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.

Vulpia myuros (rattail fescue)			
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		
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	y	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	n	-1
4.05	Toxic to animals	n	0
4.06	Host for recognised pests and pathogens	n	0
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	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	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	y	1
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	y	1
7.03	Propagules likely to disperse as a produce contaminant	y	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		
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-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			16

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	7	yes
B	12	yes
C	19	yes
total	38	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	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.	minimum temp.: 17°F
2.02		
2.03	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	Native and introduced range includes Europe, northern and southern Africa, temperate and tropical Asia, Australia and New Zealand, western U.S., Mexico, southern South America, and Hawaii.
2.04		
2.05	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	Native to Europe, North Africa, and Asia - present in Australia and New Zealand, southern Africa, Mexico, southern South America, and Hawaii.
3.01	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"
3.02		no evidence
3.03	Dillon and Forcella (1984) Germination, emergence, vegetative growth and flowering of two silvergrasses, *Vulpia bromoides* (L.) S.F. Gray and *V. myuros* (L.) C.C. Gmel. Australian Journal of Botany 32: 165-175.	"The silvergrasses, *V. bromoides* and *V. myuros,* are widely recognized as weeds of crops and grasslands thoughout the world's temperate regions…In Australia the silvergrasses are well known as weeds of pastures with light- to medium-textured acidic soils"
3.04	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	considered an environmental weed in Australia

3.05	Dillon and Forcella (1984) Germination, emergence, vegetative growth and flowering of two silvergrasses, *Vulpia bromoides* (L.) S.F. Gray and *V. myuros* (L.) C.C. Gmel. Australian Journal of Botany 32: 165-175.	"The silvergrasses, *V. bromoides* and *V. myuros,* are widely recognized as weeds of crops and grasslands thoughout the world's temperate regions…In Australia the silvergrasses are well known as weeds of pastures with light- to medium-textured acidic soils"
4.01	Dillon and Forcella (1984) Germination, emergence, vegetative growth and flowering of two silvergrasses, *Vulpia bromoides* (L.) S.F. Gray and *V. myuros* (L.) C.C. Gmel. Australian Journal of Botany 32: 165-175.	silvergrass infestations can cause "irritation and penetration of livestock carcasses"
4.02	1. An, Pratley, and Haig (1997) Phytotoxicity of vulpia residues. I. Investigation of aqueous extracts. Journal of Chemical Ecology 23: 1979-1995. 2. 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.	1. "Vulpia residues contained water-soluble materials that were toxic to germination and to coleoptile and root growth of wheat." BUT 2. not allelopathic
4.03	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for annual fescue (*Vulpia myuros* L.), prepared by D. Dyer and R. O'Beck.	no description of this
4.04	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	"A combination of spring and autumn grazing can reduce the density of the grass."
4.05	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.	no toxicity
4.06	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for annual fescue (*Vulpia myuros* L.), prepared by D. Dyer and R. O'Beck.	no pests
4.07	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.	no toxicity
4.08	Alderson and Sharp (1995) Grass Varieties in the United States. CRC Lewis Publishers, Boca Raton.	"Relatively low fire hazard"
4.09	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.	shade intolerant
4.1	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for annual fescue (*Vulpia myuros* L.), prepared by D. Dyer and R. O'Beck.	can tolerate low fertility soil
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	1. Weber (2003) Invasive Plant Species of the World.	1. "Dense swards of this grass

	CABI Publishing. 2. 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.	displace native vegetation and strongly reduce species richness." 2. but only grows to 1.5 feet tall
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.	does not fix nitrogen (and is Poaceae)
5.04	1. USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for annual fescue (*Vulpia myuros* L.), prepared by D. Dyer and R. O'Beck. 2. 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.	1. fibrous root system 2. not propagated by bulbs, corms, or tubers
6.01		
6.02	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.	propagated by seed
6.03		
6.04	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	"most of the florets cleistogamous" [genus *Vulpia*]
6.05	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	"most of the florets cleistogamous" [genus *Vulpia*]
6.06	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.	vegetative spread rate: none
6.07	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.	annual
7.01		
7.02	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for annual fescue (*Vulpia myuros* L.), prepared by D. Dyer and R. O'Beck.	used for erosion control and as a cover crop
7.03	Halvorsen, Melseth, and Grostad (2000) *Vulpia myuros* (L.) C.C. Gmel. - a recently introduced plant in Norway coming from lawn grass seed mixtures. Blyttia 58: 55-58.	"*V. myuros* is thought to originate from imported seed mixtures."
7.04	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	fruit is caryopsis 3.5-4 mm long
7.05		no evidence
7.06		externally-dispersed grass

7.07	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	"seeds are dispersed mainly by attaching to animals"
7.08		externally-dispersed grass
8.01		
8.02	1. Weber (2003) Invasive Plant Species of the World. CABI Publishing. 2. Dillon and Forcella (1984) Germination, emergence, vegetative growth and flowering of two silvergrasses, *Vulpia bromoides* (L.) S.F. Gray and *V. myuros* (L.) C.C. Gmel. Australian Journal of Botany 32: 165-175.	1. short-lived seeds 2. "The soil bank of silvergrass seeds appears to be short-lived."
8.03	1. USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for annual fescue (*Vulpia myuros* L.), prepared by D. Dyer and R. O'Beck. 2. Weber (2003) Invasive Plant Species of the World. CABI Publishing.	1. "It is readily controlled by several herbicides" 2. "Spraying glyphosate during flowering prevents seed set. Other effective herbicides are simazine applied in autumn, propyzamide or dalapon."
8.04	1. USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for annual fescue (*Vulpia myuros* L.), prepared by D. Dyer and R. O'Beck. 2. Dillon and Forcella (1984) Germination, emergence, vegetative growth and flowering of two silvergrasses, *Vulpia bromoides* (L.) S.F. Gray and *V. myuros* (L.) C.C. Gmel. Australian Journal of Botany 32: 165-175.	1. "annual fescue can be mowed frequently" BUT 2. intolerant to ploughing
8.05		