

Australia/New Zealand Weed Risk Assessment adapted for United States.

Data used for analysis published in: Gordon, D.R. and C.A. Gantz. 2008. Potential impacts on the horticultural industry of screening new plants for invasiveness. Conservation Letters 1: 227-235. Available at: <http://www3.interscience.wiley.com/cgi-bin/fulltext/121448369/PDFSTART>

<i>Smilacina fusca</i>			
Question number	Question	Answer	Score
1.01	Is the species highly domesticated?	n	0
1.02	Has the species become naturalised where grown?		
1.03	Does the species have weedy races?		
2.01	Species suited to U.S. climates (USDA hardiness zones; 0-low, 1-intermediate, 2-high)	2	
2.02	Quality of climate match data (0-low; 1-intermediate; 2-high)	1	
2.03	Broad climate suitability (environmental versatility)	y	1
2.04	Native or naturalized in regions with an average of 11-60 inches of annual precipitation	?	
2.05	Does the species have a history of repeated introductions outside its natural range?	?	
3.01	Naturalized beyond native range	n	-1
3.02	Garden/amenity/disturbance weed	n	0
3.03	Weed of agriculture	n	0
3.04	Environmental weed	n	0
3.05	Congeneric weed	n	0
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic		
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals		
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens		
4.07	Causes allergies or is otherwise toxic to humans		
4.08	Creates a fire hazard in natural ecosystems		
4.09	Is a shade tolerant plant at some stage of its life cycle		
4.1	Grows on one or more of the following soil types: alfisols, entisols, or mollisols	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets		
5.01	Aquatic	n	0

5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	?	
6.01	Evidence of substantial reproductive failure in native habitat	n	0
6.02	Produces viable seed		
6.03	Hybridizes naturally		
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators		
6.06	Reproduction by vegetative fragmentation	y	1
6.07	Minimum generative time (years)		
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
7.02	Propagules dispersed intentionally by people	?	
7.03	Propagules likely to disperse as a produce contaminant	n	-1
7.04	Propagules adapted to wind dispersal	n	-1
7.05	Propagules water dispersed		
7.06	Propagules bird dispersed	y	1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)		
8.01	Prolific seed production		
8.02	Evidence that a persistent propagule bank is formed (>1 yr)		
8.03	Well controlled by herbicides		
8.04	Tolerates, or benefits from, mutilation or cultivation		
8.05	Effective natural enemies present in U.S.		
<b>Total Score</b>			<b>0</b>

<b>Outcome</b>	<b>Accept</b>
----------------	---------------

<b>section</b>	<b># questions answered</b>	<b>satisfy minimum?</b>
A	9	Yes
B	5	Yes
C	9	Yes
total	23	yes

