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.

Calliandra haematocephala (powderpuff bush)			
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	y	1
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	n	0
4.1	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils)	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	y	1
5.04	Geophyte		
6.01	Evidence of substantial reproductive failure in native habitat		
6.02	Produces viable seed	y	1
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	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)	y	1
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	13	yes
total	30	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		used ornamentally, but no evidence of selection for reduced weediness
1.02		
1.03		
2.01	1. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. 2. Horticopia 4.0	1. hardiness zone 9 2. hardiness zones 9B to 11
2.02		
2.03	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	Native to Bolivia. [and no evidence of naturalization elsewhere]
2.04		
2.05	Nevling and Elias (1971) *Calliandra haematocephala*: history, morphology, and taxonomy. Journal of the Arnold Arboretum 52: 69-85.	"a widely distributed ornamental plant"
3.01	Csurhes and Edwards (1998) Potential Environmental Weeds in Australia. Queensland Department of Natural Resources.	"It often produces seedlings in gardens." [no evidence of naturalization]
3.02		no evidence
3.03		no evidence
3.04	Csurhes and Edwards (1998) Potential Environmental Weeds in Australia. Queensland Department of Natural Resources.	The genus *Calliandra* is on their list of potential environmental weeds - no evidence that this species has become an environmental weed.
3.05	Kairo, Ali, Cheesman, Haysom, and Murphy (2003) Invasive Species Threats in the Caribbean Region. Report to the Nature Conservancy.	*Calliandra calothyrsus* considered naturalized and invasive in the Dominican Republic.
4.01	Nevling and Elias (1971) *Calliandra haematocephala*: history, morphology, and taxonomy. Journal of the Arnold Arboretum 52: 69-85.	no description of these traits
4.02		no evidence
4.03	Nevling and Elias (1971) *Calliandra haematocephala*: history, morphology, and taxonomy. Journal of the Arnold Arboretum 52: 69-85.	no description of this

4.04		
4.05		no evidence
4.06		
4.07	Horticopia 4.0	"Pollen causes significant allergy in certain people."
4.08		no evidence
4.09	1. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. 2. Missouri Botanical Garden, Kemper Center for Home Gardening (http://www.mobot.org/gardeninghelp/plantfinder/Plant.asp?code=A493). 3. Horticopia 4.0.	1. full sun 2. full sun (only) BUT 3. partial shade or partial sun to full sun
4.1	1. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. 2. Horticopia 4.0	1. various well-drained soils 2. "Powderpuff grows fast in sandy soils and full sun"
4.11	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	evergreen shrub or small tree
4.12		no evidence
5.01		terrestrial
5.02	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	Fabaceae
5.03	Allen and Allen (1981) The Leguminosae: a Source Book of Characteristics, Uses, and Nodulation. The University of Wisconsin Press, Madison.	*C. haematocephala* found to fix nitrogen.
5.04		
6.01		
6.02	1. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida. 2. Horticopia 4.0	1. propagation by seeds 2. "Seeds occasionally germinate in the landsape forming colonies."
6.03		
6.04		
6.05	1. Nevling and Elias (1971) *Calliandra haematocephala*: history, morphology, and taxonomy. Journal of the Arnold Arboretum 52: 69-85. 2. Horticopia 4.0 3. Ayers (2004) The legumes: a diverse, but important group of bee forages. American Bee Journal 144: 463-468.	1. "Unfortunately, we do not know the pollinator, but on the basis of inflorescence position, filament color, and direct observation of other species, one suspects humming birds". 2. attracts butterflies 3. attractive to bees
6.06	Horticopia 4.0	"Suckers often appear from the base of the plant."
6.07	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	rapid growth rate [but time to vegetative reproduction unknown]
7.01		
7.02	Nevling and Elias (1971) *Calliandra haematocephala*: history, morphology, and taxonomy. Journal of the Arnold Arboretum 52: 69-85.	"a widely distributed ornamental plant"
7.03		no evidence; unlikely to come into contact with produce
7.04	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	fruit is a legume, to 5 in. long [no evidence of adaptations to wind dispersal]

7.05		no evidence
7.06	1. Horticopia 4.0 2. Gilman and Watson (1993) *Calliandra haematocephala* (powderpuff). University of Florida, IFAS Extension (http://edis.ifas.ufl.edu/ST108).	1. fruit is a dry pod 2. does not attract wildlife
7.07	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	fruit is a legume, to 5 in. long [no evidence of any means of attachment]
7.08	1. Horticopia 4.0 2. Gilman and Watson (1993) *Calliandra haematocephala* (powderpuff). University of Florida, IFAS Extension (http://edis.ifas.ufl.edu/ST108).	1. fruit is a dry pod 2. does not attract wildlife
8.01		
8.02		probably - hard legume seeds
8.03		
8.04		
8.05		