UF IFAS UNIVERSITY of FLORIDA

Assessment of Non-native Plants in Florida's Natural Areas

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Assessment date 31 March 2016

	Mucuna pruriens **ALL ZONES**	**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) North Zone: suited to Zones 8, 9 Central Zone: suited to Zones 9, 10 South Zone: suited to Zone 10	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 North Zone: mean annual precipitation 50-70 inches Central Zone: mean annual precipitation 40-60 inches South Zone: mean annual precipitation 40-60 inches	y	1
2.05	Does the species have a history of repeated introductions outside its natural range?	y	
3.01	Naturalized beyond native range	y	2
3.02	Garden/amenity/disturbance weed	y	2
3.03	Weed of agriculture	n	0
3.04	Environmental weed	unk	
3.05	Congeneric weed	y	2
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	n	-1
4.05	Toxic to animals	y	1
4.06	Host for recognised pests and pathogens	n	0
4.07	Causes allergies or is otherwise toxic to humans	y	1
4.08	Creates a fire hazard in natural ecosystems	unk	0
4.09	Is a shade tolerant plant at some stage of its life cycle	unk	0
4.10	Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols.	y	1
4.11	Climbing or smothering growth habit	y	1
4.12	Forms dense thickets	y	1
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	n	0
6.02	Produces viable seed	y	1

6.03	Hybridizes naturally	unk	-1
6.04	Self-compatible or apomictic	y	1
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	n	-1
6.07	Minimum generative time (years)	0	1
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	y	1
7.05	Propagules water dispersed	y	1
7.06	Propagules bird dispersed	unk	-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	unk	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	unk	-1
8.03	Well controlled by herbicides		
8.04	Tolerates, or benefits from, mutilation or cultivation	unk	-1
8.05			
	Total Score	**10**	
	Implemented Pacific Second Screening	**no**	
	Risk Assessment Results	**High**	

section	**# questions answered**	**satisfy minimum?**
A	10	yes
B	10	yes
C	17	yes
total	37	yes

	Reference	Source data
1.01		cultivated, but no evidence of selection for reduced weediness
1.02		
1.03		
2.01	1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif). 2. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (4-6-2016).	No computer analysis was performed. 1. Global hardiness zone: ; equivalent to USDA Hardiness zones: 9, 10, 11, 12, 13. 2. Native to Africa East Tropical Africa: Kenya; Tanzania; Uganda Northeast Tropical Africa: Chad; Ethiopia; Somalia; Sudan South Tropical Africa: Angola; Malawi; Zambia; Zimbabwe Southern Africa: South Africa - KwaZulu-Natal, - Transvaal West Tropical Africa: Ghana; Guinea; Guinea-Bissau; Liberia; Nigeria; Senegal; Sierra Leone; Togo West-Central Tropical Africa: Burundi; Cameroon; Central African Republic; Equatorial Guinea; Sao Tome and Principe; Zaire Western Indian Ocean: Madagascar Asia-Tropical Indian Subcontinent: Bangladesh; Bhutan; India; Nepal; Sri Lanka Indo-China: Cambodia; Myanmar; Thailand; Vietnam Malesia: Indonesia; Malaysia; Papua New Guinea; Philippines
2.02		
2.03	1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). GBIF http://www.gbif.org/species/2951506 (4-4-2016)	1. Distribution in the native/cultivated range occurs in Af, Am, Aw, As, Cfa,
2.04	1. Climate Charts. World Climate Maps. http://www.climate-charts.com/World-Climate-Maps.html#rain (8-19-2015)	1. native to regions with rainfall from 29 to 196 inches annually.
2.05	1. Hammerton, John 2003. MUCUNA PRURIENS: WEED, INVASIVE,OR MULTI-USE CROP FOR THE BAHAMAS? College of The Bahamas Research Journal Volume 12. 2. 1. Invasive Species Compendium http://www.cabi.org/isc/datasheet/35134 (4-6-2016)	1. It is native to tropical Asia but is now established throughout the American tropics, the Caribbean, and the Old World Tropics… Velvet beans were probably introduced into Mesoamerica in the 1920s by the United Fruit Company as a forage crop for the company's mules on their banana plantations, principally along the Atlantic coast of the isthmus. 2. Introduced to Panama, Haiti, and Puerto Rico, and Bolivia
3.01	1. PIER http://www.hear.org/pier/species/mucuna_pruriens.htm (4-6-2016) 2. Australian Weed Committee http://www.weeds.org.au/cgi-bin/weedident.cgi?tpl=plant.tpl&state=nt&s=&region=vb&card=V19 (4-8-2016)	1. Invasive in Guam, Fiji, Indonesia, and Thailand. 2. introduced to Queensland as a silage/green manure crop and has naturalised.
3.02	1. Invasive Species Compendium http://www.cabi.org/isc/datasheet/35134 (4-6-2016)	1. M. pruriens is an invasive annual vine that poses a high risk to native environments. The species has been extensively cultivated as a popular soil-improver and forage plant, as well as a cover crop, as it smothers weed plants. However, this species itself has the potential to invade and damage ecosystems
3.03		no evidence
3.04		lack of evidence
3.05	1. Holm, LeRoy G. A Geographical Atlas of World Weeds. Malabar, FL: Krieger Pub., 1991. Print.	1. Mucuna coriacea is a principle weed in Mozambique
4.01	1. PIER http://www.hear.org/pier/species/mucuna_pruriens.htm (4-6-2016)	no evidence of these features
4.02		no evidence
4.03	1. PIER http://www.hear.org/pier/species/mucuna_pruriens.htm (4-6-2016)	no evidence

