Although the plant is clonal, studies have shown that it is still possible to collect seed from a relatively limited population and still achieve some measure of genetic diversity in your collection. "Within *M. dilatatum* populations, clonality is a significant factor, but the spatial structuring of genetic variation suggests that both low levels of restricted gene flow and repeated recruitment of genets occur." (Wilson et al, 2005) Rhizomes: Collect rhizomes in the fall before the deciduous leaves disappear for the season, making the plants impossible to find. (Potash and Aubry, 1997)
Propagule Processing/Propagule Characteristics :	Seed: Berries are shiny and brownish yellow with red mottling. (Potash and Aubry, 1997) Seed is comparatively small – usually about 2mm across and it's embryo is at least half the length of the seed. (Martin and Barkley, 1961)
Pre-Planting Propagule Treatments :	Rhizomes: Cut rhizomes into sections, making sure each section has roots or root buds. (Potash and Aubry, 1997)
Growing Area Preparation / Annual Practices for Perennial Crops	Rhizomes: Plant horizontally with roots down, in pots, flats, or at site. (Potash and Aubry, 1997)
Establishment Phase (from seeding to germination):	Seeds: Whole seed is planted in flats, containers, or directly on site, and left outside in natural ambient conditions. (Potash and Aubry, 1997) Cold-Warm-Cold-Warm stratification is necessary to break both root and epicotyl dormancy. (Baskin and Baskin, 1998) (Schollmeyer, pers. comm.) Rhizomes: the above ground portion of the plant dies back after dividing or salvaging due to the deep roots are easily damaged. They usually grow back in the second year. (Leigh, 1999)
Length of Establishment Phase:	Seed: emerges two years after planting
Active Growth Phase :	One growing season
Length of Active Growth Phase:	
Hardening Phase :	
Length of Hardening Phase:	
Harvesting, Storage and Shipping:	
Length of Storage :	
Guidelines for Outplanting	Each stalk comes from and underground system of vigorous

/ Performance on Typical Sites	horizontal stems. A single plant can, in time, produce hundreds of above ground triads of two leaves and one flower cluster. (Krukeberg, 1982)
INFORMATION SOURCES	
References:	Baskin, C.C. and J.M. Baskin 1998. *Seeds: Ecology, Biogeography, and evolution of dormancy and germination*. Academic Press, San Diego, CA Cody, W.J., C.E. Kennedy, B. Bennett, J. Staniforth. *New Records of Vascular Plants in the Yukon Territory*. Canadian Field-Naturalist. 117(2):278-301 Apr-Jun 2003 Flora of N. America webite. www.efloras.org/flora_page.aspx?flora_id=1 (Accessed 05/07/2007) Klinka, K., V.J. Krajina, A. Ceska, and A.M. Scagel. 1989 *Indicator Plants of Coastal British Colombia.* University of British Colombia Press, Vancouver BC. Kruckeberg, A. 1982. *Gardening with Native Plants of the Pacific Northwest.* University of Washington Press. Seattle, WA. Leigh, M. 1999 *Grow your own Native Landscape; a guide to identifiying, propagating, and landscaping with western Washington native plants*. 2nd edition. Washignton State University Extension Press Martin, A.C. and W.D. Barkley. 1961. *Seed Identification Manual*. University of California Press. Berkely, CA Native plant materials webpage from USDA Forest Service Celebrating Wildflowers website. http://www.fs.fed.us/wildflowers/nativeplantmaterials/index.shtml (Accessed 05/07/07) Schollmeyer, Jeanne. Senior Gardener and manager, Atlantic City Nursery. Seattle Parks and Recreation. Personal communication Wilson ASG, B.J. VanderKamp and C. Ritland. *Spatial genetic and clonal structure in Maianthemum dilatatum as defined by AFLP markers*. Canadian Journal of Botany 83 (9) 1126-1132 Sep 2005
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Date Entered or Updated :	05/08/2007