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.

Malvaviscus penduliflorus (mazapan)			
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?		
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	n	0
3.03	Weed of agriculture	n	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	n	0
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		
6.01	Evidence of substantial reproductive failure in native habitat		
6.02	Produces viable seed	n	-1
6.03	Hybridizes naturally	y	1
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators	y	-1
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)		
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	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	n	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-1
8.03	Well controlled by herbicides		
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 **Accept***

*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	16	yes
total	34	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	known only from cultivation or former cultivation; plants sterile
1.02	1. Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu. 2. Turner and Mendenhall (1993) A revision of *Malvaviscus* (Malvaceae). Annals of the Missouri Botanical Garden 80: 439-457.	1. "sparingly naturalized in disturbed mesic sites, 0-330 m, at least on Kaua'i, Maui, and Hawai'i" 2. "often escaping or persisting following cultivation"
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.	"now in cultivation throughout tropical and warm temperate regions worldwide"
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. Turner and Mendenhall (1993) A revision of *Malvaviscus* (Malvaceae). Annals of the Missouri Botanical Garden 80: 439-457. 3. Webb, Sykes, and Garnock-Jones (1988) Flora of New Zealand, Vol. 4. Naturalised Pteridophytes, Gymnosperms, Dicotyledons. Botany Division, Department of Scientific and Industrial Research.	1. "sparingly naturalized in disturbed mesic sites, 0-330 m, at least on Kaua'i, Maui, and Hawai'i" 2. "often escaping or persisting following cultivation" 3. "naturalised in the tropical Pacific"
3.02		no evidence
3.03		no evidence
3.04		no evidence
3.05		no evidence
4.01	Turner and Mendenhall (1993) A revision of Malvaviscus (Malvaceae). Annals of the Missouri Botanical Garden 80: 439-457.	no description of these traits
4.02		no evidence
4.03	Turner and Mendenhall (1993) A revision of Malvaviscus (Malvaceae). Annals of the Missouri Botanical Garden 80: 439-457.	no description of this

4.04		
4.05		no mention of toxicity in horticultural or toxicity references
4.06	Floridata (http://www.floridata.com/ref/M/malv_pen.cfm)	"mostly pest-free"
4.07		no mention of toxicity in horticultural or toxicity references
4.08		no evidence
4.09	Floridata (http://www.floridata.com/ref/M/malv_pen.cfm)	"Grow in full sun for a compact shape and the most flowers. It is, however, tolerant of shade."
4.1	Floridata (http://www.floridata.com/ref/M/malv_pen.cfm)	"Turk's cap will tolerate just about any soil."
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.	shrub
4.12		no evidence
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.	Malvaceae
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.	Malvaceae
5.04		
6.01		
6.02	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	"plants sterile, flowering freely but producing no fruits"
6.03	Turner and Mendenhall (1993) A revision of Malvaviscus (Malvaceae). Annals of the Missouri Botanical Garden 80: 439-457.	"it is believed to hybridize occasionally with locally native taxa, mostly *M. arboreus*"
6.04		
6.05	Fryxell (1979) The Natural History of the Cotton Tribe (Malvaceae, Tribe Gossypieae). Texas A&M University Press, College Station and London.	In Malvaviscus spp., "the corolla is tightly tubular and bright red and the exsertion is much greater; the adaptation is evidently to pollination by hummingbirds"
6.06	1. Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25. 2. Webb, Sykes, and Garnock-Jones (1988) Flora of New Zealand, Vol. 4. Naturalised Pteridophytes, Gymnosperms, Dicotyledons. Botany Division, Department of Scientific and Industrial Research.	1. "It is evidently propagated only by vegetative means" 2. (about *M. arboreus,* which the authors considerd *M. penduliflorus* a variant of) "often spreading vegetatively by layering"
6.07		
7.01		
7.02	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i	"now in cultivation throughout tropical and warm temperate

	Press/Bishop Museum Press, Honolulu.	regions worldwide"
7.03	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	"plants sterile, flowering freely but producing no fruits" [no fruits/seeds to be contaminants, and unlikely to come into contact with produce]
7.04	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	"plants sterile, flowering freely but producing no fruits" [no fruits/seeds to be dispersed by wind]
7.05		no evidence
7.06	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	"plants sterile, flowering freely but producing no fruits" [no fruits to be consumed]
7.07	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	"plants sterile, flowering freely but producing no fruits" [no fruits/seeds to attach]
7.08	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	"plants sterile, flowering freely but producing no fruits" [no fruits to be consumed]
8.01	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	"plants sterile, flowering freely but producing no fruits"
8.02	Fryxell (1988) Malvaceae of Mexico. Systematic Botany Monographs vol. 25.	"plants sterile, flowering freely but producing no fruits"
8.03		
8.04		
8.05		