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.

Aira caryophyllea (silver hairgrass)			
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)	y	1
2.04	Native or naturalized in habitats with periodic inundation	n?	0
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	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		
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	y	1
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)	1	1
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
7.02	Propagules dispersed intentionally by people	n	-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)	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)	n	-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			9

Outcome	**Reject***

*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	8	yes
B	9	yes
C	17	yes
total	34	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		no evidence of cultivation
1.02		
1.03		
2.01		
2.02		
2.03	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	broad native and naturalized distribution throughout Europe, Africa, Australia/New Zealand, and parts of the Americas
2.04	Stace (1997) New Flora of the British Isles, second edition. Cambridge University Press, Cambridge.	found on dry, sandy ground in Britain
2.05	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	"Native to Europe, now widely naturalized"
3.01	1. Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu. 2. New Zealand Plant Conservation Network (2005) New Zealand Adventive Vascular Plant List.	1. "Native to Europe, now widely naturalized" 2. fully naturalized in New Zealand
3.02		no evidence
3.03	Holm (1979) A Geographical Atlas of World Weeds. John Wiley and Sons.	Present as an agricultural weed in Chile and New Zealand.
3.04	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	Considered an environmental weed in Australia - invades coastal vegetation, heath- and woodland, riparian habitats, wetlands, rock outcrops.
3.05		no evidence
4.01	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	no description of these traits
4.02		no evidence
4.03	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	no description of this
4.04		
4.05		no evidence
4.06		
4.07		no evidence
4.08		no evidence
4.09		
4.1	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	"In the native range, this grass is found in forests on sandy and generally acid soils that are not too nutrient-poor, in heaths, on rocks and dunes."
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: graminoid
4.12	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	"grows in dense colonies…preventing the establishment of native plants" [but is a short grass]

5.01		terrestrial
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.	Poaceae
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 Poaceae
5.04	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.	an annual
6.01		
6.02	Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	*A. caryophyllea* exhibits seasonal regeneration by seed.
6.03		
6.04		
6.05		grass (likely wind-pollinated)
6.06	1. McIntyre, Lavorel, and Tremont (1995) Plant life-history attributes: their relationship to disturbance response in herbaceous vegetation. Journal of Ecology 83: 31-44. 2. Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	1. vegetative reproduction absent 2. *A. caryophyllea* does not exhibit seasonal regeneration by vegetative means, or lateral vegetative spread.
6.07	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	"An annual or overwintering grass"
7.01		
7.02		no evidence
7.03		no evidence
7.04	1. McIntyre, Lavorel, and Tremont (1995) Plant life-history attributes: their relationship to disturbance response in herbaceous vegetation. Journal of Ecology 83: 31-44. 2. Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	1. not listed as being dispersed by wind 2. wind not listed as an agent of dispersal
7.05		no evidence
7.06		externally dispersed grass
7.07	1. McIntyre, Lavorel, and Tremont (1995) Plant life-history attributes: their relationship to disturbance response in herbaceous vegetation. Journal of Ecology 83: 31-44. 2. Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	1. dispersal: adhesive [assumed based on morphology] 2. dispersal adhesive (dispersule with an awn, or with spiny calyx teeth)
7.08	Malo and Suarez (1995) Herbivorous mammals as seed dispersers in a Mediterranean *dehesa*. Oecologia 104: 246-255.	*A. caryophyllea* was one of the 99 most frequent species in a Spanish *dehesa*, but was absent from dung samples of rabbits, fallow deer, red deer, and cattle.
8.01	Bartolome (1979) Germination and seedling establishment in California annual grassland. Journal of Ecology 67: 273-281.	Estimated # seeds per plant: 6.8. Estimated seed production: 365 seeds/dm^2

		(=36,500 seeds/m^2). [possible given the number of seeds per plant???]
8.02	Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	*A. caryophyllea* does not have a large bank of persistent seeds in the soil - most of seeds germinate shortly after being shed, with a small amount of seed persisting in the soil after seed has just been shed.
8.03		
8.04		
8.05		