

Assessment date 16 October 2018 Prepared by Sullivan and Lieurance

<i>Tecoma stans</i> (Trumpetbush) South 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	y	4
3.05	Congeneric weed	y	2
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	unk	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	y	1
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	unk	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	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	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	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	y	1
6.04	Self-compatible or apomictic	?	
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)	2	0
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)	unk	-1
8.01	Prolific seed production	unk	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-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 U.S.	?	
Total Score			16
Implemented Pacific Second Screening			no
Risk Assessment Results			HIGH

section	# questions answered	satisfy minimum?
A		11 yes
B		10 yes
C		19 yes
total		40 yes

Assessment date 16 October 2018 Prepared by Sullivan and Lieurance

<i>Tecoma stans</i> (Trumpetbush) North & Central 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	1	
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	1
3.02	Garden/amenity/disturbance weed	y	1
3.03	Weed of agriculture	n	0
3.04	Environmental weed	y	2
3.05	Congeneric weed	y	1
4.01	Produces spines, thorns or burrs	n	0
4.02	Allelopathic	unk	0
4.03	Parasitic	n	0
4.04	Unpalatable to grazing animals	y	1
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	unk	0
4.09	Is a shade tolerant plant at some stage of its life cycle	n	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	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	n	0
6.02	Produces viable seed	y	1
6.03	Hybridizes naturally	y	1
6.04	Self-compatible or apomictic	?	
6.05	Requires specialist pollinators	n	0
6.06	Reproduction by vegetative propagation	y	1
6.07	Minimum generative time (years)	2	0
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)	unk	-1
8.01	Prolific seed production	unk	-1
8.02	Evidence that a persistent propagule bank is formed (>1 yr)	n	-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 U.S.	?	
Total Score			11
Implemented Pacific Second Screening			no
Risk Assessment Results			HIGH

section	# questions answered	satisfy minimum?
A		11 yes
B		10 yes
C		19 yes
total		40 yes

	Reference	Source data
1.01		Cultivated, but no evidence of selection for reduced invasive traits.
1.02		Skip to 2.01
1.03		Skip to 2.01
2.01	<p>1. UF/ IFAS Electronic Data Information Source (http://edis.ifas.ufl.edu/st625 [assessed 28 March 2018]) 2. Floridata Plant Encyclopedia (https://floridata.com/Plants/Bignoniaceae/Tecoma+stans/77 [assessed 12 March 2018]) 3. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. Retrieved on February 21, 2018 from https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=80111 4.1. Köppen-Geiger climate map (http://koeppen-geiger.vu-wien.ac.at/pdf/kottek_et_al_2006_A4.pdf [accessed 21 Feb 2018]) 2. Global Biodiversity Information Facility (https://www.gbif.org/species/3172492 [assessed 21 Feb 2018]) See source data for 2.01.</p>	<p>No computer analysis was performed. 1. Found in hardiness zones 10b through 11. 2. Found USDA Hardiness zones 7 through 11. 3. Native to NORTHERN AMERICA-Mexico, South-Central U.S.A.: United States New Mexico, Texas Southwestern U.S.A.: United States Arizona, SOUTHERN AMERICA-Caribbean: Antigua and Barbuda Antigua; Bahamas ; Cayman Islands ; Cuba ; Dominica ; Dominican Republic ; Grenada ; Guadeloupe ; Haiti ; Jamaica ; Martinique ; Netherlands Antilles Curacao, Saba; Puerto Rico ; St. Lucia ; Trinidad and Tobago Trinidad; Virgin Islands (British) Tortola; Virgin Islands (U.S.), Central America: Costa Rica ; El Salvador ; Guatemala ; Honduras ; Nicaragua ; Panama, Northern South America: Venezuela, Southern South America: Argentina, Western South America: Bolivia ; Colombia ; Ecuador ; Peru. 4. distribution falls in the three Koppen Geiger zones found in SOUTH Florida, but not Cfa, which encompasses all of North and Central Florida</p>
2.02		No computer analysis was performed. Native range is well known; refer to 2.01 source data.
2.03	<p>1. Köppen-Geiger climate map (http://koeppen-geiger.vu-wien.ac.at/pdf/kottek_et_al_2006_A4.pdf [accessed 21 Feb 2018]) 2. Global Biodiversity Information Facility (https://www.gbif.org/species/3172492 [assessed 21 Feb 2018]) See source data for 2.01.</p>	<p>1. Distribution in native and cultivated ranges occurs in more than three climate zones. (Aw, Am, Af). All three zones found in Florida</p>
2.04	<p>1. World Climate Maps (https://www.climate-charts.com/World-Climate-Maps.html#rain [assessed on 11 March 2018]) 2. Global Biodiversity Information Facility (https://www.gbif.org/species/3172492 [assessed 11 March 2018]) 3. USDA Plants Database (https://plants.usda.gov/java/charProfile?symbol=TEST [assessed 26 March 2018])</p>	<p>Native range precipitation averages from 20 to 200 inches. 3. Max precipitation 40 inches, Minimum precipitation 10 inches</p>

