

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>Thespesia populnea (portia tree)</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	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	0
3.02	Garden/amenity/disturbance weed	n	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	y	1
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	n	0
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	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		
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally		
6.04	Self-compatible or apomictic		
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative fragmentation	n	-1
6.07	Minimum generative time (years)	2	0
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	y	1
7.05	Propagules water dispersed	y	1
7.06	Propagules bird dispersed	n	-1
7.07	Propagules dispersed by other animals (externally)	?	
7.08	Propagules dispersed by other animals (internally)	n	-1
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	y	1
8.05	Effective natural enemies present in Florida, or east of the continental divide		
Total Score			13

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	18	yes
total	36	yes

Data collected 2006-2007

Question number	Reference	Source data
1.01		cultivated, but no evidence of selection for reduced weediness
1.02		
1.03		
2.01		
2.02		
2.03		
2.04	Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	"Milo is occasionally found at the edges of mangrove swamps and at the high tide line and will tolerate occasional inundation."
2.05	Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	"Milo has been planted throughout the tropics and is naturalized in tropical climates throughout the world from Caribbean to Africa to the Pacific."
3.01	Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	"Milo has been planted throughout the tropics and is naturalized in tropical climates throughout the world from Caribbean to Africa to the Pacific."
3.02		no evidence
3.03		no evidence
3.04	1. Kairo, Ali, Cheesman, Haysom, and Murphy (2003) Invasive Species Threats in the Caribbean Region. Report to the Nature Conservancy. 2. Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	1. Considered naturalized and invasive in the Bahamas and Puerto Rico. 2. "The tree has taken over beaches used by nesting sea turtles in the West Indies."
3.05		no evidence
4.01	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	no description of these traits
4.02	1. John and Nair (1998) Allelopathic effect of leaf litter of multipurpose trees on crops. <i>Allelopathy Journal</i> 5: 191-194. 2. USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Data	1. Leaf litter of <i>Thespesia populnea</i> suppressed germination and growth of rice.

	compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.	BUT 2. not allelopathic
4.03	Wagner, Herbst, and Sohmer (1999) Manual of the flowering plants of Hawai'i. University of Hawai'i Press/Bishop Museum Press, Honolulu.	no description of this
4.04		
4.05	1. 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. 2. Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	1. no toxicity 2. "Leaves have been used as animal fodder."
4.06	Sosef, Hong, and Prawirohatmodjo, eds. (1998) Plant Resources of South-East Asia. No. 5(3). Timber Trees: Lesser-known Timbers. Backhuys Publishers, Leiden.	" <i>T. populnea</i> has been outlawed in cotton-growing areas because it is an alternative host of certain cotton pests."
4.07	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.	no toxicity
4.08		no evidence
4.09	1. Hortocopia 4.0 2. Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	1. exposure: full sun 2. "requires full sun"
4.1	1. Weber (2003) Invasive Plant Species of the World. CABI Publishing. 2. Sosef, Hong, and Prawirohatmodjo, eds. (1998) Plant Resources of South-East Asia. No. 5(3). Timber Trees: Lesser-known Timbers. Backhuys Publishers, Leiden.	1. "Where native, this shrub grows at the edges of mangrove swamps, along tidal waters, usually on sandy and rocky coasts." 2. "preferring light 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: tree/shrub
4.12	1. Weber (2003) Invasive Plant Species of the World. CABI Publishing. 2. Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	1. "The shrub's spreading lower branches leads to dense and impenetrable thickets that affect wildlife and crowd out native vegetation." 2. "It grows in dense thickets which tend to exclude other plants"
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.	does not fix nitrogen (and is Malvaceae)

