

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.

<i>Mimosa pigra (catclaw mimosa)</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 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)		
2.04	Native or naturalized in habitats with periodic inundation	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	0
3.02	Garden/amenity/disturbance weed	y	0
3.03	Weed of agriculture	y	0
3.04	Environmental weed	y	0
3.05	Congeneric weed	y	0
4.01	Produces spines, thorns or burrs	y	1
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)	y	1
4.11	Climbing or smothering growth habit	n	0
4.12	Forms dense thickets	y	1
5.01	Aquatic	n	0

5.02	Grass	n	0
5.03	Nitrogen fixing woody plant	y	1
5.04	Geophyte	n	0
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	n	0
6.06	Reproduction by vegetative fragmentation	y	1
6.07	Minimum generative time (years)	1	1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y	1
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	y	1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	y	1
7.08	Propagules dispersed by other animals (internally)	n	-1
8.01	Prolific seed production	y	1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	y	1
8.03	Well controlled by herbicides	y	-1
8.04	Tolerates, or benefits from, mutilation or cultivation	y	1
8.05	Effective natural enemies present in Florida, or east of the continental divide		
Total Score			27

Outcome	Reject*
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*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	20	yes
total	37	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		
2.04	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Habitat: Wet places in the humid and subhumid tropics, occurring as a weed of roadsides, watercourses, drainage ditches, reservoirs, seasonally flooded wetlands, lowland fields, and occasionally, tropical mountain valleys."
2.05	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Mimosa is a native of tropical America...Introduced into other areas as an ornamental or as a cover crop"
3.01	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Introduced as an ornamental or as a cover crop, it is now widespread as a serious weed in Africa, India, northern Thailand, Indonesia, the Philippines and some Pacific islands."
3.02	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	a weed of roadsides and drainage ditches
3.03	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Waterhouse (1997) The major invertebrate pests and weeds of agriculture and plantation forestry in the southern and western Pacific. ACIAR Monograph No. 44, 99p.	1. "interferes with stock watering...it smothers pastures, reduces the available grazing area, makes stock mustering difficult"; Agricultural land in northern Thailand is infested with mimosa. 2. Considered a major weed of agriculture (pastures) in the Pacific.
3.04	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Weber (2003) Invasive Plant Species of the World. CABI Publishing. 3. Lonsdale (1993) Rates of spread of an invading species - <i>Mimosa pigra</i> in northern Australia. Journal of Ecology 81: 513-521.	1. "alters the natural habitat in conservation areas" 2. Considered an environmental weed in tropical and southern Africa, tropical Asia, and Australia; invades grassland, freshwater wetlands, riparian habitats, and wet forests. 3. " <i>M. pigra</i> poses a great threat to nature conservation

		and primary production"
3.05	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	<i>M. invisa</i> and <i>M. pudica</i> are both considered noxious weeds in Australia.
4.01	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	prickles on stems and leaf stalks
4.02		no evidence
4.03	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	no description of this
4.04	Lonsdale (1993) Rates of spread of an invading species - <i>Mimosa pigra</i> in northern Australia. Journal of Ecology 81: 513-521.	"There is no evidence to support the widespread popular perception that feral buffalo grazing suppressed the weed, nor that the removal of grazing pressure has resulted in an upsurge of the weed."
4.05	Burrows and Tyrl (2001) Toxic Plants of North America. Iowa State University Press, Ames.	"Although specific reports of intoxication problems caused by species of <i>Mimosa</i> are lacking, the plants have been found to contain several potential toxicants." [no evidence of toxicity]
4.06		
4.07	Burrows and Tyrl (2001) Toxic Plants of North America. Iowa State University Press, Ames.	"Although specific reports of intoxication problems caused by species of <i>Mimosa</i> are lacking, the plants have been found to contain several potential toxicants." [no evidence of toxicity]
4.08		no evidence
4.09	Lonsdale and Abrecht (1989) Seedling mortality in <i>Mimosa pigra</i> , an invasive tropical shrub. Journal of Ecology 77: 371-385.	"Removal of the canopy had no significant effect on the probability of seedling survival, while artificial shade enhanced survival"
4.1	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Sutton and Langeland (1993) Can <i>Mimosa pigra</i> be eradicated in Florida? Proceedings of the Southern Weed Science Society 46: 239-243.	1. "Nodulation is better on sandy than on other soil types." 2. "The plants are very adaptable and will grow under a variety of soil types"
4.11	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	erect, much branched shrub
4.12	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"forms impenetrable thickets 4 to 5 metres high, making infested areas inaccessible to man and animals"
5.01		terrestrial
5.02	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	Fabaceae
5.03	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"typical rhizobial nodules on the root hairs"
5.04	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	root "a branching taproot, extending to 1 to 2 m deep"
6.01		
6.02	Parsons and Cuthbertson (2001) Noxious Weeds	"reproducing by seeds and suckers"