2.05	<p>1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/52951 [assessed 14 March 2018]) 2. Pacific Island Ecosystems at Risk (PIER) (http://www.hear.org/pier/species/tecoma_stans.htm [assessed 11 April 2018])</p>	<p>1. Introduced in Africa (Cape Verde, Mauritania, Mauritius, Nigeria, South Africa), Asia (Philippines, Pakistan, India, Christmas Island), South America (Argentina, Brazil) and Oceania (American Samoa, Australia, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia, New Caledonia, Niue, Northern Mariana Islands, Palau, Samoa, Solomon Islands, Tonga). 2. Introduced in American Samoa, Cook Islands, Commonwealth of Northern Mariana Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Hawaii, Kiribati, Marshall Islands, Nauru, New Caledonia, Niue, Palau, Papua new Guinea, Samoa, Solomon Islands, Tonga, and Australia.</p>
3.01	<p>1. Environmental Weeds of Australia for Biosecurity Queensland (https://keyserver.lucidcentral.org/weeds/data/media/Html/tecoma_stans.htm [assessed 11 March 2018]) 2. CABI (https://www.cabi.org/isc/datasheet/52951 accessed 10/16/2018)</p>	<p>1. Naturalized in the coastal areas of northern and eastern Australia. 2. Listed as widespread on Christmas Island, parts of mainland India, Java, the Philippines, areas of Africa including Cape Verde, South Africa, and in Hawaii. Also in parts of South America where it was introduced (Argentina, Brazil,) and in Micronesia. This species was listed as present in many other areas around the world.</p>
3.02	<p>1. PlantNet (http://publish.plantnet-project.org/project/plantinvasivekruger/collection/collection/synthese/details/TECST assessed 10/16/2018)</p>	<p>1. Tecoma stans is a weed of roadsides, riparian zones, open woodlands, grasslands, forest margins, waste areas, rocky places, sandy lake shores and disturbed sites in tropical and subtropical environments</p>
3.03		<p>No evidence.</p>
3.04	<p>1. Weber, E. (2003). Invasive Plant Species of the World: A reference guide to environmental weeds. United Kingdom: CABI. 2. Environmental Weeds of Australia for Biosecurity Queensland (https://keyserver.lucidcentral.org/weeds/data/media/Html/tecoma_stans.htm [assessed 11 March 2018])</p>	<p>1. Known to form dense tangles that impeded on native habitats and prevent the regeneration of native plants. 2. Tecoma stans is considered to be an environmental weed in Queensland and New South Wales and a potential weed in Northern Territory and Western Australia.</p>
3.05	<p>USDA Campsis radicans Plant Guide (https://plants.usda.gov/plantguide/pdf/pg_cara2.pdf [assessed 30 March 2018]) 2. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/52951 [assessed 16 March 2018])</p>	<p>1. Campsis radicans, also known as Tecoma radicans, is considered to be an invasive weed. It is known to displace vegetation from its native habitat. 2. Tecoma castanifolia and Tecoma alata are considered to be invasive and naturalized.</p>
4.01	<p>Gilman, E. F., Watson, D. G. (October 1994). Tecoma stans Fact Sheet (http://hort.ufl.edu/database/documents/pdf/tree_fact_sheets/tecstaa.pdf [assessed 26 March 2018]) 2. Pacific Island Ecosystems at Risk (PIER) (http://www.hear.org/pier/species/tecoma_stans.htm [assessed 26 March 2018])</p>	<p>1. No thorns 2. Smooth bark</p>
4.02	<p>1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/52951 [assessed 16 March 2018]) 2. USDA Plants Database (https://plants.usda.gov/java/charProfile?symbol=TEST)</p>	<p>1. "Allelopathic activities are not known but plants contain various monoterpene alkaloids, tecostanine, tecomanine, and boschniakine which may well contribute to the exclusion of competitors." 2. Tecoma stans is not a known allelopath.</p>
4.03		<p>No evidence.</p>