Data collected 2008

Question number	Reference	Source data
1.01		used horticulturally, but no evidence of significant modification
1.02		
1.03		
2.01	<p>1. PERAL NAPPFAST Global Plant Hardiness (<a href="http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20gnd.tif">http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20gnd.tif</a>). 2. Kress, WJ (2003) A checklist of the trees, shrubs, herbs, and climbers of Myanmar. Contributions from the United States National Herbarium 45: 1-590. Department of Systematic Biology--Botany, National Museum of Natural History, Washington, DC. 3. Annotated Checklist of the Flowering Plants of Nepal. <i>Smilacina fusca</i>. <a href="http://www.efloras.org/florataxon.aspx?flora_id=110&amp;taxon_id=200027882">http://www.efloras.org/florataxon.aspx?flora_id=110&amp;taxon_id=200027882</a>. Accessed May 7, 2008. 4. Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i>. Pp. 217-222. In: Wu, Z and Raven, PH (editors). Flora of China. Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).</p>	<p>1. Global plant hardiness zones (2?)3-12. 2. Distribution: Myanmar. 3. Distribution: Nepal. 4. "S Xizang, NW Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim]".</p>
2.02		
2.03	<p>1. Köppen-Geiger climate map (<a href="http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf">http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf</a>). 2. Kress, WJ (2003) A checklist of the trees, shrubs, herbs, and climbers of Myanmar. Contributions from the United States National Herbarium 45: 1-590. Department of Systematic Biology--Botany, National Museum of Natural History, Washington, DC. 3. Annotated Checklist of the Flowering Plants of Nepal. <i>Smilacina fusca</i>. <a href="http://www.efloras.org/florataxon.aspx?flora_id=110&amp;taxon_id=200027882">http://www.efloras.org/florataxon.aspx?flora_id=110&amp;taxon_id=200027882</a>. Accessed May 7, 2008. 4. Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i>. Pp. 217-222. In: Wu, Z and Raven, PH (editors). Flora of China. Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).</p>	<p>1. Occurs in three climatic regions. 2. Distribution: Myanmar. 3. Distribution: Nepal. 4. "S Xizang, NW Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim]".</p>
2.04	<p>1. Atlapedia Online (<a href="http://www.atlapedia.com/online/countries/myanmar.htm">http://www.atlapedia.com/online/countries/myanmar.htm</a>). 2. Atlapedia Online (<a href="http://www.atlapedia.com/online/countries/nepal.htm">http://www.atlapedia.com/online/countries/nepal.htm</a>). 3. Climate Source (<a href="http://www.climatesource.com/cn/fact_sheets/chin">http://www.climatesource.com/cn/fact_sheets/chin</a></p>	<p>1. For Myanmar: "The coastal and high mountain precipitation varies between 2,500 to 5,000 mm (98 to 196 inches) annually with the interior receiving 1,000 mm (39 inches) or less." 2. For Nepal: "Average annual</p>

	<p>appt_xl.jpg). 4. Climate Source (<a href="http://www.climatesource.com/cn/fact_sheets/chinappt_xl.jpg">http://www.climatesource.com/cn/fact_sheets/chinappt_xl.jpg</a>). 5. Atlapedia Online (<a href="http://www.atlapedia.com/online/countries/bhutan.htm">http://www.atlapedia.com/online/countries/bhutan.htm</a>). 6. Microsoft Encarta World Precipitation and Average Rainfall (<a href="http://uk.encarta.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&amp;artrefid=761554737&amp;pn=3&amp;sec=-1">http://uk.encarta.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&amp;artrefid=761554737&amp;pn=3&amp;sec=-1</a>).</p>	<p>precipitation decreases from 1,778 mm (70 inches) in the east to 899 mm (35 inches) in the west." 3. For Xizang Province, the average annual precipitation is 2 inches/year -- greater than 196.9 inches/year. 4. For Yunnan Province, the average annual precipitation is 23.6 in/yr -- 196.9 in/yr. 5. For Bhutan: "Average annual precipitation varies from 1,020 to 1,520 mm (40 to 60 inches)". 6. For India: Average annual precipitation for the entire country ranges from less than 10 to greater than 80 inches, however most of the country falls into the 20-60 inch range.</p>
2.05	B & T World Seeds ( <a href="http://www.b-and-t-world-seeds.com/carth.asp?species=Maianthemum%20fuscum&amp;sref=79778">http://www.b-and-t-world-seeds.com/carth.asp?species=Maianthemum%20fuscum&amp;sref=79778</a> ).	Species listed on the website, but seeds are not available.
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05		no evidence
4.01	Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). <i>Flora of China</i> . Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).	no evidence
4.02		
4.03	Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). <i>Flora of China</i> . Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).	no evidence
4.04		
4.05	Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). <i>Flora of China</i> . Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).	no evidence
4.06		
4.07		