4.04	1. PIER http://www.hear.org/pier/species/mucuna_pruriens.htm (4-6-2016) 2. FAO http://www.fao.org/AG/agp/agpc/doc/gbase/DATA/PF000416.HTM (4-8-2016)	1. Commonly used as a cover crop and the pods and beans are used to feed livestock. 2. Velvet beans are a nutritious animal feed and are used mainly for grazing
4.05	1. Invasive Species Compendium http://www.cabi.org/isc/datasheet/35134 (4-6-2016) 2. Australian Weed Committee http://www.weeds.org.au/cgi-bin/weedident.cgi?tpl=plant.tpl&state=nt&s=&region=vb&card=V19 (4-8-2016)	1. M. pruriens is known to be toxic to mammals. Despite being useful as a forage crop, the seeds have been shown to cause severe vomiting and diarrhea to pigs upon ingestion 2. Ingestion of pods with irritant hairs can lead to cattle death.
4.06	1. Lampariello, L. R., Cortelazzo, A., Guerranti, R., Sticozzi, C., & Valacchi, G. (2012). The Magic Velvet Bean of Mucuna pruriens. Journal of Traditional and Complementary Medicine, 2(4), 331–339. 2. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Mucuna_pruriens.htm (4-6-2016)	1.The toxicity of unprocessed velvet bean may explain why the plant exhibits low susceptibility to insect pests. 2. Resistance to pests and diseases.
4.07	1. Hammerton, John 2003. MUCUNA PRURIENS: WEED, INVASIVE,OR MULTI-USE CROP FOR THE BAHAMAS? College of The Bahamas Research Journal Volume 12. 2. Invasive Species Compendium http://www.cabi.org/isc/datasheet/35134 (4-6-2016) 3. Dave's Garden http://davesgarden.com/guides/pf/go/75900/#b (4-6-2016)	1. The pods and seeds contain several toxic principles, and for human consumption boiling with repeated changes of the water, and removal of the testa, are necessary to reduce toxicity. 2. M. pruriens is a climbing vine with stiff, stinging hairs on its fruits which penetrate the skin causing an intensive burning sensation that may last for hours, although the stinging hairs are not poisonous or permanently harmful unless they enter the eye 3. Handling plant may cause skin irritation or allergic reaction
4.08		no evidence
4.09		no evidence
4.10	1. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Mucuna_pruriens.htm (4-6-2016) 2. FAO http://www.fao.org/AG/agp/agpc/doc/gbase/DATA/PF000416.HTM (4-8-2016) 3. USDA Soil Map http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/use/?cid=nrcs142p2_054013 (4-8-2016)	1. Prefers well drained, medium to high fertility soils but can be grown successfully on sandy soils and will tolerate and be productive in a very wide soil acidity range 2. A wide range of soil types are suitable, including heavy clays, provided that they are well drained, since velvet beans cannot stand waterlogging. 3. Native to regions with soil compatible with all three regions of Florida.
4.11	1. Lampariello, L. R., Cortelazzo, A., Guerranti, R., Sticozzi, C., & Valacchi, G. (2012). The Magic Velvet Bean of Mucuna pruriens. Journal of Traditional and Complementary Medicine, 2(4), 331–339. 2. M. PUGALENTHI Plant Foods for Human Nutrition 60: 201–218, 2005. Alternative Food/Feed Perspectives of an Underutilized Legume Mucuna pruriens var. Utilis—A Review.	1. The plant M. pruriens, widely known as “velvet bean,” is a vigorous annual climbing legume 2. annual climbing herb
4.12	1. PIER http://www.hear.org/pier/species/mucuna_pruriens.htm (4-6-2016) 2. Invasive Species Compendium http://www.cabi.org/isc/datasheet/35134 (4-6-2016) 3. Waddington, Stephen R. Grain Legumes and Green Manures for Soil Fertility in Southern Africa: Taking Stock of Progress: Proceedings of a Conference Held 8-11 October 2002 at the Leopard Rock Hotel, Vumba, Zimbabwe. Harare, Zimbabwe: Soil Fertility Network, 2003. Print.	1. It can form woody thickets and smother underlying vegetation 2. It has the ability to form woody thickets 3. produces a dense vegetative cover
5.01		Family: Papilionaceae
5.02		Family: Papilionaceae
5.03	1. Lampariello, L. R., Cortelazzo, A., Guerranti, R., Sticozzi, C., & Valacchi, G. (2012). The Magic Velvet Bean of Mucuna pruriens. Journal of Traditional and Complementary Medicine, 2(4), 331–339. 2. Feedipedia http://www.feedipedia.org/node/270 (4-6-2016) 3. 2. Australian Weed Committee http://www.weeds.org.au/cgi-bin/weedident.cgi?tpl=plant.tpl&state=nt&s=&region=vb&card=V19 (4-8-2016)	1. Like most legumes, the velvet bean has the potential to fix atmospheric nitrogen via a symbiotic relationship with soil microorganisms. 2. Velvet bean is an N-fixing legume that has no specific rhizobium requirements, but N fixation is favoured by warm temperatures 3. Annual vine, not woody
5.04	1. PIER http://www.hear.org/pier/species/mucuna_pruriens.htm (4-6-2016)	no evidence of these features
6.01		no evidence

