

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>Persicaria microcephala</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)	2	
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	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	n	-2
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	n	0
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	n	0

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	y	1
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		
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>
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section	# questions answered	satisfy minimum?
A	11	Yes
B	7	Yes
C	9	Yes
total	27	yes

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. Grierson, AJC and Long, DG (1983) Flora of Bhutan. Volume 1, Part 1, p.165. Polygonaceae. Royal Botanic Garden Edinburgh, Edinburgh. 3. Ohba, H and Akiyama, S (1992) The alpine flora of the Jaljale Himal, East Nepal. University Museum, University of Tokyo, Tokyo. 4. Ohba, H and Ikeda, H (2000) The flora of Hinku and Hunku Valleys, East Nepal. University Museum, University of Tokyo, Tokyo. 5. Press, JR, Shrestha, KK, and Sutton, DA (2000) Annotated Checklist of the Flowering Plants of Nepal. The Natural History Museum, London and Tribhuvan University, Kathmandu. 6. Wu, Z. Y., P. H. Raven &amp; D. Y. Hong, eds. 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.</p>	<p>1. Global hardiness zones 4-11. 2. "Bhutan: S - Samchi, Phuntsholing and Gaylegphug districts, C - Thimphu, Tongsa and Mongar districts; Sikkim" 3. Present in Jaljale Himal, East Nepal. 4. Present in the Hinku and Hunku Valleys of East Nepal. 5. Himalaya (Nepal to Bhutan), NE India, China. 6. S Gansu, Guizhou, Hubei, Hunan, S Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India, 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. Grierson, AJC and Long, DG (1983) Flora of Bhutan. Volume 1, Part 1, p.165. Polygonaceae. Royal Botanic Garden Edinburgh, Edinburgh. 3. Ohba, H and Akiyama, S (1992) The alpine flora of the Jaljale Himal, East Nepal. University Museum, University of Tokyo, Tokyo. 4. Ohba, H and Ikeda, H (2000) The flora of Hinku and Hunku Valleys, East Nepal. University Museum, University of Tokyo, Tokyo. 5. Press, JR, Shrestha, KK, and Sutton, DA (2000) Annotated Checklist of the Flowering Plants of Nepal. The Natural History Museum, London and Tribhuvan University, Kathmandu. 6. Wu, Z. Y., P. H. Raven &amp; D. Y. Hong, eds. 2003. Flora of China. Vol. 5 (Ulmaceae through Basellaceae). Science Press,</p>	<p>1. At least 3 climatic regions (maybe 4). 2. "Bhutan: S - Samchi, Phuntsholing and Gaylegphug districts, C - Thimphu, Tongsa and Mongar districts; Sikkim" 3. Present in Jaljale Himal, East Nepal. 4. Present in the Hinku and Hunku Valleys of East Nepal. 5. Himalaya (Nepal to Bhutan), NE India, China. 6. S Gansu, Guizhou, Hubei, Hunan, S Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Nepal, Sikkim].</p>

	Beijing, and Missouri Botanical Garden Press, St. Louis.	
2.04	<p>1. Atlapedia Online (<a href="http://www.atlapedia.com/online/countries/">http://www.atlapedia.com/online/countries/</a>). 2. 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>). 3. 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>).</p>	<p>1. For Bhutan: "Average annual precipitation varies from 1,020 to 1,520 mm (40 to 60 inches)"; For Nepal: "Average annual precipitation decreases from 1,778 mm (70 inches) in the east to 899 mm (35 inches) in the west." 2. 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. 3. For the regions listed, average annual precipitation ranges from 2 inches/year to 196.9 inches/year.</p>
2.05	<p>1. Avondale Nursery (<a href="http://www.avondalenursery.co.uk/Content/Catalogue/perennials_P.asp">http://www.avondalenursery.co.uk/Content/Catalogue/perennials_P.asp</a>). 2. Brookside Perennials (<a href="http://www.brooksideperennials.ca/plants1.htm">http://www.brooksideperennials.ca/plants1.htm</a>).</p>	<p>1. Sold in the United Kingdom. 2. Sold in Canada.</p>
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05		no evidence
4.01	<p>Wu, Z. Y., P. H. Raven &amp; D. Y. Hong, eds. 2003. Flora of China. Vol. 5 (<i>Ulmaceae</i> through <i>Basellaceae</i>). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.</p>	no description of these traits
4.02		
4.03	<p>Wu, Z. Y., P. H. Raven &amp; D. Y. Hong, eds. 2003. Flora of China. Vol. 5 (<i>Ulmaceae</i> through <i>Basellaceae</i>). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.</p>	no description of parasitism
4.04		
4.05	<p>Wu, Z. Y., P. H. Raven &amp; D. Y. Hong, eds. 2003. Flora of China. Vol. 5 (<i>Ulmaceae</i> through <i>Basellaceae</i>). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.</p>	no evidence

4.06		
4.07	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	no evidence
4.08		
4.09		
4.1	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> ).	Entisols are present in this region.
4.11	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Herbs perennial...Stems erect or decumbent, 40-60 cm tall".
4.12	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Herbs perennial...Stems erect or decumbent, 40-60 cm tall".
5.01	Press, JR, Shrestha, KK, and Sutton, DA (2000) Annotated Checklist of the Flowering Plants of Nepal. The Natural History Museum, London and Tribhuvan University, Kathmandu.	Herb; terrestrial.
5.02	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	Polygonaceae
5.03	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	Polygonaceae
5.04	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Rhizomes stout".
6.01		no evidence
6.02		
6.03		
6.04		
6.05		

6.06	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Herbs perennial...rhizomes stout".
6.07		
7.01		
7.02	1. Avondale Nursery ( <a href="http://www.avondalenursery.co.uk/Content/Catalogue/perennials_P.asp">http://www.avondalenursery.co.uk/Content/Catalogue/perennials_P.asp</a> ). 2. Brookside Perennials ( <a href="http://www.brooksideperennials.ca/plants1.htm">http://www.brooksideperennials.ca/plants1.htm</a> ).	1. Sold in the United Kingdom. 2. Sold in Canada.
7.03		no evidence
7.04	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Achenes black-brown, opaque, broadly ovoid, trigonous, 2-2.5 mm, punctate". [no evidence of adaptations to wind dispersal]
7.05		
7.06		
7.07	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2003. Flora of China. Vol. 5 ( <i>Ulmaceae</i> through <i>Basellaceae</i> ). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Achenes black-brown, opaque, broadly ovoid, trigonous, 2-2.5 mm, punctate". [no evidence of adaptations to external dispersal]
7.08		
8.01		
8.02		
8.03		
8.04		
8.05		