

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>Pteris multifida</i> (spider brake)			
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		
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	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)	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	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	y	1
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)		
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)		
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)		
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			9

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	6	yes
B	10	yes
C	16	yes
total	32	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		used horticulturally, but no evidence of selection for reduced weediness
1.02		
1.03		
2.01		
2.02		
2.03		
2.04	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	"If planted in gardens, the soil should be poor and well drained for all <i>Pteris</i> species."
2.05	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	" <i>P. multifida</i> occurs from Japan to Indo-China and Singapore and is naturalized in various locations in the Americas."
3.01	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	" <i>P. multifida</i> occurs from Japan to Indo-China and Singapore and is naturalized in various locations in the Americas."
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05	Holm (1979) A Geographical Atlas of World Weeds. John Wiley and Sons.	<i>P. ensiformis</i> is considered a common weed of agriculture in Indonesia and Taiwan, and <i>P. vittata</i> is present as a weed in Ghana and Malaysia.
4.01	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	no description of these traits
4.02		no evidence
4.03	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	no description of this
4.04		
4.05		no evidence

4.06		
4.07	Bruneton (1999) Toxic Plants: Dangerous to Humans and Animals. Lavoisier Publishing, Paris.	"Ferns are rarely harmful to humans"; "Allergies to ferns are very rare"
4.08		no evidence
4.09	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	"It [the genus <i>Pteris</i>] grows terrestrially in more or less shaded locations"
4.1	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	"It [the genus <i>Pteris</i>] grows terrestrially...on all kinds of soils"; "If planted in gardens, the soil should be poor and well drained for all <i>Pteris</i> species."
4.11	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	growth habit: forb/herb
4.12		no evidence
5.01	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	terrestrial or epilithic [the genus <i>Pteris</i>]
5.02	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	Pteridaceae
5.03	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	herbaceous Pteridaceae
5.04	Duncan (1994) Ferns and Allied Plants of Victoria, Tasmania and South Australia. Melbourne University Press, Carlton, Victoria.	fern roots are usually fine and fibrous
6.01		
6.02	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	"All <i>Pteris</i> species grow easily from spores, and this is their preferred method of propagation"
6.03		
6.04	1. Kawakami, Ito, and Kawakami (1995) Apogamous sporophyte formation in a fern <i>Pteris multifida</i> and its characteristics. Journal of Plant Research 108: 181-184. 2. Murakami, Nishiyama, Satoh, and Suzuki (1997) Marked spatial genetic structure in three populations of a weedy fern, <i>Pteris multifida</i> Poir., and reestimation of its selfing rate. Plant Species Biology 12: 97-106.	1. "When spores of the fern, <i>Pteris multifida</i> , were aseptically cultured in the dark, sporophytic plants were apogamously induced." 2. <i>P. multifida</i> is capable of selfing, but its mating system was found to be predominantly outcrossing.
6.05		fern

6.06	de Winter and Amoroso, eds. (2003) Plant Resources of South-East Asia. No. 15(2). Cryptogams: Ferns and Fern Allies. Backhuys Publishers, Leiden.	short-creeping rhizome; "it is possible to propagate [the genus <i>Pteris</i>] from rhizome cuttings and by separation of plantlets"
6.07	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	"All [species of <i>Pteris</i>] are easily and quickly reproduced from spores; a mature plant can be produced in less than a year"
7.01		
7.02	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	used horticulturally
7.03		no evidence
7.04	Duncan (1994) Ferns and Allied Plants of Victoria, Tasmania and South Australia. Melbourne University Press, Carlton, Victoria.	"The numerous tiny, one-celled spores are easily carried by the wind and afford a very efficient method of distribution." [ferns in general]
7.05		no evidence
7.06		unlikely for spores
7.07		
7.08		unlikely for spores
8.01		fern
8.02		
8.03		
8.04		
8.05		