

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>Epipremnum pinnatum</i> cv. <i>Aureum</i> (pothos)			
Question number	Question	Answer	Score
1.01	Is the species highly domesticated?	y	-3
1.02	Has the species become naturalised where grown?	y	1
1.03	Does the species have weedy races?	y	1
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	n	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	y	1
4.07	Causes allergies or is otherwise toxic to humans	y	1
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	y	1
4.12	Forms dense thickets	?	

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		
6.03	Hybridizes naturally		
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators		
6.06	Reproduction by vegetative fragmentation	y	1
6.07	Minimum generative time (years)		
7.01	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y	1
7.02	Propagules dispersed intentionally by people	y	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	y	1
7.07	Propagules dispersed by other animals (externally)	n	-1
7.08	Propagules dispersed by other animals (internally)	y	1
8.01	Prolific seed production	n	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)		
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		
<b>Total Score</b>			<b>11</b>

<b>Outcome</b>	<b>Reject*</b>
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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	8	yes
B	10	yes
C	15	yes
total	33	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01	1. Boyce (1998) The genus <i>Epipremnum</i> Schott (Araceae - Monsteroideae - Monstereae) in west and central Malesia. <i>Blumea</i> 43: 183-213. 2. Bown (2000) <i>Aroids: Plants of the Arum Family</i> . Timber Press, Portland, Oregon.	1. "Certainly cv. Aureum appears never to have been collected in the wild and the possibility exists that it is a horticultural selection of <i>E. pinnatum</i> ." 2. " <i>E. pinnatum</i> flowers freely in the wild and in cultivation, whereas the cultivar 'Aureum' and reverted green plants are notoriously shy-flowering"
1.02	1. Wagner, Herbst, and Sohmer (1999) <i>Manual of the flowering plants of Hawai'i</i> . University of Hawai'i Press/Bishop Museum Press, Honolulu. 2. Bown (2000) <i>Aroids: Plants of the Arum Family</i> . Timber Press, Portland, Oregon.	1. "readily escaping from cultivation in tropical areas of the world; in Hawaii, common as an escaped hemiepiphytic vine, climbing on the trunks of trees and into the forest canopy, primarily in disturbed areas and along roadsides...The naturalized plants in Hawaii are the cultivar 'Aureum'" 2. " <i>Epipremnum pinnatum</i> 'Aureum' is now grown throughout the tropics and in places (such as Malaysia) it has escaped into the wild."
1.03	1. Space, Waterhouse, Miles, Tiobech, and Rengulbai (2003) Report to the Republic of Palau on Invasive Plant Species of Environmental Concern. USDA Forest Service, Institute of Pacific Islands Forestry, Honolulu. 2. Kairo, Ali, Cheesman, Haysom, and Murphy (2003) <i>Invasive Species Threats in the Caribbean Region</i> . Report to the Nature Conservancy.	1. Considered a major invasive species in Palau (Table D); an invasive species of environmental concern (Table 1); "this tree-climbing species can invade the forest understory". 2. Considered naturalized and invasive in Bermuda.
2.01		
2.02		
2.03		
2.04	Boyce (1998) The genus <i>Epipremnum</i> Schott (Araceae - Monsteroideae - Monstereae) in west and central Malesia. <i>Blumea</i> 43: 183-213.	"Where it escapes in Malaysia it grows in damp evergreen forest and abandoned rubber plantations at low altitudes."
2.05	Whistler (2000) <i>Tropical Ornamentals: a Guide</i> . Timber Press, Portland.	"widely cultivated as an ornamental with an attractive tropical look"

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. Bown (2000) Aroids: Plants of the Arum Family. Timber Press, Portland, Oregon.	1. "readily escaping from cultivation in tropical areas of the world; in Hawaii, common as an escaped hemiepiphytic vine, climbing on the trunks of trees and into the forest canopy, primarily in disturbed areas and along roadsides...The naturalized plants in Hawaii are the cultivar 'Aureum'" 2. " <i>Epipremnum pinnatum</i> 'Aureum' is now grown throughout the tropics and in places (such as Malaysia) it has escaped into the wild."
3.02	1. PIER, Institute of Pacific Islands Forestry ( <a href="http://www.hear.org/pier/species/epipremnum_pinnatum_cv_aureum.htm">http://www.hear.org/pier/species/epipremnum_pinnatum_cv_aureum.htm</a> ) 2. Space, Waterhouse, Newfield, and Bull (2004) Invasive Plant Species on Niue Following Cyclone Heta. Report to the Government of Niue and the United Nations Development Programme.	1. "A number of infestations of this plant were seen in forested areas of Niue, mostly along roads where they were probably the result of the dumping of garden cuttings." 2. Considered a "major invasive species" on Niue - subject to control campaign. [first reference implies disturbance weed - second reference is unclear as to whether a disturbance weed or environmental weed]
3.03		no evidence
3.04	1. Space, Waterhouse, Miles, Tiobech, and Rengulbai (2003) Report to the Republic of Palau on Invasive Plant Species of Environmental Concern. USDA Forest Service, Institute of Pacific Islands Forestry, Honolulu. 2. Kairo, Ali, Cheesman, Haysom, and Murphy (2003) Invasive Species Threats in the Caribbean Region. Report to the Nature Conservancy.	1. Considered a major invasive species in Palau (Table D); an invasive species of environmental concern (Table 1); "this tree-climbing species can invade the forest understory". 2. Considered naturalized and invasive in Bermuda.
3.05		no evidence
4.01	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	no description of these traits
4.02		no evidence
4.03	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	no description of this
4.04		
4.05	Burrows and Tyrl (2001) Toxic Plants of North America. Iowa State University Press, Ames.	"this common ornamental has occasionally caused vomiting and diarrhea in dogs. However, experimentally, even very large doses...failed to cause adverse effects in cattle and sheep." [first part sounds pretty minor]
4.06	1. Wick and Dicklow (2002) <i>Epipremnum</i> , a new host for <i>Phytophthora capsici</i> . Plant Disease 86: 1050. 2. Crop Knowledge Master ( <a href="http://www.extento.hawaii.edu/kbase/cro">http://www.extento.hawaii.edu/kbase/cro</a> )	<i>Epipremnum aureum</i> found to be a host for <i>Phytophthora capsici</i> (1), a common crop pest, particularly for members of Solanaceae and Cucurbitaceae (2).