5.04	<p>1. 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.</p> <p>2. Francis (2003) <i>Thespesia populnea</i> (L.) Sol. ex Correa. Tropical Tree Seed Manual, Species Descriptions. Reforestation, Nurseries, and Genetics Resources (http://www.rngr.net/Publications/ttsm/Folder.2003-07-11.4726/PDF.2004-03-16.0354/file).</p>	<p>1. not propagated by bulbs, corms, or tubers 2. "Seedlings develop a long, wiry taproot with numerous fine laterals."</p>
6.01		
6.02	<p>1. 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.</p> <p>2. Weber (2003) Invasive Plant Species of the World. CABI Publishing. 3. Sosef, Hong, and Prawirohatmodjo, eds. (1998) Plant Resources of South-East Asia. No. 5(3). Timber Trees: Lesser-known Timbers. Backhuys Publishers, Leiden.</p>	<p>1. propagated by seed 2. "Sometimes it forms forests of seedlings at the high-tide line of beaches." 3. "<i>Thespesia</i> [genus] is easily raised from seed"</p>
6.03		
6.04		
6.05	<p>Sosef, Hong, and Prawirohatmodjo, eds. (1998) Plant Resources of South-East Asia. No. 5(3). Timber Trees: Lesser-known Timbers. Backhuys Publishers, Leiden.</p>	<p>"Pollination is probably by birds."</p>
6.06	<p>1. 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.</p> <p>2. Lorenzi, de Souza, Torres, and Bacher (2003) Arvores Exoticas no Brasil. Instituto Plantarum de Estudos da Flora Ltda., Sao Paulo, Brasil.</p>	<p>1. vegetative spread rate: none 2. Propagation exclusively by seeds.</p>
6.07	<p>Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).</p>	<p>"Flowering may begin in trees as young as 1 to 2 years old."</p>
7.01		
7.02	<p>1. Sosef, Hong, and Prawirohatmodjo, eds. (1998) Plant Resources of South-East Asia. No. 5(3). Timber Trees: Lesser-known Timbers. Backhuys Publishers, Leiden. 2. Francis (2003) <i>Thespesia populnea</i> (L.) Sol. ex Correa. Tropical Tree Seed Manual, Species Descriptions. Reforestation, Nurseries, and Genetics Resources (http://www.rngr.net/Publications/ttsm/Folder.2003-07-11.4726/PDF.2004-03-16.0354/file).</p>	<p>1. "<i>T. populnea</i> is a sacred tree in many parts of the Pacific and has often been planted near temples. Elsewhere it has been planted as an ornamental or roadside tree." 2. "It is also used to reforest disturbed coastal areas and stabilize coastal dunes."</p>
7.03		<p>no evidence</p>
7.04	<p>1. Parrotta (1994) USDA Forest Service, International Institute of Tropical Forestry (http://www.fs.fed.us/global/iitf/Thespesiapopulnea.pdf).</p> <p>2. Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry</p>	<p>1. "The seeds are probably dispersed by the wind" 2. hairy seeds; "Seeds are blown short distances by wind but more likely to be dispersed by water."</p>

	(http://www.agroforestry.net/tti/Thespesia-milo.pdf).	
7.05	1. Weber (2003) Invasive Plant Species of the World. CABI Publishing. 2. Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	1. "...seeds are dispersed by tides and ocean currents. The small seeds can withstand extended periods of floating and easily germinate in sand." 2. "Both the lightweight fruits and seeds can float from one island to another on ocean currents."
7.06		wind dispersed
7.07		hairy seeds
7.08		wind dispersed
8.01	1. Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf). 2. Francis (2003) <i>Thespesia populnea</i> (L.) Sol. ex Correa. Tropical Tree Seed Manual, Species Descriptions. Reforestation, Nurseries, and Genetics Resources (http://www.rngr.net/Publications/ttsm/Folder.2003-07-11.4726/PDF.2004-03-16.0354/file).	1. "The tree seeds prolifically" 2. 1 to 11 seeds per fruit (mean 5.7)
8.02	Sosef, Hong, and Prawirohatmodjo, eds. (1998) Plant Resources of South-East Asia. No. 5(3). Timber Trees: Lesser-known Timbers. Backhuys Publishers, Leiden.	"The seeds remain viable in seawater for more than a year"
8.03	Workman (1998) Mahoe: native or exotic or both? <i>Wildland Weeds</i> 1: 9-11.	<i>Thespesia populnea</i> control: cut stump, 50% Garlon 3A / water solution; basal bark, 10% Garlon 4 / oil solution.
8.04	Friday and Okano (2005) <i>Thespesia populnea</i> (milo), Species Profiles for Pacific Island Agroforestry (http://www.agroforestry.net/tti/Thespesia-milo.pdf).	"Milo tolerates heavy pruning and trees will grow back even if topped or pollarded."
8.05		