4.08		
4.09		
4.1	<p>USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources (<a href="http://soils.usda.gov/use/worldsoils/mapindex/order.html">http://soils.usda.gov/use/worldsoils/mapindex/order.html</a>).</p>	<p>Xizang (S): rocky land with a very small amount of aridisols scattered throughout and a very small amount of gelisols and histisols; Yunnan (NW): mostly entisols with some of the rocky land soil order type; Nepal: mostly entisols with some inceptisols and a small amount of ultisols and gelisols (and also some rocky land); Sikkim: mostly entisols with some inceptisols, ultisols and a small amount of aridisols (also with some rocky land); Bhutan: mostly ultisols with some entisols and a very tiny amount of inceptisols (and also some rocky land); India (NE): mostly inceptisols and alfisols with some ultisols and entisols; Myanmar (Burma): mostly ultisols with some inceptisols and alfisols and a small amount of entisols (and also a small amount of either aridisols or shifting sands—it is difficult to tell from the map).</p>
4.11	<p>1. Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i>. Pp. 217-222. In: Wu, Z and Raven, PH (editors). <i>Flora of China</i>. Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis). 2. Kunth, KS (1850) <i>Enumeratio plantarum omnium hucusque cognitarum, secundum familias naturales disposita, adjectis characteribus, differentiis et synonymis</i>. Sumtibus J.G. Cottae, Stutgardiae et Tubingae.</p>	<p>1. "Plants 25-50 cm tall" [species description]; "herbs perennial...stems erect, simple" [genus description]. 2. "Herba glabra...Caulis simplex, erectus" [Glabrous herb...stem simple, erect].</p>
4.12		
5.01		terrestrial
5.02	<p>USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland (<a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?34506">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?34506</a>).</p>	Convallariaceae
5.03	<p>USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network -</p>	Convallariaceae

	(GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland ( <a href="http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?34506">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?34506</a> ).	
5.04	1. Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). Flora of China. Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis). 2. Kunth, KS (1850) Enumeratio plantarum omnium hucusque cognitarum, secundum familias naturales disposita, adjectis characteribus, differentiis et synonymis. Sumtibus J.G. Cottae, Stutgardiae et Tubingae.	1. "Rhizome creeping, tuberous-moniliform, ca. 1 cm thick, stout." 2. "Rhizoma repens" [rhizome creeping].
6.01	Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). Flora of China. Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).	no evidence
6.02		
6.03		
6.04		
6.05		
6.06	1. Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). Flora of China. Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis). 2. Kunth, KS (1850) Enumeratio plantarum omnium hucusque cognitarum, secundum familias naturales disposita, adjectis characteribus, differentiis et synonymis. Sumtibus J.G. Cottae, Stutgardiae et Tubingae.	"Rhizoma repens" [rhizome creeping].
6.07		
7.01		
7.02	B & T World Seeds ( <a href="http://www.b-and-t-world-seeds.com/carth.asp?species=Maianthemum%20fuscum&amp;sref=79778">http://www.b-and-t-world-seeds.com/carth.asp?species=Maianthemum%20fuscum&amp;sref=79778</a> ).	Species listed on the website, but seeds are not available.
7.03		no evidence
7.04	Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). Flora of China. Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).	"Berries red at maturity, 5-8 mm in diam., 1-3-seeded" [species description]; "fruit a berry, globose or subglobose. Seeds 1-3, globose to ovoid" [genus description]. [no evidence of adaptations to wind dispersal]
7.05		

7.06	Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). <i>Flora of China</i> . Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).	"Berries red at maturity, 5-8 mm in diam., 1-3-seeded" [species description]; "fruit a berry, globose or subglobose. Seeds 1-3, globose to ovoid" [genus description].
7.07	Xinqi, C and Kawano, S (2000) <i>Maianthemum fuscum</i> . Pp. 217-222. In: Wu, Z and Raven, PH (editors). <i>Flora of China</i> . Vol. 24. Science Press (Beijing) and Missouri Botanical Garden (St. Louis).	"Berries red at maturity, 5-8 mm in diam., 1-3-seeded" [species description]; "fruit a berry, globose or subglobose. Seeds 1-3, globose to ovoid" [genus description]. [no evidence of adaptations to external dispersal]
7.08		
8.01		
8.02		
8.03		
8.04		
8.05		