

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>Sapium sebiferum (Chinese tallow)</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	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	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	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	y	1
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	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	y	1
6.07	Minimum generative time (years)	3	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	n	-1
7.05	Propagules water dispersed	y	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)		
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			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	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"It has been cultivated in China for at least 14 centuries as a seed crop and as an ornamental." [selection has likely been for more fruit]
1.02		
1.03		
2.01	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. <i>Natural Areas Journal</i> 17: 255-260.	"...we believe that the northern limit for naturalization of tallow from Arkansas to Georgia occurs in Plant Hardiness Zone 7b...This inference is supported by data from China showing that the average minimum winter temperature for growth is -15°C and the average minimum for oilseed production is -10°C."
2.02		
2.03		
2.04	USDA, NRCS. 2005. <i>The PLANTS Database</i> , Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	establishes in wet prairie and marshes; "It is generally found in low, swampy places"
2.05	USDA, NRCS. 2005. <i>The PLANTS Database</i> , Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"Chinese tallow has been introduced to many parts of the world including Sri Lanka, Indochina, Bengal, India, Sudan, Martinique, southern United States, southern France, and Algeria."
3.01	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. <i>Natural Areas Journal</i> 17: 255-260.	"Tallow has been introduced worldwide and is naturalized in Japan, Formosa, India, Pakistan, central and southern Europe, Martinique, and the Sudan."
3.02	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"It quickly becomes the dominant plant in disturbed vacant lots, abandoned agricultural land..."
3.03		no evidence
3.04	1. USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch. 2. Bruce, Cameron, Harcombe, and Jubinsky (1997)	1. invader of natural areas in Louisiana and Texas 2. "Native prairies invaded by Chinese tallow suffered altered ecosystem"

	Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. <i>Natural Areas Journal</i> 17: 255-260.	structure as a result of the monospecific stands of tallow trees that persisted."
3.05		no evidence
4.01	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	no description of these traits
4.02	Conway and Smith (2002) Potential allelopathic interference by the exotic Chinese tallow tree. <i>American Midland Naturalist</i> 148: 43-53.	"Our experiment questions the validity of allelopathic interference as a mechanism enhancing tallow invasion or maintaining woodlands once established...tallow may in fact be perpetuating its own woodland(s) by self-facilitation, rather than inhibiting other plant survival by allelopathic interference."
4.03	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	no description of this
4.04	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. <i>Natural Areas Journal</i> 17: 255-260.	"Sheep and goats will eat leaves of tallow [unclear whether eaten readily]. While there is anecdotal evidence that cattle suppress tallow, toxicity of the plant to cattle limits the effectiveness of control by grazing."
4.05	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"The milky sap in both the leaves and the berries is poisonous to animals. Sheep and goats have been known to eat the leaves of Chinese tallow, but the plant is toxic to cattle."
4.06	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"Chinese tallow trees are remarkably free of insect pests and serious pathogenic organisms."
4.07	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"Ingestion of plant material causes gastrointestinal upset with nausea and vomiting. Contact with the plants can cause dermatitis."
4.08		no evidence
4.09	1. Jones and McLeod (1989) Shade tolerance in seedlings of Chinese tallow tree, American sycamore, and cherrybark oak. <i>Bulletin of the Torrey Botanical Club</i> 116: 371-377. 2. <i>Horticultura</i> 4.0	1. "These results are consistent with the observation that Chinese tallow tree can establish under closed canopies" BUT 2. exposure: full sun
4.1	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. <i>Natural Areas Journal</i> 17: 255-260.	"It grows in poorly or well-drained sites on clay or sandy soil"
4.11	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for	tree

	Chinese tallow tree, prepared by L. Urbatsch.	
4.12	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	"Once established, it forms pure stands that exclude almost all other plants".
5.01		terrestrial
5.02	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	Euphorbiaceae
5.03	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	Euphorbiaceae
5.04		
6.01		
6.02	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. <i>Natural Areas Journal</i> 17: 255-260.	"viability of seeds averages 95%"
6.03		
6.04	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. <i>Natural Areas Journal</i> 17: 255-260.	outcrossing is promoted by dichogamy [unclear whether self-pollination is possible]
6.05	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"The flowers of Chinese tallow are favored by honeybees"
6.06	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"roots readily develop shoots"
6.07	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"They may reach reproductive age in as little as three years"
7.01		
7.02	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"It has been cultivated in China for at least 14 centuries as a seed crop and as an ornamental. In the early 1900s, the Foreign Plant Introduction Division of the USDA promoted tallow tree planting in Gulf Coast states to establish a local soap industry. Since that time, the species has been planted in the U.S. mainly for its unique ornamental qualities..."
7.03		no evidence
7.04	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. <i>Natural Areas Journal</i> 17: 255-260.	fruits are 3-lobed capsules - seeds remain attached to the placenta after dehiscence
7.05	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"The major dispersal methods of Chinese tallow are birds and water."

7.06	Renne, Barrow, Johnson Randall, and Bridges (2002) Generalized avian dispersal syndrome contributes to Chinese tallow tree (<i>Sapium sebiferum</i> , Euphorbiaceae) invasiveness. Diversity and Distributions 8: 285-295.	"c. 40% of the seed crop is effectively dispersed by at least 16 bird species...There is no evidence of tallow tree seed predation by birds and seed passage through the avian gut enhances germination rate and percentage..."
7.07	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	no description of any means of attachment
7.08		
8.01	USDA, NRCS. 2005. The PLANTS Database, Version 3.5 (http://plants.usda.gov). Plant guide for Chinese tallow tree, prepared by L. Urbatsch.	"a mature tree may annually produce an average of 100,000 seeds"
8.02	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. Natural Areas Journal 17: 255-260.	"...with 10-50% of seeds viable after 1 year in the soil in Louisiana"
8.03	Bruce, Cameron, Harcombe, and Jubinsky (1997) Introduction, impact on native habitats, and management of a woody invader, the Chinese tallow tree, <i>Sapium sebiferum</i> (L.) Roxb. Natural Areas Journal 17: 255-260.	"In Texas, control of tallow can be achieved with Grazon P+D, Grazon PC, a tank mix of Grazon PC + Remedy, Velpar L, and Spike 20P. To be effective, control for tallow must be continued for a 3- to 5-year period..."
8.04	Weber (2003) Invasive Plant Species of the World. CABI Publishing.	"resprouts vigorously if damaged"
8.05		