4.04	1. USDA Plants Database (https://plants.usda.gov/java/charProfile?symbol=TEST [assessed 26 March 2018])	1. Low palatability among grazing animals.
4.05	1. USDA Plants Database (https://plants.usda.gov/java/charProfile?symbol=TEST [assessed 26 March 2018])	1. No toxicity associated with the species.
4.06		No evidence.
4.07	1. Floridata Plant Encyclopedia (https://floridata.com/Plants/Bignoniaceae/Tecoma+stans/772 [assessed 26 March 2018]) 2. USDA Plants Database (https://plants.usda.gov/java/charProfile?symbol=TEST [assessed 26 March 2018])	1. Tecoma stans is used in herbal medicine to treat diabetes, digestive problems, and yeast infections. 2. No toxicity associated with the species.
4.08	1. USDA Plant Database (https://plants.usda.gov/java/charProfile?symbol=TEST [assessed 11 April 2018])	1. No fire resistance
4.09	1. Arizona State University (http://www.public.asu.edu/~camartin/plants/Plant%20html%20files/tecomastans.html [assessed 11 March 2018]) 2. UF/ IFAS Electronic Data Information Source (http://edis.ifas.ufl.edu/st625 [assessed 28 March 2018])	1. Requires full sun in order to grow. 2. Light requirement: full sun
4.10	1. UF/ IFAS Electronic Data Information Source (http://edis.ifas.ufl.edu/st625 [assessed 28 March 2018]) 2. The University of Arizona Campus Arboretum (https://apps.cals.arizona.edu/arboretum/taxon.aspx?id=272 [assessed 23 March 2018])	1. Tecoma stans can tolerate clay, sand, loam, alkaline, acidic, and well-drained soils. 2. Tecoma stans can grow in almost every type of soil, but performs the best in neutral alkaline soil.
4.11		No evidence.
4.12	1. Weber, E. (2003). Invasive Plant Species of the World: A reference guide to environmental weeds. United Kingdom: CABI. 2. Agriculture Research Council of South Africa (http://www.arc.agric.za/arc-ppri/Fact%20Sheets%20Library/Tecoma%20stans.pdf [assessed 26 March 2018])	1. Known to form dense tangles that impeded on native habitats and prevent the regeneration of native plants. 2. Tecoma stans has the potential to form dense tangles.
5.01	Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/52951 [assessed 14 March 2018])	Bignoniaceae
5.02	Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/52951 [assessed 14 March 2018])	Bignoniaceae
5.03	1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/52951 [assessed 14 March 2018])	1. Bignoniaceae
5.04		No evidence.
6.01		No evidence.
6.02	1. Agriculture Research Council of South Africa (http://www.arc.agric.za/arc-ppri/Fact%20Sheets%20Library/Tecoma%20stans.pdf [assessed 26 March 2018])	The seeds are viable and have a 90% germination rate.
6.03	1. Wood, J. R. I. (2008). A revision of Tecoma Juss. (Bignoniaceae) in Bolivia. Botanical Journal of the Linnean Society, 156, 144-145	1. In Bolivia T. tenuiflora and T. stans form hybrids when grown in close proximity to one another. The hybrid is commonly found near Samaipata and the Andean valleys west of Santa Cruz. Hybrids produced are fertile.

