

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>Scleranthus annuus (German knotgrass)</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	y	1
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	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	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)	n	-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)	y	1
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			5

Outcome	Evaluate*
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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	18	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		
2.04		
2.05	1. Lorenzi (1987) Weeds of the United States and their Control. Van Nostrand Reinhold Company Inc. 2. New Zealand Plant Conservation Network (2005) New Zealand Adventive Vascular Plant List. 3. Finot, Marcos-Figueroa, and Valdimir-Perez (2000) Distribution of weed communities in the province of Nuble, VIII region, Chile. Agro-Ciencia 16: 33-46.	<i>S. annuus</i> is native to Eurasia (1), but currently naturalized in New Zealand (2), North America (1), and South America (3).
3.01	New Zealand Plant Conservation Network (2005) New Zealand Adventive Vascular Plant List.	considered fully naturalized in New Zealand
3.02	Muenschler (1980) Weeds. 2nd ed. Cornell University Press, Ithaca.	<i>S. annuus</i> is a weed of gardens, lawns, fields, and waste places.
3.03	1. Finot, Marcos-Figueroa, and Valdimir-Perez (2000) Distribution of weed communities in the province of Nuble, VIII region, Chile. Agro-Ciencia 16: 33-46. 2. Uva, Neal, and DiTomaso (1997) Weeds of the Northeast. Cornell University Press, Ithaca.	1. <i>Scleranthus annuus</i> is a weed of annual crops in Chile. 2. "Knawel [<i>S. annuus</i>] is primarily a weed of low-maintenance turfgrass and nursery crops."
3.04		no evidence
3.05		no evidence
4.01	Uva, Neal, and DiTomaso (1997) Weeds of the Northeast. Cornell University Press, Ithaca.	no description of these traits
4.02		no evidence
4.03	Uva, Neal, and DiTomaso (1997) Weeds of the Northeast. Cornell University Press, Ithaca.	no description of this
4.04		
4.05	Fogelfors (1984) Useful weeds? Part 17. Lantmannen 105: 44.	"the sweet-tasting leaves are fairly good fodder for sheep"
4.06	Groves, Walgenbach, Moyer, and Kennedy (2001) Overwintering of <i>Frankliniella fusca</i> (Thysanoptera: Thripidae) on winter annual weeds infected with	<i>S. annuus</i> is a host of tomato spotted wilt virus, and shows high retention of the virus over the winter.

	Tomato spotted wilt virus and patterns of virus movement between susceptible weed hosts. <i>Phytopathology</i> 91: 891-899.	
4.07		no evidence
4.08		no evidence
4.09		
4.1	Uva, Neal, and DiTomaso (1997) <i>Weeds of the Northeast</i> . Cornell University Press, Ithaca.	"It is most commonly found on dry, sandy soils."
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, and is herbaceous
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.	Caryophyllaceae
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 Caryophyllaceae
5.04	Uva, Neal, and DiTomaso (1997) <i>Weeds of the Northeast</i> . Cornell University Press, Ithaca.	"small taproot with a secondary fibrous root system"
6.01		
6.02	Uva, Neal, and DiTomaso (1997) <i>Weeds of the Northeast</i> . Cornell University Press, Ithaca.	"reproduction is by seed"
6.03		
6.04	Svensson (1991) The effect of crossing distances and population subdivision on floral morphology in <i>Scleranthus annuus</i> (Caryophyllaceae), a selfing annual. <i>Plant Systematics and Evolution</i> 174: 5-16.	"The nectarless <i>S. annuus</i> is predominantly self-fertilizing...No proper estimates of the selfing rate are available, but the lack of flower visitors, the absence of attracting petals and nectar, the extremely small size of the flowers and the complete fruit set in isolation suggest a very high selfing rate."
6.05	Svensson (1991) The effect of crossing distances and population subdivision on floral morphology in <i>Scleranthus annuus</i> (Caryophyllaceae), a selfing annual. <i>Plant Systematics and Evolution</i> 174: 5-16.	"The nectarless <i>S. annuus</i> is predominantly self-fertilizing." Has no attracting petals or nectar, and a lack of flower visitors.
6.06	Uva, Neal, and DiTomaso (1997) <i>Weeds of the Northeast</i> . Cornell University Press, Ithaca.	an annual [and no mention of vegetative means of reproduction]
6.07	Uva, Neal, and DiTomaso (1997) <i>Weeds of the Northeast</i> . Cornell University Press, Ithaca.	an annual
7.01		
7.02		no evidence
7.03		no evidence

7.04	1. Svensson (1991) The effect of crossing distances and population subdivision on floral morphology in <i>Scleranthus annuus</i> (Caryophyllaceae), a selfing annual. Plant Systematics and Evolution 174: 5-16. 2. Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	1. the fruit "has a low passive dispersal distance of c. 0.1 m" 2. fruit is unspecialized (morphological features facilitating dispersal absent or undetected)
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7.08	1. Svensson (1991) The effect of crossing distances and population subdivision on floral morphology in <i>Scleranthus annuus</i> (Caryophyllaceae), a selfing annual. Plant Systematics and Evolution 174: 5-16. 2. Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	1. the fruit "has a low passive dispersal distance of c. 0.1 m" 2. fruit is unspecialized (morphological features facilitating dispersal absent or undetected)
8.01		
8.02	Grime, Hodgson, and Hunt (1988) Comparative Plant Ecology: a Functional Approach to Common British Species. Unwin Hyman Ltd., London.	likely has a persistent seed bank
8.03	Lorenzi (1987) Weeds of the United States and their Control. Van Nostrand Reinhold Company Inc.	"Knawel [<i>S. annuus</i>] is susceptible to atrazine, bromoxynil, linuron, metribuzin, paraquat, and simazine"
8.04		
8.05		