

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>Lamium amplexicaule (henbit)</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)	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	y	0
3.03	Weed of agriculture	y	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	y	1
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	?	
4.05	Toxic to animals	y	1
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	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	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		
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)		
8.01	Prolific seed production	y	1
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			18

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	7	yes
B	11	yes
C	17	yes
total	35	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		no evidence of cultivation
1.02		
1.03		
2.01	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	" <i>L. amplexicaule</i> is generally distributed throughout the major agricultural regions of the temperate zones".
2.02		
2.03	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	Native and naturalized distribution includes North America and South America (northern and southern), Europe and North Africa, Central, East, and Southeast Asia, and Australia.
2.04		
2.05	1. Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu. 2. Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	Native to Eurasia and northern Africa (1); present as a weed in North and South America, East Asia, southeast Asia, and Australia (2).
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 Eurasia and northern Africa, widely but sparingly naturalized elsewhere."
3.02	1. Burrows and TyrI (2001) Toxic Plants of North America. Iowa State University Press, Ames. 2. Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/henbit.htm).	1. " <i>L. amplexicaule</i> is a noxious weed of disturbed sites and infests lawns, gardens, and croplands in the spring". 2. "There is a strong preference for disturbed areas. Henbit can spread aggressively."
3.03	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	<i>L. amplexicaule</i> is a serious weed in Poland and Australia, and a principal weed in Argentina, Belgium, Bulgaria, Iran, Germany, Sweden, and the United States.
3.04	Illinois Wildflowers	"There is a strong preference for

	(http://www.illinoiswildflowers.info/weeds/plants/henbit.htm).	disturbed areas." [and no evidence of weediness in natural areas]
3.05	1. Holm (1979) A Geographical Atlas of World Weeds. John Wiley and Sons. 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. <i>L. album</i> is considered a common weed of agriculture in England and the former Soviet Union; <i>L. purpureum</i> is considered a common weed in England, Germany, Spain, and the former Soviet Union. 2. <i>L. purpureum</i> considered a weed in New Zealand.
4.01	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	no description of these traits
4.02	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	"Aqueous extracts of five weed species, including <i>L. amplexicaule</i> , were found to inhibit root hair development of seedlings of <i>Picea abies</i> ."
4.03	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	no description of this
4.04	Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/henbit.htm).	"The foliage is eaten by voles and box turtles, while rabbits rarely bother it." [unclear whether eaten readily]
4.05	Burrows and Tyrl (2001) Toxic Plants of North America. Iowa State University Press, Ames.	"Neurologic problems caused by <i>L. amplexicaule</i> have been limited to Australia (Everist 1981). Signs of intoxication become evident after consumption of fresh plants for several days and animals are forced to move some distance, such as being driven from one pasture to another...Sheep appear more prone to develop the disease, although it has occurred in horses and cattle as well."
4.06	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	<i>L. amplexicaule</i> has been "reported as a host of <i>Sclerotinia sclerotiorum</i> , which causes crown and stem rot in winter forages".
4.07		no evidence
4.08		no evidence
4.09	1. Missouriplants.com (http://www.missouriplants.com/Pinkopp/Lamium_amplexicaule_page.html). 2. Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/henbit.htm).	1. "The plant is tolerant of sun or shade" 2. "Typical growing conditions are full or partial sun"
4.1	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	can grow in light sandy soil
4.11	USDA, NRCS. 2005. The PLANTS Database,	growth habit: forb/herb

	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.	
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.	Lamiaceae
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 Lamiaceae
5.04	1. Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York. 2. Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	1. illustration shows fibrous roots 2. "from a taproot"
6.01		
6.02	1. Baskin and Baskin (1981) Seasonal changes in the germination responses of buried <i>Lamium amplexicaule</i> seeds. Weed Research 21: 299-306. 2. Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/henbit.htm).	1. "Seed viability throughout the study was very high." 2. "This plant reproduces by reseeding itself..."
6.03		
6.04	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	"The closed flowers produce nuts freely."
6.05	1. Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York. 2. Illinois Wildflowers (http://www.illinoiswildflowers.info/weeds/plants/henbit.htm).	1. produces cleistogamous flowers and is self-pollinated 2. also pollinated by insects; "The nectar and pollen of the early blooming flowers attract long-tongued bees primarily, including honeybees and bumblebees."
6.06	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	"with numerous upright branches that root readily at nodes when in contact with the ground"
6.07	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	annual or biennial
7.01		
7.02		no evidence
7.03	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	A study in Japan concluded that <i>L. amplexicaule</i> arrived with transplants of crop species.
7.04	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	"fruit a group of 4 small, pear-shaped, angled, nutlets at base of persistent calyx tube, separating at maturity" [no

		evidence of adaptations for wind dispersal]
7.05		no evidence
7.06		
7.07	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	"fruit a group of 4 small, pear-shaped, angled, nutlets at base of persistent calyx tube, separating at maturity" [no evidence of any means of attachment]
7.08		
8.01	Holm, Doll, Holm, Pancho, and Herberger (1997) World weeds: natural histories and distribution. John Wiley & Sons, New York.	"The seed of one large plant was collected daily and it produced 60,000 seeds in the season. Other records of field weeds have registered 2000 or more per season for this species."
8.02	Baskin and Baskin (1981) Seasonal changes in the germination responses of buried <i>Lamium amplexicaule</i> seeds. Weed Research 21: 299-306.	"only about 15% of those [seeds] buried in June 1978 were dead at the end of the 27th month of burial"
8.03	Stock Seed Farms (http://www.stockseed.com/weeds_product_display.asp?pid=163).	"Heavy infestations can be controlled with triclopyr + clopyralid, 2,4-D or 2,4-D combination herbicides; at or prior to flowering."
8.04		
8.05		