

Part IV. Plant Assessment Form

For use with “Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands”
by the California Exotic Pest Plant Council and the Southwest Vegetation Management Association

Electronic version, February 28, 2003

Table 1. Species and Evaluator Information

Species name (Latin binomial):	Sapium sebiferum (L. Roxb.)
Synonyms:	Croton sebiferum, Excoecaria sebifera, Stillingia sebifera, Triadica sebifera, Triadica sinensis
Common names:	Chinese tallowberry, Chicken tree, Florida aspen, Popcorn tree, Vegetable tallow, White wax berry,
Evaluation date (mm/dd/yy):	8/16/04
Evaluator #1 Name/Title:	Mark Newhouser/Project Director, Arundo Eradication and Coordination Project
Affiliation:	Sonoma Ecology Center
Phone numbers:	(707) 996-0712 ext. 113
Email address:	mnewhouser@vom.com
Address:	205 First Street West Sonoma, CA 95476
Evaluator #2 Name/Title:	enter text here
Affiliation:	enter text here
Phone numbers:	enter text here
Email address:	enter text here
Address:	enter text here

Section below for list committee use—please leave blank

List committee members:	Carla Bossard, John Randall, Cynthia Roye, Jake Sigg, Peter Warner
Committee review date:	2/11/05
List date:	enter text here
Re-evaluation date(s):	enter text here

General comments on this assessment:

enter text here

Table 2. Criteria, Section, and Overall Scores

1.1	Impact on abiotic ecosystem processes	B	Rev'd, Sci. Pub'n
1.2	Impact on plant community	B	Rev'd, Sci. Pub'n
1.3	Impact on higher trophic levels	B	Rev'd, Sci. Pub'n
1.4	Impact on genetic integrity	D	No Information

<p>Impact</p> <p><i>Enter four characters from Q1.1-1.4 below:</i></p> <p>BBBD</p> <p><i>Using matrix, determine score and enter below:</i></p> <p>B</p>

2.1	Role of anthropogenic and natural disturbance	3 pts	Rev'd, Sci. Pub'n
2.2	Local rate of spread with no management	0 pts	No Information
2.3	Recent trend in total area infested within state	2 pts	Rev'd, Sci. Pub'n
2.4	Innate reproductive potential Wksht A	2pts	Rev'd, Sci. Pub'n
2.5	Potential for human-caused dispersal	2 pts	Rev'd, Sci. Pub'n
2.6	Potential for natural long-distance dispersal	2 pts	Rev'd, Sci. Pub'n
2.7	Other regions invaded	B	Rev'd, Sci. Pub'n

<p>Invasiveness</p> <p><i>Enter the sum total of all points for Q2.1-2.7 below:</i></p> <p>13</p> <p><i>Use matrix to determine score and enter below:</i></p> <p>B</p>
--

<p>Plant Score</p> <p><i>Using matrix, determine Overall Score and Alert Status from the three section scores and enter below:</i></p> <p>Medium</p> <p>Alert</p>
--

3.1	Ecological amplitude/Range	C	Rev'd, Sci. Pub'n
3.2	Distribution/Peak frequency Wksht C	D	Pers. Obs.

<p>Distribution</p> <p><i>Using matrix, determine score and enter below:</i></p> <p>C</p>