6.04	1. Kranz WM, Passini T, 1997. Amarelinho, biologia e controle. Informada a Pesquisa. Estado do Parana, Secretaria da Agricultura e do Abastecimento, Instituto Agronomico do Parana, No. 121:1-17.	1. Autocompatible and requires external pollination. 2. Attracts bees, butterflies, hummingbirds and other nectar insects.
6.05	1. Laby Bird Johnson Wildflower Center (https://www.wildflower.org/plants/result.php?id_plant=test [assessed 26 March 2018]) 2. University of Arizona Campus Arboretum (https://apps.cals.arizona.edu/arboretum/taxon.aspx?id=272 [assessed 11 April 2018])	1. Attracts bees, butterflies, hummingbirds and other nectar insects. 2. The nectar attracts bees, butterflies and hummingbirds.
6.06	1. USDA Plant Database (https://plants.usda.gov/java/charProfile?symbol=TEST [assessed 11 April 2018])	1. No vegetative reproduction.
6.07	UF/ IFAS Electronic Data Information Source (http://edis.ifas.ufl.edu/st625 [assessed 28 March 2018])	1. Seedlings take two years to bloom.
7.01	1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/5295 [assessed 21 March 2018])	1. Commonly found along roadsides and in eroded or overgrazed areas. Tecoma stans seeds are smalls and are easily transported from place to place.
7.02	1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/5295 [assessed 21 March 2018]) 2. New South Wales WeedWise (http://weeds.dpi.nsw.gov.au/Weeds/Details/148#control [assessed 26 March 2018])	1. There is a risk of Tecoma stans being introduced to new environments through nursery trades. It is a popular ornamental garden plant. 2. Tecoma Stans is commonly cultivated as an ornamental in tropical and subtropical regions of the world.
7.03		No evidence.
7.04	1. Weber, E. (2003). Invasive Plant Species of the World: A reference guide to environmental weeds. United Kingdom: CABI. 2. Environmental Weeds of Australia for Biosecurity Queensland (https://keyserver.lucidcentral.org/weeds/data/media/Html/tecoma_stans.htm [assessed 11 March 2018]) 3. CABI (https://www.cabi.org/isc/datasheet/52951 [assessed 16 March 2018])	1. Seeds are wind dispersed. 2. The light weight seeds produced are primarily dispersed by wind. 3. Seeds are primarily dispersed by water and wind.
7.05	1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/52951 [assessed 16 March 2018]) 2. Environmental Weeds of Australia for Biosecurity Queensland (https://keyserver.lucidcentral.org/weeds/data/media/Html/tecoma_stans.htm [assessed 11 March 2018])	1. Seed are primarily dispersed by water and wind. 2. Seeds can be dispersed by flood waters.
7.06	1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/52951 [assessed 16 March 2018])	1. Not much is known about the role birds play in the dispersal of the Tecoma stans seeds.
7.07		Highly unlikely because the seeds are thin and papery and unlikely to attach to an animals coat.
7.08	1. University of Arizona Campus Arboretum (https://apps.cals.arizona.edu/arboretum/taxon.aspx?id=272 [assessed 11 April 2018])	1. Small mammals are known to consume the leaves and seeds of the plant.
8.01	1. Weber, E. (2003). Invasive Plant Species of the World: A reference guide to environmental weeds. United Kingdom: CABI. 2. USDA Plant Database (https://plants.usda.gov/java/charProfile?symbol=TEST [assessed 28 March 2018])	1. Seeds are produced in abundance. 2. The fruit seed abundance of Tecoma stans is high and there are approximately 100000 seeds per pound.
8.02	1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/5295 [assessed 21 March 2018])	1. No evidence of seed dormancy and seed longevity is limited.

8.03	<p>1. New South Wales WeedWise (http://weeds.dpi.nsw.gov.au/Weeds/Details/148#control [assessed 26 March 2018]) 2. Agriculture Research Council of South Africa (http://www.arc.agric.za/arc-ppri/Fact%20Sheets%20Library/Tecoma%20stans.pdf [assessed 26 March 2018])</p>	<p>1. Herbicides can be used to treat medium to large infestations. Examples of these herbicides include Roundup (glyphosate), Vililant II (picloram and aminopyralid) and Access (triclopyr and picloram). 2. There is no specific herbicide used to target Tacoma stans, but a general herbicide is effective.</p>
8.04	<p>1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/5295 [assessed 21 March 2018])</p>	<p>1. "Tolerates, or benefits from, cultivation, browsing pressure, mutilation, fire etc"</p>
8.05	<p>1. Centre for Agriculture and Bioscience International (https://www.cabi.org/isc/datasheet/5295 [assessed 21 March 2018])</p>	<p>1."The rapid expansion of its distribution and its invasive behaviour in Argentina and Brazil must be a strong indication of an introduced exotic responding to the absence of natural enemies although most of the literature gives Argentina as its southern,ost natural distribution."</p>