Australia/New Zealand Weed Risk Assessment adapted for Florida.

Data used for analysis published in: Gordon, D.R., D.A. Onderdonk, A.M. Fox, R.K. Stocker, and C. Gantz. 2008. Predicting Invasive Plants in Florida using the Australian Weed Risk Assessment. Invasive Plant Science and Management 1: 178-195.

Ruellia makoyana (monkey plant)			
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 Florida's USDA climate 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)	n	0
2.04	Native or naturalized in habitats with periodic inundation		
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	y	0
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	n	0
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	n	0
4.09	Is a shade tolerant plant at some stage of its life cycle	y	1
4.1	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils)	n	0
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		
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	y	1
7.05	Propagules water dispersed	n	-1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	n	-1
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 Florida, or east of the continental divide		
Total Score			-1

Outcome	**Accept***

*Used secondary screen from: Daehler, C. C., J.L. Denslow, S. Ansari, and H. Kuo. 2004. A risk assessment system for screening out harmful invasive pest plants from Hawaii's and other Pacific islands. Conserv. Biol. 18: 360-368.

section	# questions answered	satisfy minimum?
A	7	yes
B	10	yes
C	11	yes
total	28	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		no evidence of selection for reduced weediness
1.02		
1.03		
2.01		
2.02		
2.03	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	"native in the Atlantic forest of Brazil" [and no evidence of naturalization elsewhere]
2.04		
2.05	1. Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda. 2. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	used horticulturally (1, 2)
3.01		no evidence
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05	1. Wilson and Mecca (2003) Seed production and germination of eight cultivars and the wild type of *Ruellia tweediana*: a potentially invasive ornamental. Journal of Environmental Horticulture 21: 137-143. 2. Holm (1979) A Geographical Atlas of World Weeds. John Wiley and Sons.	1. *R. tweediana* is considered an environmental weed in Florida. 2. *R. tuberosa* is considered a serious weed of agriculture in Thailand.
4.01	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	no description of these traits
4.02		no evidence
4.03	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	no description of this
4.04		
4.05		no evidence
4.06		
4.07		no evidence

4.08		no evidence
4.09	Lee, Bone, Tarsis, and Storch (1990) Correlates of leaf optical properties in tropical forest sun and extreme-shade plants. American Journal of Botany 77: 370-380.	*R. makoyana* considered a shade-adapted rain forest species.
4.1	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	"on permeable and fertile soil"
4.11	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	"much branched, trailing shrub"
4.12		no evidence, and low-growing
5.01		terrestrial
5.02	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	Acanthaceae
5.03	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	Acanthaceae
5.04		
6.01		
6.02		
6.03		
6.04		
6.05	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	"The flowers are much visited by hummingbirds." [likely has specialist pollinators, but unknown whether it requires them]
6.06	Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda.	"Propagated by plant division"
6.07		
7.01		
7.02	1. Lorenzi and Emygdio de Mello Filho (2000) The Tropical Plants of R. Burle Marx. Instituto Plantarum de Estudos da Flora Ltda. 2. Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	used horticulturally (1, 2)
7.03		no evidence
7.04	Witztum and Schulgasser (1995) The mechanics of seed expulsion in Acanthaceae. Journal of Theoretical Biology 176: 531-542.	subfamily Acanthoideae (which includes *Ruellia*) has explosive dispersal of its seeds
7.05		no evidence
7.06		wind dispersed
7.07	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	fruits of genus *Ruellia* are externally smooth, ellipsoid to clavate capsules, 1.4-2.5 cm long [no evidence of any means of attachment]
7.08		wind dispersed
8.01		
8.02		

8.03		
8.04		
8.05		