Table 3. Documentation

Question 1.1 Impact on abiotic ecosystem processes	B Rev'd, Sci. Pub'n back
Identify ecosystem processes impacted: The Chinese tallow tree alters nutrient levels in soil. The tallow tree adds nutrients to systems where it has been introduced (increases eutrophication).	
Rationale: Through rapidly decomposing leaf litter the tallow tree increases the levels of nitrogen, phosphorus, and other nutrients while decreasing levels of sodium and magnesium.	
Sources of information: Barrilleaux,-T.C; Grace,-J.B.2000. "Growth and invasive potential of Sapium sebiferum (Euphorbiaceae) within the coastal prairie region: the effects of soil and moisture regime." American Journal of Botany. 87 (8):1099-1106. Cameron G.C., Spencer S.R. "Rapid Leaf Decay and Nutrient Release in a Chinese Tallow Forest." Oecologia 80:222-228. 1989. DiTomaso J.M., Healy E. Weeds of California and Other Western States. As yet unpublished. Jubinsky G. "Chinese Tallow, (Sapium sebiferum)." Dept. Enviro. Protection, Florida. Publication # TSS-93-03. 1995	
Question 1.2 Impact on plant community composition, structure, and interactions	B Rev'd, Sci. Pub'n back
Identify type of impact or alteration: The Chinese tallow tree can alter plant species composition and structure. Once established it is able to form monotypic stands. It has taken over areas of coastal prairie in Texas and areas of coastal floodplain forests of the Southeast.	
Rationale: The tallow tree grows faster than native vegetation and can establish and grow under a variety of different conditions.	
Sources of information: Bruce K.A., et al. "Introduction, Impact on Native Habitats, and Management of a Woody Invader, the Chinese Tallow Tree, Sapium sebiferum (L.) Roxb." Natural Areas Journal 17(3): 255-260. 1997. Cameron G.C., Spencer S.R. "Rapid Leaf Decay and Nutrient Release in a Chinese Tallow Forest." Oecologia 80:222-228. 1989. Conway W.C., Smith L.M. "Potential Allelopathic Interference by the Exotic Chinese Tallow Tree (Sapium sebiferum)." American Midlands Naturalist 148: 43-53. 2002. Jones R.H., McLeod K.W. "Shade Tolerance in Seedlings of Chinese Tallow Tree, American Sycamore, and Cherrybark Oak." Bulletin of the Torrey Botanical Club 116(4): 371-377. 1989. Jubinsky G. "Chinese Tallow, (Sapium sebiferum)." Dept. Enviro. Protection, Florida. Publication # TSS-93-03. 1995 Randall, J. M. "Weed Alert! New Invasive Weeds in California." CAL IPC Proceedings. 1997. Siemann, E. and W. E. Rogers (2003). "Changes in light and nitrogen availability under pioneer trees may indirectly facilitate tree invasions of grasslands." Journal of Ecology 91(6): 923-931.	

Question 1.3 Impact on higher trophic levels	B Rev'd, Sci. Pub'n back
Identify type of impact or alteration: The berries of the tallow tree are eaten by many bird species and the foliage is not grazed by herbivores in areas where established. Studies in Texas have shown that rates of nutrient cycling promotes populations of a non-native isopod and depresses populations of native invertebrates. It produces tannins which inhibit the feeding of isopod and amphipod invertebrates in aquatic systems and toxic chemicals capable of stupefying fish.	
Rationale: Although the tallow tree may be a food source for birds it could be harmful to aquatic species. Also, the tallow tree displaces native vegetation reducing habitat and food sources for native wildlife.	
Sources of information: Bruce K.A., et al. "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(3): 255-260. 1997. DiTomaso J.M., Healy E. <i>Weeds of California and Other Western States</i> . As yet unpublished. Jubinsky G. "Chinese Tallow, (<i>Sapium sebiferum</i>)." Dept. Enviro. Protection, Florida. Publication # TSS-93-03. 1995 Lankau, R. A., W. E. Rogers, et al. (2004). "Constraints on the utilisation of the invasive Chinese tallow tree <i>Sapium sebiferum</i> by generalist native herbivores in coastal prairies." <i>Ecological Entomology</i> 29(1): 66-75. Randall, J. M. "Weed Alert! New Invasive Weeds in California." CAL EPPC Proceedings. 1997. Renne I.J. et al. "Generalized Avian Dispersal Syndrome Contributes to Chinese Tallow Tree (<i>Sapium sebiferum</i> Euphorbiaceae) Invasiveness." <i>Diversity and Distribution</i> 8:285-295. 2002.	
Question 1.4 Impact on genetic integrity	D Rev'd Sci. Pub'n back
Identify impacts: none	
Rationale: No closely-related species.	
Sources of information: Hickman, J. C. (ed.) 1993. <i>The Jepson Manual, Higher Plants of California</i> . University of California Press. Berkeley, CA	
Question 2.1 Role of anthropogenic and natural disturbance in establishment	A Rev'd, Sci. Pub'n back
Describe role of disturbance: Has invaded disturbed areas in California.	
Rationale: It is able to establish and grow under a variety of soil conditions, is shade tolerant, can grow in saline conditions, can tolerate flooding and drought, grows quickly, fruits at a young age, and produces large amounts of seed. The seeds are also dispersed into natural areas by birds.	
Sources of information: Anonymous. "Chinese Tallow Tree, Pop-corn Tree <i>Sapium sebiferum</i> (L.) Roxb." Department of Natural Resources, Bureau of Aquatic Plant Management, Research and Technical Services, April 1990. Anonymous. "This Beauty is a Beast." <i>Aquatic Plant Quarterly</i> Summer 1992. DiTomaso J.M., Healy E. <i>Weeds of California and Other Western States</i> . As yet unpublished. Jubinsky G., Anderson L.C. "The Invasive Potential of Chinese Tallow-tree (<i>Sapium sebiferum</i>) in the	

