

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>Sherardia arvensis (blue fieldmadder)</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		
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	n	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	n?	0
4.1	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils)		
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	n?	-1
6.05	Requires specialist pollinators		
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	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)	y	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	n	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			7

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	9	yes
C	17	yes
total	32	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	only minorly cultivated
1.02		
1.03		
2.01		
2.02		
2.03		
2.04		
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 Eurasia, 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. Roy, Popay, Champion, James, and Rahman (2004) An Illustrated Guide to Common Weeds of New Zealand. 2nd edition. New Zealand Plant Protection Society.	1. "Native to Eurasia, now widely naturalized; in Hawai'i naturalized in dry, open, disturbed sites" 2. "Widespread and locally common to abundant throughout NZ."
3.02	1. Roy, Popay, Champion, James, and Rahman (2004) An Illustrated Guide to Common Weeds of New Zealand. 2nd edition. New Zealand Plant Protection Society. 2. MissouriPlants.com (http://www.missouriplants.com/Pinkopp/Sherardia_arvensis_page.html).	1. Considered a weed in disturbed areas in New Zealand. 2. "The plant can be quite weedy if left unchecked".
3.03	Holm (1979) A Geographical Atlas of World Weeds. John Wiley and Sons.	Considered a common weed of agriculture in England, Morocco, and Spain.
3.04		no evidence
3.05	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	monotypic genus
4.01	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	no description of these traits
4.02		no evidence
4.03	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i	no description of this

	Press/Bishop Museum Press, Honolulu.	
4.04		
4.05		no evidence
4.06		
4.07		no evidence
4.08		no evidence
4.09	Missouriplants.com (http://www.missouriplants.com/Pinkopp/Sherardia_arvensis_page.html).	"Habitat - Openings in woods, along creeks, disturbed sites, field, roadsides." [all open environments]
4.1		
4.11	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	"slender annual herbs"
4.12		no evidence, and is an herb
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.	Rubiaceae
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 Rubiaceae
5.04	Roy, Popay, Champion, James, and Rahman (2004) An Illustrated Guide to Common Weeds of New Zealand. 2nd edition. New Zealand Plant Protection Society.	fibrous, slender roots (and is an annual)
6.01		
6.02	Roberts (1986) Seed persistence in soil and seasonal emergence in plant species from different habitats. <i>Journal of Applied Ecology</i> 23: 639-656.	60% of seeds sown produced seedlings within 3 weeks.
6.03		
6.04	Lumaret, Guillerm, Maillet, and Verlaque (1997) Plant species diversity and polyploidy in islands of natural vegetation isolated in extensive cultivated lands. <i>Biodiversity and Conservation</i> 6: 591-613.	Allogamy is predominant reproductive system of <i>Sherardia arvensis</i> .
6.05		
6.06	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	annual [and no evidence of ability to reproduce vegetatively]
6.07	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	annual
7.01		
7.02	Huxley (1992) The New Royal Horticultural Society Dictionary of Gardening. The MacMillan Press, London.	"It is seldom cultivated in gardens, but is an attractive annual when sown <i>en bloc</i> ". [so generally no, and no other evidence of cultivation]
7.03	Hill, Townsend, Hill, and Hampton (1999) Weed	Seeds of <i>Sherardia arvensis</i> were

	seeds in white clover seed lots: losses during seed cleaning. Agronomy New Zealand 29: 27-30.	found in seed lots of white clover, even after seed cleaning.
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 didymous, dry, forming 2 indehiscent cocci", fruit 2-7 mm long [no evidence of adaptations for wind dispersal]
7.05		no evidence
7.06		externally dispersed
7.07	Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	dispersal adhesive (dispersule with an awn, or with spiny calyx teeth)
7.08	1. Traba, Levassor, and Peco (2003) Restoration of species richness in abandoned Mediterranean grasslands: seeds in cattle dung. Restoration Ecology 11: 378-384. 2. Malo and Suarez (1995) Herbivorous mammals as seed dispersers in a Mediterranean <i>dehesa</i> . Oecologia 104: 246-255.	1. When cattle dung was sown into an abandoned pasture, <i>Sherardia arvensis</i> was significantly more abundant in sown plots than control plots after 2 years. [so cattle are eating <i>S. arvensis</i> , and it survives passage through the gut] 2. Seeds of <i>S. arvensis</i> from dung of fallow deer and cattle germinated (but were found at very low densities in the dung).
8.01	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	2 seeds per fruit
8.02	1. Roberts (1986) Seed persistence in soil and seasonal emergence in plant species from different habitats. Journal of Applied Ecology 23: 639-656. 2. Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	1. In <i>Sherardia arvensis</i> , most seeds germinated soon after sowing and few seeds persisted for more than a year, unlike other species which formed a persistent seed bank. 2. most seed persistent only until start of next growing season
8.03	1. Salembier and Gomand (1974) Comparative biological study of the herbicide efficiency of LS 69.1299 and LS 67-520 in winter wheat. Parasitica 30: 133-143. 2. Pacific Northwest Weed Management Handbook (http://weeds.ippc.orst.edu/pnw/weeds?10W_WHEB04.dat). 3. Pacific Northwest Weed Management Handbook (http://weeds.ippc.orst.edu/pnw/weeds?16W_MINT03.dat).	1. <i>Sherardia arvensis</i> was only slightly susceptible to high rates of two herbicides that were effective against other weeds, and this rate damaged the winter wheat. 2. 2,4-D and MCPA were less than 70% effective (rated poor) against <i>Sherardia arvensis</i> in wheat. 3. Sethoxydim, quizalofop, clethodim, and clopyralid were all less than 70% effective (rated poor) against <i>Sherardia arvensis</i> in mint.
8.04		
8.05		