	p/Type/p_capsi.htm).	
4.07	1. Whistler (2000) Tropical Ornamentals: a Guide. Timber Press, Portland. 2. Burrows and Tyrl (2001) Toxic Plants of North America. Iowa State University Press, Ames.	1. "All parts of the plant may cause stomach problems if ingested." 2. " <i>Epipremnum</i> is capable of causing contact irritation."
4.08		no evidence
4.09	1. Horticipia 4.0 2. Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	1. full shade to partial sun 2. full sun to dense shade
4.1	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	varied soils
4.11	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 ( <a href="http://plants.usda.gov">http://plants.usda.gov</a> ). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	growth habit: vine, subshrub
4.12	Space, Waterhouse, Newfield, and Bull (2004) Invasive Plant Species on Niue Following Cyclone Heta. Report to the Government of Niue and the United Nations Development Programme.	"It forms a dense mat on the forest floor"
5.01		terrestrial
5.02	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 ( <a href="http://plants.usda.gov">http://plants.usda.gov</a> ). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	Araceae
5.03	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 ( <a href="http://plants.usda.gov">http://plants.usda.gov</a> ). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	Araceae
5.04	Whistler (2000) Tropical Ornamentals: a Guide. Timber Press, Portland.	"adventitious roots that cling to tree trunks"
6.01		
6.02		
6.03		
6.04		
6.05		
6.06	1. Boyce (1998) The genus <i>Epipremnum</i> Schott (Araceae - Monsteroideae - Monstereae) in west and central Malesia. Blumea 43: 183-213. 2. Space, Waterhouse, Newfield, and Bull (2004) Invasive Plant Species on Niue Following Cyclone Heta. Report to the Government of Niue and the United Nations Development Programme.	1. "clasping roots densely arising from nodes and internodes" 2. "any roots or pieces left behind will sprout"
6.07		

7.01	1. PIER, Institute of Pacific Islands Forestry ( <a href="http://www.hear.org/pier/species/epipremnum_pinnatum_cv_aureum.htm">http://www.hear.org/pier/species/epipremnum_pinnatum_cv_aureum.htm</a> ). 2. Space, Waterhouse, Miles, Tiobech, and Rengulbai (2003) Report to the Republic of Palau on Invasive Plant Species of Environmental Concern. USDA Forest Service, Institute of Pacific Islands Forestry, Honolulu.	1. "A number of infestations of this plant were seen in forested areas of Niue, mostly along roads where they were probably the result of the dumping of garden cuttings." 2. On Palau, "its main method of spread is through discarded garden cuttings".
7.02	Whistler (2000) Tropical Ornamentals: a Guide. Timber Press, Portland.	"widely cultivated as an ornamental with an attractive tropical look"
7.03		no evidence
7.04	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	fruits are berries
7.05		no evidence
7.06		fruits are berries
7.07	Dehgan, B. (1998) Landscape Plants for Subtropical Climates. University Press of Florida.	no evidence of any means of attachment - fruits are berries
7.08		fruits are berries
8.01	1. Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu. 2. Whistler (2000) Tropical Ornamentals: a Guide. Timber Press, Portland. 3. Bown (2000) Aroids: Plants of the Arum Family. Timber Press, Portland, Oregon.	1. berries are 1-2 seeded 2. fruit rarely formed in cultivation 3. " <i>E. pinnatum</i> flowers freely in the wild and in cultivation, whereas the cultivar 'Aureum' and reverted green plants are notoriously shy-flowering"
8.02		
8.03	Langeland and Stocker (2001) Control of non-native plants in natural areas of Florida. University of Florida, IFAS Extension, SP 242 ( <a href="http://edis.ifas.ufl.edu/pdf/files/WG/WG20900.pdf">http://edis.ifas.ufl.edu/pdf/files/WG/WG20900.pdf</a> ).	"Hand pull vegetation...After it has resprouted from broken stems, treat with 3% Roundup and surfactant. If non-target damage is not a concern, 3% Roundup is very effective on large intact patches."
8.04		
8.05		