Southeast.” <i>Castanea</i> 61(3): 226-231. 1996.	
Question 2.2 Local rate of spread with no management	A Pers. Obs. back
Describe rate of spread: In Davis, CA, trees doubled in the north Davis ponds in less than 10 years.	
Rationale: enter text here	
Sources of information: Carla Bossard, St. Mary’s College and John Randall, The Nature Conservancy, UC Davis, personal observations.	
Question 2.3 Recent trend in total area infested within state	B No Information back
Describe trend: In 1998 there were over 100 trees along the American River Parkway and could easily spread downstream. The tallow tree is also located in the Consumnes River watershed, Redding, and the San Francisco Bay delta region.	
Rationale: enter text here	
Sources of information: DiTomaso J.M., Healy E. <i>Weeds of California and Other Western States</i> . As yet unpublished. Randall, J. M. “Weed Alert! New Invasive Weeds in California.” CAL EPPC Proceedings. 1997.	
Question 2.4 Innate reproductive potential	U Rev'd, Sci. Pub'n back
Describe key reproductive characteristics: Tallow trees are able to produce a large amount of seeds and start producing seed at a young age, when about 1m high. A tree cultivated on the Texas coastal prairie produces 310,000 seeds and in hardwood forests of Louisiana trees produces an average of 8,000 seeds. Roots and stumps are also able to resprout after being cut or burned. Seeds are dispersed by birds and moving water. Seeds are viable for at least 1 year in field conditions and can remain viable for several weeks while floating in water. Saplings are able to establish and grow quickly under many different conditions.	
Rationale: Studies have shown that the tallow tree can produce large amounts of seed and can establish in a variety of conditions.	
Sources of information: Anonymous. “This Beauty is a Beast.” <i>Aquatic Plant Quarterly</i> Summer 1992. Anonymous. 1990 “Chinese Tallow Tree, Pop-corn Tree <i>Sapium sebiferum</i> (L.) Roxb.” Department of Natural Resources, Bureau of Aquatic Plant Management, Research and Technical Services Bruce K.A., et al. 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(3): 255-260. DiTomaso J.M., Healy E. <i>Weeds of California and Other Western States</i> . As yet unpublished. Jones R.H., McLeod K.W. “Shade Tolerance in Seedlings of Chinese Tallow Tree, American Sycamore, and Cherrybark Oak.” <i>Bulletin of the Torrey Botanical Club</i> 116(4): 371-377. 1989. Jubinsky G. “Chinese Tallow, (<i>Sapium sebiferum</i>).” Dept. Enviro. Protection, Florida. Publication # TSS-93-	