	of Australia. CSIRO Publishing.	
6.03		
6.04	Global Invasive Species Database (http://www.issg.org/database/species/ecology.asp?si=41&fr=1&sts=sss).	"probably self-compatible"
6.05	Global Invasive Species Database (http://www.issg.org/database/species/ecology.asp?si=41&fr=1&sts=sss).	bee-pollinated, possibly wind-pollinated
6.06	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Global Invasive Species Database (http://www.issg.org/database/species/ecology.asp?si=41&fr=1&sts=sss).	1. "reproducing by seeds and suckers" BUT 2. "Does not normally reproduce vegetatively."
6.07	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"The first flowers appear 4 to 12 months after germination"
7.01	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	The one-seeded segments of the pods are carried in mud by machinery.
7.02	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Mimosa is a native of tropical America...Introduced into other areas as an ornamental or as a cover crop"
7.03		no evidence
7.04	1. Lonsdale (1993) Rates of spread of an invading species - <i>Mimosa pigra</i> in northern Australia. Journal of Ecology 81: 513-521. 2. Sutton and Langeland (1993) Can <i>Mimosa pigra</i> be eradicated in Florida? Proceedings of the Southern Weed Science Society 46: 239-243.	1. "It is clear that wind dispersal alone cannot account for the dramatic advance of <i>M. pigra</i> " 2. "The light buoyant seed...is ideally suited for dispersal via wind, water, or moving objects."
7.05	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Lonsdale (1993) Rates of spread of an invading species - <i>Mimosa pigra</i> in northern Australia. Journal of Ecology 81: 513-521.	1. "The most important means of spread...is water, especially flood waters" 2. "This suggests that dispersal of seeds by flotation is central to the observed rapid expansion of the weed in the region's wetlands."
7.06	1. Lonsdale (1993) Rates of spread of an invading species - <i>Mimosa pigra</i> in northern Australia. Journal of Ecology 81: 513-521. 2. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	1. "animals are likely to be important only in moving small numbers of seeds...the fruits are not highly palatable to animals" 2. Seed segments "pass unharmed through the digestive tract of animals". [Animals are capable of dispersing seeds, but this is not an important mode of dispersal.]
7.07	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	The one-seeded segments of the pods stick to fur and clothing.
7.08	1. Lonsdale (1993) Rates of spread of an invading species - <i>Mimosa pigra</i> in northern Australia. Journal of Ecology 81: 513-521. 2. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	1. "animals are likely to be important only in moving small numbers of seeds...the fruits are not highly palatable to animals" 2. Seed segments "pass unharmed through the digestive tract of animals". [Animals are capable of dispersing seeds, but this is not an important mode of dispersal.]

8.01	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Lonsdale (1993) Rates of spread of an invading species - <i>Mimosa pigra</i> in northern Australia. <i>Journal of Ecology</i> 81: 513-521.	1. 20-25 seeds per pod; "A mature plant may produce as many as 90,000 seeds annually under glasshouse conditions." 2. "The stands produce more than 9000 seeds m ⁻² annually"
8.02	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Lonsdale, Harley, and Gillett (1988) Seed bank dynamics in <i>Mimosa pigra</i> , an invasive tropical shrub. <i>Journal of Applied Ecology</i> 25: 963-976.	1. "The seeds have an extremely hard, often impermeable, seedcoat. Some are able to germinate as soon as conditions permit, others remain dormant for many years; more than 15 years in Northern Territory experience." 2. Survival of seeds buried at 10 cm varied between 7.7% and 48% after 99 weeks.
8.03	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	"Cut stumps are treated with glyphosate, hexazinone, imazapyr, or triclopyr. Other effective herbicides are dicamba or tebuthiuron."
8.04	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Young plants exhibit a remarkable regenerative capacity. In experiments, regrowth from young plants severed at ground level reached a height of 2.51 metres and covered an area of 6.3 square metres within 12 weeks"
8.05		