

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>Faramea multiflora</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)	?	
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		
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		
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		
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.		
Total Score			-2

Outcome	Accept
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section	# questions answered	satisfy minimum?
A	8	Yes
B	6	Yes
C	10	Yes
total	24	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 (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20Ign.d.tif). 2. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago. 3. Pereira, ZV, de Carvalho-Okano, RM, and Garcia, FCP (2006) Rubiaceae Juss. da Reserva Florestal mata do Paraíso, Viçosa, MG, Brasil. Acta bot. bras. 20(1): 207-224. 4. Lorence, DH (1999) A Nomenclator of Mexican and Central American Rubiaceae. Missouri Botanical Garden Press, St. Louis, Missouri.	1. Global hardiness zones (8-9?)10-13. 2. "The species ranges from northern Costa Rica to Brazil and Bolivia." 3. " <i>Faramea multiflora</i> distribui-se pela Costa Rica, Brasil e Bolívia [species is found in Costa Rica, Brazil and Bolivia]". 4. "Type: French Guiana".
2.02		
2.03	1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). 2. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago. 3. Pereira, ZV, de Carvalho-Okano, RM, and Garcia, FCP (2006) Rubiaceae Juss. da Reserva Florestal mata do Paraíso, Viçosa, MG, Brasil. Acta bot. bras. 20(1): 207-224. 4. Lorence, DH (1999) A Nomenclator of Mexican and Central American Rubiaceae. Missouri Botanical Garden Press, St. Louis, Missouri.	1. Possibly three (-4?) climatic regions. 2. "The species ranges from northern Costa Rica to Brazil and Bolivia." 3. " <i>Faramea multiflora</i> distribui-se pela Costa Rica, Brasil e Bolívia [species is found in Costa Rica, Brazil and Bolivia]". 4. "Type: French Guiana".
2.04	1. Atlapedia Online (http://www.atlapedia.com/online/countries/costa.htm) . 2. Atlapedia Online (http://www.atlapedia.com/online/countries/brazil.htm) . 3. World Trade Press (http://www.worldtradeppress.com/Precipitation_Map_Ecuador.html). 4. Atlapedia Online (http://www.atlapedia.com/online/countries/venezual.htm). 5. Atlapedia Online (http://www.atlapedia.com/online/countries/peru.htm). 6. Atlapedia Online (http://www.atlapedia.com/online/countries/frenguinh.htm). 7. Microsoft Encarta World Precipitation and	1. For Costa Rica: average annual precipitation is 3,300 mm (130 inches) and rainfall patterns vary from region to region. 2. For Brazil: "the nationwide average annual precipitation varies between 1,010 mm (40 inches) and 2,030 mm (80 inches)." 3. For Ecuador: Average annual precipitation ranges from 3.9 in/yr to greater than 98.4 in/yr. 4. For Venezuela: the wet season is from May to November with an average annual precipitation

	<p>Average Rainfall (http://uk.encarta.msn.com/encnet/RefPages/RefMedia.aspx?refid=461530746&artrefid=761554737&pn=3&sec=-1). 8. Atlapedia Online (http://www.atlapedia.com/online/countries/panama.htm). 9. Altapedia Online (http://www.atlapedia.com/online/countries/guyana.htm).</p>	<p>varying from 1,400 mm (55 inches) in the Andes to 280 mm (11 inches) on the coast. 5. For Peru: average annual precipitation varies from 2,540 mm (100 inches) to 3,960 mm (156 inches) depending on the region. 6. Average annual precipitation is more than 2,500 mm (100 inches). 7. For Bolivia, the average annual precipitation ranges from under 10 inches/year to 80 inches/year. 8. For Panama: average annual precipitation varies from 1,780 mm (70 inches) to 2,540 (100 inches) depending on the region. 9. Average annual precipitation in Georgetown is 2,280 mm (90 inches) with less rainfall occurring on the higher plateau.</p>
2.05		no evidence
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05		
4.01	<p>1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.</p>	no description of these traits
4.02		
4.03	<p>1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation</p>	no description of parasitism

	International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.	
4.04		
4.05	1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.	no evidence
4.06		
4.07	1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.	no evidence
4.08		
4.09	Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.	"Understory shrubs of wet evergreen forest interiors and forest edges".
4.1	USDA, National Resources Conservation Services (NRCS), Soil Survey Division, World Soil Resources (http://soils.usda.gov/use/worldsoils/mapindex/order.html).	Costa Rica: mostly ultisols with a small amount of inceptisols (also with a small amount of andisols); Panama: almost entirely ultisols with a very small amount of inceptisols (and a very small amount of andisols); Brazil: a large amount of oxisols, with ultisols and

