

**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>Flacourtia montana</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)	n	0
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?	?	
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	y	1
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		
5.01	Aquatic	n	0

5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	n	0
5.04	Geophyte	n	0
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	n	-1
6.05	Requires specialist pollinators		
6.06	Reproduction by vegetative fragmentation		
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	n	-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	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>-2</b>

<b>Outcome</b>	<b>Accept</b>
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section	# questions answered	satisfy minimum?
A	10	Yes
B	6	Yes
C	11	Yes
total	27	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	1. PERAL NAPPFAST Global Plant Hardiness ( <a href="http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20Igd.tif">http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20Igd.tif</a> ). 2. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 3. Gamble, JS (1936) Flora of the Presidency of Madras. Volume 2. Pp. 53-54. Adlard & Son. Ltd., London.	1. Global hardiness zones 9-13. 2. Distribution of genus is "tropical, few subtropical and temperate" [specific distribution of species has not been found, but it is in the Flora of British India]. 3. "Forests of the W. Coast and W. Ghats".
2.02		
2.03	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. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London. 3. Gamble, JS (1936) Flora of the Presidency of Madras. Volume 2. Pp. 53-54. Adlard & Son. Ltd., London.	1. 2-3 climatic regions (unsure of distribution and India has 3 climatic regions). 2. Distribution of genus is "tropical, few subtropical and temperate" [specific distribution of species has not been found, but it is in the Flora of British India]. 3. "Forests of the W. Coast and W. Ghats".
2.04	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> ).	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.
2.05		no evidence
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05	Holm, L, JV Pancho, JP Herberger, and DL Plucknett (1979) A Geographical Atlas of World Weeds. John Wiley and Sons, New York.	<i>Flacourtia indica</i> present as a weed in Zimbabwe [not enough evidence to be considered a weed].

4.01	1. Hooker JB (1875) The Flora of British India. London: L. Reeve and Co. 2. Chavan, AR and Oza, GM (1966) The Flora of Pavagadh (Gujarat State, India). The Maharaja Sayajirao University of Baroda Botanical Memoirs: no. 1. University of Baroda, Baroda [India]. 3. Gamble, JS (1936) Flora of the Presidency of Madras. Volume 2. Pp. 53-54. Adlard & Son. Ltd., London.	1. "Branches spinous...a very thorny tree". 2. "Branches thorny". 3. "A thorny tree".
4.02		
4.03	Hooker JB (1875) The Flora of British India. London: L. Reeve and Co.	no description of parasitism
4.04		
4.05	Krishnamani, R and Kumar, A (2000) Phyto-ecology of the lion-tailed macaque ( <i>Macaca silenus</i> ) habitats in Karnataka, India: Floristic structure and density of food-trees.	A food tree of the lion-tailed macaque...fruit and nectar are eaten [no evidence of toxicity].
4.06		
4.07	Gazetteer of the Bombay Presidency ( <a href="http://www.maharashtra.gov.in/pdf/gazetteer_reprint/Ratnagiri/savantvadi/pro2_minerals.html#2">http://www.maharashtra.gov.in/pdf/gazetteer_reprint/Ratnagiri/savantvadi/pro2_minerals.html#2</a> ).	"Has an edible fruit" [no evidence of toxicity].
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> ).	In the West Coast/Western Ghats regions of India, the main soil order types are alfisols and ultisols. There are very small regions of inceptisols and mollisols and potentially a very small region of aridisols in the range.
4.11	Hooker JB (1875) The Flora of British India. London: L. Reeve and Co.	Trees or shrubs.
4.12		
5.01		terrestrial
5.02	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?17121">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?17121</a> ).	Flacourtiaceae
5.03	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?17121">http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?17121</a> ).	Flacourtiaceae

	grin.gov/cgi-bin/npgs/html/taxon.pl?17121).	
5.04	1. Hooker JB (1875) The Flora of British India. London: L. Reeve and Co. 2. Chavan, AR and Oza, GM (1966) The Flora of Pavagadh (Gujarat State, India). The Maharaja Sayajirao University of Baroda Botanical Memoirs: no. 1. University of Baroda, Baroda [India].	1. Trees or shrubs. 2. "Large trees".
6.01		no evidence
6.02		
6.03		
6.04	1. Hooker JB (1875) The Flora of British India. London: L. Reeve and Co. 2. Gamble, JS (1936) Flora of the Presidency of Madras. Volume 2. Pp. 53-54. Adlard & Son. Ltd., London.	1. "Flowers dioecious". 2. "Flowers small, dioecious" [genus description].
6.05		
6.06		
6.07		
7.01		
7.02		no evidence
7.03		no evidence
7.04	1. Puyravaud J, Dufour C, and Subramanian, A (2003) Rain forest expansion mediated by successional processes in vegetation thickets in the Western Ghats of India. Journal of Biogeography 30: 1067-1080. 2. Matthew, KM (1991) An Excursion Flora of Central Tamilnadu, India. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.	1. "Dispersal agent = birds". 2. "Drupe globose, seeds obovoid" [genus description]. [no evidence of adaptations to wind dispersal].
7.05		
7.06	1. Chavan, AR and Oza, GM (1966) The Flora of Pavagadh (Gujarat State, India). The Maharaja Sayajirao University of Baroda Botanical Memoirs: no. 1. University of Baroda, Baroda [India]. 2. Puyravaud J, Dufour C, and Subramanian, A (2003) Rain forest expansion mediated by successional processes in vegetation thickets in the Western Ghats of India. Journal of Biogeography 30: 1067-1080. 3. Hooker JB (1875) The Flora of British India. London: L. Reeve and Co. 4. Gamble, JS (1936) Flora of the Presidency of Madras. Volume 2. Pp. 53-54. Adlard & Son. Ltd., London.	1. "Fruits red, of the size of a cherry." 2. "Dispersal agent = birds". 3. "Fruit slightly acid, size of a cherry" [species description]; "fruit indehiscent, endocarp hard...seeds obovoid" [genus description]. 4. "Fruits resembling cherries".
7.07	Matthew, KM (1991) An Excursion Flora of Central Tamilnadu, India. Oxford and IBH Publishing Co. Pvt.	Drupe globose, seeds obovoid [genus description]. [no evidence of

	Ltd., New Delhi.	adaptations to external dispersal].
7.08	1. Krishnamani R and Kumar A (2000) Phyto-ecology of the lion-tailed macaque ( <i>Macaca silenus</i> ) habitats in Karnataka, India: Floristic structure and density of food-trees. 2. Matthew, KM (1991) An Excursion Flora of Central Tamilnadu, India. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.	1. A food tree of the lion-tailed macaque...fruit is eaten [but no evidence of post-dispersal viability]. 2. Drupe globose, seeds obovoid [genus description].
8.01		
8.02		
8.03		
8.04		
8.05		