6.02	1. PIER http://www.hear.org/pier/species/mucuna_pruriens.htm (4-6-2016) 2. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Mucuna_pruriens.htm (4-6-2016) 3. Dave's Garden http://davesgarden.com/guides/pf/go/75900/#b (4-6-2016)	1. Propagated by seed 2. Grown from seeds 3. Propagated by seed
6.03		no evidence
6.04	1. M. Pugalenthi, V. Vadivel, Agro biodiversity of eleven accessions of Mucuna pruriens (L.) DC. var. utilis (Wall. ex Wight) Baker ex Burck (velvet bean) collected from four districts of South India. Genet. Resour. Crop. Ev. 54, 1117–1124 (2007) 2. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Mucuna_pruriens.htm (4-6-2016)	1. self-pollinated. 2. Self-pollinating.
6.05		no evidence
6.06		no evidence
6.07	1. Tropical Forages http://www.tropicalforages.info/key/Forages/Media/Html/Mucuna_pruriens.htm (4-6-2016) 2. Oudia, P. 2001 Purdue University Kapikachu or Cowhage (Mucuna pruriens) https://hort.purdue.edu/newcrop/CropFactSheets/mucuna.html (4-8-2016)	1. Varieties mature in 100–280 days after start of flowering. Maturation is not uniform. 2. Normally flowering begins 45–50 days after sowing.
7.01	1. Invasive Species Compendium http://www.cabi.org/isc/datasheet/35134 (4-6-2016)	1. The species has been introduced outside of its native range both intentionally in agricultural settings, and unintentionally. 2. In disturbed areas such as pastures, forest edges, and roadsides, at lower and middle elevations.
7.02	1. Lampariello, L. R., Cortelazzo, A., Guerranti, R., Sticozzi, C., & Valacchi, G. (2012). The Magic Velvet Bean of Mucuna pruriens. Journal of Traditional and Complementary Medicine, 2(4), 331–339. 2. Invasive Species Compendium http://www.cabi.org/isc/datasheet/35134 (4-6-2016) 3. Feedipedia http://www.feedipedia.org/node/270 (4-6-2016)	1. It is cultivated in Asia, America, Africa, and the Pacific Islands, where its pods are used as a vegetable for human consumption, and its young leaves are used as animal fodder. 2. The species has been introduced outside of its native range both intentionally in agricultural settings, and unintentionally... Highly likely to be transported internationally deliberately 3. Velvet bean is mainly grown as a cover crop and green manure because it can establish very quickly without requiring complete soil preparation
7.03		no evidence
7.04	1. PIER http://www.hear.org/pier/species/mucuna_pruriens.htm (4-6-2016)	1. seeds can blow considerable distances in the wind to cause irritation.
7.05	1. Invasive Species Compendium http://www.cabi.org/isc/datasheet/35134 (4-6-2016)	1. M. pruriens seeds are dispersed by water and in soil.
7.06	1. FAO http://www.fao.org/AG/agp/agpc/doc/gbase/DATA/PF000416.HTM (4-8-2016)	no evidence 1. The pods contain 4-6 seeds, globular, approximately 1.2 x 1.2 cm
7.07		no evidence
7.08		no evidence
8.01		no evidence
8.02		no evidence
8.03		no evidence
8.04		no evidence
8.05		no evidence