		entisols the next most prevalent types, and alfisols, aridisols, mollisols, and inceptisols on the eastern side/east coast; Venezuela: ultisols, inceptisols, some alfisols, a very small amount of mollisols and entisols (also primarily oxisols in southern Venezuela); Peru: ultisols (mostly in central Peru), some inceptisols and mollisols, and entisols all along the Pacific Coast (also oxisols in the north, a very small amount of andisols, and some rocky land along the border of the Pacific Coast entisols); French Guiana: almost entirely oxisols, with a small amount of inceptisols and a very small amount of entisols; Bolivia: mostly ultisols, alfisols, and inceptisols, with some mollisols, aridisols, and entisols (also a small amount of andisols); Guyana: Primarily ultisols and entisols in the north and oxisols and inceptisols in the south.
4.11	1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago. 4. Pereira, ZV, de Carvalho-Okano, RM, and Garcia, FCP (2006) Rubiaceae Juss. da Reserva Florestal mata do Paraíso, Viçosa, MG, Brasil. Acta bot. bras. 20(1): 207-224.	1. "Small trees" [genus description]. 2. "Shrubs or small trees" [genus description]. 3. "Shrubs or small trees, (1-)2-5(-6) m tall". 4. "Arbustos 1,5 m." [Shrubs 1.5 m].
4.12		
5.01		terrestrial
5.02	1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes	Rubiaceae

	on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.	
5.03	1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.	Rubiaceae
5.04	1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.	1. "Small trees" [genus description]. 2. "Shrubs or small trees" [genus description]. 3. "Shrubs or small trees, (1-)2-5(-6) m tall".
6.01	1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago.	no evidence

6.02		
6.03		
6.04		
6.05		
6.06		
6.07		
7.01		
7.02		no evidence
7.03		no evidence
7.04	<p>1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago. 4. Pereira, ZV, de Carvalho-Okano, RM, and Garcia, FCP (2006) Rubiaceae Juss. da Reserva Florestal mata do Paraíso, Viçosa, MG, Brasil. Acta bot. bras. 20(1): 207-224.</p>	<p>1. "Fruits...one-seeded, fleshy, also distinctive in being usually broader than long, seeds horizontal" [genus description]. 2. "Fruit baccate or almost dry, by abortion 1-seeded, the seed horizontal, deeply excavate on the lower side" [genus description]. 3. "Fruits 6-8 mm long, (8-)10-13 mm broad, oblate or transversely reniform, laterally compressed (oblong in cross-section), surface smooth and without costae, blue-black at maturity; pyrenes solitary." 4. "Fruto bacáceo, comprimido-globoso, 4-5 × 6-7 mm, azul na maturidade [Fruits are berry-like, compressed-globular, 4-5 × 6-7 mm, blue when mature]". [no evidence of adaptations to wind dispersal].</p>
7.05		
7.06	<p>1. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago. 2. Pereira, ZV, de Carvalho-Okano, RM, and Garcia, FCP (2006) Rubiaceae Juss. da Reserva Florestal mata do Paraíso, Viçosa, MG, Brasil. Acta bot. bras. 20(1): 207-224.</p>	<p>1. Fruits 6-8 mm long, (8-)10-13 mm broad, oblate or transversely reniform, laterally compressed (oblong in cross-section), surface smooth and without costae, blue-black at maturity; pyrenes solitary. 2. "Fruto bacáceo, comprimido-globoso, 4-5 × 6-7 mm, azul na maturidade [Fruits are berry-like, compressed-globular, 4-5 × 6-7 mm, blue when mature]".</p>
7.07	<p>1. Gentry, AH (1996) A field guide to the families and genera of woody plants of Northwest South America (Colombia, Ecuador, Peru) with supplementary notes on herbaceous taxa. The University of Chicago</p>	<p>1. "Fruits...one-seeded, fleshy, also distinctive in being usually broader than long, seeds horizontal" [genus description]. 2. "Fruit baccate or</p>

	<p>Press, Published in Association with Conservation International, Chicago and London. 2. Macbride, JF (1936) Flora of Peru. Botanical Series. Field Museum of Natural History, Volume XIII, Publication 364. Field Museum of Natural History, Chicago. 3. Burger, W (Editor) (1993) Flora Costaricensis. Family #202 Rubiaceae. Fieldiana Botany, New Series, No. 33. Field Museum of Natural History, Chicago. 4. Pereira, ZV, de Carvalho-Okano, RM, and Garcia, FCP (2006) Rubiaceae Juss. da Reserva Florestal mata do Paraíso, Viçosa, MG, Brasil. Acta bot. bras. 20(1): 207-224.</p>	<p>almost dry, by abortion 1-seeded, the seed horizontal, deeply excavate on the lower side" [genus description]. 3. "Fruits 6-8 mm long, (8-)10-13 mm broad, oblate or transversely reniform, laterally compressed (oblong in cross-section), surface smooth and without costae, blue-black at maturity; pyrenes solitary." 4. "Fruto bacáceo, comprimido-globoso, 4-5 x 6-7 mm, azul na maturidade [Fruits are berry-like, compressed-globular, 4-5 x 6-7 mm, blue when mature]". [no evidence of adaptations to external dispersal].</p>
7.08		
8.01		
8.02		
8.03		
8.04		
8.05		