

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>Parkinsonia aculeata (Jerusalem thorn)</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	n	0
3.03	Weed of agriculture	y	0
3.04	Environmental weed	y	0
3.05	Congeneric weed	n	0
4.01	Produces spines, thorns or burrs	y	1
4.02	Allelopathic	y	1
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	y	1
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	y	1
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		
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	n	-1
6.07	Minimum generative time (years)	2	0
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	n	-1
7.05	Propagules water dispersed	y	1
7.06	Propagules bird dispersed	y	1
7.07	Propagules dispersed by other animals (externally)	?	
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	y	-1
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			18

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	11	yes
C	15	yes
total	33	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		cultivated, but no evidence of selection for reduced weediness
1.02		
1.03		
2.01		
2.02		
2.03		
2.04	Fournier (2003) <i>Parkinsonia aculeata</i> L. Tropical Tree Seed Manual, Species Descriptions. Reforestation, Nurseries, and Genetics Resources (http://www.rngr.net/Publications/ttsm/Folder.2003-07-11.4726/PDF.2004-03-15.5909/file).	"In Guanacaste, Costa Rica, <i>P. aculeata</i> grows in large natural stands in areas that are swampy during the rainy season and very dry during the dry season."
2.05	Whistler (2000) Tropical Ornamentals: a Guide. Timber Press, Portland.	"It is widely if not commonly cultivated as a novelty because of its unusual, weeping form and for reforestation in dry areas."
3.01	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Henderson (2001) Alien Weeds and Invasive Plants: a Complete Guide to Declared Weeds and Invaders in South Africa. Plant Protection Research Institute Handbook No. 12. 3. Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	Naturalized in many parts of Australia (1), South Africa (2), and Hawaii (3).
3.02		no evidence
3.03	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"It may form dense thickets, especially along creeks and rivers, reducing the grazing area, shading out more useful pasture species, limiting access to watering places and hindering stock musters."
3.04	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Weber (2003) Invasive Plant Species of the World. CABI Publishing.	1. "It has since become troublesome, extending through the dry monsoonal region of Western Australia, the Northern Territory and Queensland, onto the sandy plains of northern

		New South Wales...Some colonies along rivers are many kilometers in length." 2. "The tree is invasive because it spreads rapidly and forms dense stands that displace native vegetation and impede regeneration of native trees and shrubs. Once it has become dominant, species richness is reduced under stands of this tree."
3.05		no evidence
4.01	Dehgan (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	"twigs armed with short thorns at each node"
4.02	Dhawan, Poonam-Dhawan, and Gupta (2001) Allelopathic potential of leguminous plant species towards <i>Parthenium hysterophorus</i> L. - effect of aqueous foliar leachates. Legume Research 24: 256-259.	"Aqueous leachates (100%) from leaves of all tested species [including <i>P. aculeata</i>]...decreased seed germination and vigour index of <i>Parthenium hysterophorus</i> ."
4.03	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	no description of this
4.04	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Everitt, Drawe, and Lonard (2002) Trees, Shrubs, and Cacti of South Texas. Texas Tech University Press, Lubbock, Texas.	1. "Sheep eat the leaves but cattle do not willingly browse Parkinsonia." 2. "occasionally browsed by white-tailed deer" [mildly browsed, but not preferred]
4.05	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Everitt, Drawe, and Lonard (2002) Trees, Shrubs, and Cacti of South Texas. Texas Tech University Press, Lubbock, Texas.	No mention of toxicity in horticultural or toxicity references. Also, 1. "sheep eat the leaves" 2. "occasionally browsed by white-tailed deer"
4.06	McMullen (1999) Flowering Plants of the Galapagos. Cornell University Press, Ithaca.	In the Galapagos, the cottony cushion scale (<i>Icerya purchasi</i>) has been found on <i>P. aculeata</i> . Infested plants tend to become sickly and frequently die. This insect was a major threat to the citrus industry in California.
4.07	Horticopia 4.0	"Pollen can cause some allergenic reactions in certain people."
4.08		no evidence
4.09	1. Dehgan (1998) Landscape Plants for Subtropical Climates. University Press of Florida. 2. Horticopia 4.0	full sun (1,2)
4.1	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"it thrives on a wide range of soil types, varying from sands to self-mulching clays"
4.11	Dehgan (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	single or multi-trunked tree

4.12	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Fournier (2003) <i>Parkinsonia aculeata</i> L. Tropical Tree Seed Manual, Species Descriptions. Reforestation, Nurseries, and Genetics Resources (http://www.rngr.net/Publications/ttسم/Folder.2003-07-11.4726/PDF.2004-03-15.5909/file).	1. "It may form dense thickets" 2. "In Guanacaste, Costa Rica, <i>P. aculeata</i> grows in large natural stands"
5.01		terrestrial
5.02	Dehgan (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	Fabaceae
5.03	Roskoski, Montano, van Kessel, and Castilleja (1982) Nitrogen fixation by tropical woody legumes: potential source of soil enrichment. Pp. 447- 454 in Graham and Harris (eds.) Biological Nitrogen Fixation Technology for Tropical Agriculture: Papers Presented at a Workshop Held at CIAT, 1981, Cali, Colombia.	<i>P. aculeata</i> was not found to fix nitrogen.
5.04	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Root: a shallow main axis and numerous surface laterals"
6.01		
6.02	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"reproducing by seed"
6.03		
6.04		
6.05	McMullen (1999) Flowering Plants of the Galapagos. Cornell University Press, Ithaca.	pollinated by carpenter bees in the Galapagos
6.06	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"The only method of spread is by seeds"
6.07	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Fournier (2003) <i>Parkinsonia aculeata</i> L. Tropical Tree Seed Manual, Species Descriptions. Reforestation, Nurseries, and Genetics Resources (http://www.rngr.net/Publications/ttسم/Folder.2003-07-11.4726/PDF.2004-03-15.5909/file).	1. "Plants flower in the second or third growth season" BUT 2. " <i>Parkinsonia aculeata</i> begins to flower and fruit 5 to 6 years after planting."
7.01	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Some [seeds] are also moved in mud sticking to...footwear and machinery."
7.02	1. Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing. 2. Whistler (2000) Tropical Ornamentals: a Guide. Timber Press, Portland.	1. introduced into Australia as a shade and ornamental shrub 2. "It is widely if not commonly cultivated as a novelty because of its unusual, weeping form and for reforestation in dry areas."
7.03		no evidence
7.04	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	seeds are "large and not adapted for any particular means of dispersal"
7.05	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"...most [seeds] fall close to the parent plant, to be moved by floodwaters or streams"
7.06	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"The main method of spread seems to be by birds and animals eating the seed and

		voiding it, often with enhanced germination capacity, away from the source."
7.07	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Some [seeds] are also moved in mud sticking to animals" [a minor means of dispersal?]
7.08		
8.01		
8.02	Fournier (2003) <i>Parkinsonia aculeata</i> L. Tropical Tree Seed Manual, Species Descriptions. Reforestation, Nurseries, and Genetics Resources (http://www.rngr.net/Publications/ttsm/Folder.2003-07-11.4726/PDF.2004-03-15.5909/file).	seeds retain their viability for at least 9 years in storage [not in soil]
8.03	Parsons and Cuthbertson (2001) Noxious Weeds of Australia. CSIRO Publishing.	"Good control of mature trees also is possible with herbicides, basal bark or cut stump treatments usually giving better results than an overall spray."
8.04		
8.05		