03. 1995	
Rogers, W. E. and E. Siemann (2003). "Effects of simulated herbivory and resources on Chinese tallow tree (<i>Sapium sebiferum</i> , Euphorbiaceae) invasion of native coastal prairie." <i>American Journal of Botany</i> 90(2): 243-249.	
Question 2.5 Potential for human-caused dispersal	A Rev'd, Sci. Pub'n back
Identify dispersal mechanisms: The tallow tree is planted as an ornamental and historically used as a honey plant for beekeeping and introduced as a possible oil crop tree. Widely planted as a street tree.	
Rationale: It has been a popular ornamental because it grows quickly and under many conditions.	
Sources of information: Anonymous. "This Beauty is a Beast." <i>Aquatic Plant Quarterly</i> Summer 1992. Bruce K.A., et al. "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(3): 255-260. 1997. DiTomaso J.M., Healy E. <i>Weeds of California and Other Western States</i> . As yet unpublished. Jubinsky G. "Chinese Tallow, (<i>Sapium sebiferum</i>)." Dept. Enviro. Protection, Florida. Publication # TSS-93-03. 1995	
Question 2.6 Potential for natural long-distance dispersal	B Rev'd, Sci. Pub'n back
Identify dispersal mechanisms: Seeds are dispersed by birds and along waterways.	
Rationale: Movement of seed through waterways and by birds make dispersal over 1km possible.	
Sources of information: Cameron G.C., Spencer S.R. "Rapid Leaf Decay and Nutrient Release in a Chinese Tallow Forest." <i>Oecologia</i> 80:222-228. 1989. DiTomaso J.M., Healy E. <i>Weeds of California and Other Western States</i> . As yet unpublished. Jubinsky G. "Chinese Tallow, (<i>Sapium sebiferum</i>)." Dept. Enviro. Protection, Florida. Publication # TSS-93-03. 1995 Jubinsky G., Anderson L.C. "The Invasive Potential of Chinese Tallow-tree (<i>Sapium sebiferum</i>) in the Southeast." <i>Castanea</i> 61(3): 226-231. 1996	
Question 2.7 Other regions invaded	B Rev'd, Sci. Pub'n back
Identify other regions: The tallow tree is now naturalized in the southeastern US from the coastal plain of South Carolina south to Florida and west along Texas.	
Rationale: The southeastern US is in the same latitudes as eastern Asia, where the tallow tree is native. May have similar habitat types. The tallow tree was introduced to the US in the 1700s. In California, it occurs in the Sacramento Valley and San Francisco Bay Region. Behavior elsewhere suggests it could be a problem in the Sacramento-San Joaquin Delta. Has invaded areas similar to the Delta that are not yet invaded in California.	

Sources of information: Bruce K.A., et al. "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(3): 255-260. 1997.	
Jubinsky G. "Chinese Tallow, (<i>Sapium sebiferum</i>)." Dept. Enviro. Protection, Florida. Publication # TSS-93-03. 1995	
Jubinsky G., Anderson L.C. "The Invasive Potential of Chinese Tallow-tree (<i>Sapium sebiferum</i>) in the Southeast." <i>Castanea</i> 61(3): 226-231. 1996.	
Randall, J. M. "Weed Alert! New Invasive Weeds in California." CAL EPPC Proceedings. 1997.	
Question 3.1 Ecological amplitude/Range	C Rev'd, Sci. Pub'n back
Describe ecological amplitude, identifying date of source information and approximate date of introduction to the state, if known:	
Rationale:	
Sources of information:	
Question 3.2 Distribution/Peak frequency	U No Information back
Describe distribution: Percent of infested areas in California is unknown.	
Rationale: enter text here	
Sources of information: enter text here	

Worksheet A[back](#)

Reaches reproductive maturity in 2 years or less	<u>No</u>
Dense infestations produce >1,000 viable seed per square meter	<u>Yes (2 pts)</u>
Populations of this species produce seeds every year.	Yes: 1 pt
Seed production sustained over 3 or more months within a population annually	Unknown: 0 pts
Seeds remain viable in soil for three or more years	No: 0 pts
Viable seed produced with <i>both</i> self-pollination and cross-pollination	Unknown: 0 pts
Has quickly spreading vegetative structures (rhizomes, roots, etc.) that may root at nodes	No: 0 pt
Fragments easily and fragments can become established elsewhere	No: 0 pts
Resprouts readily when cut, grazed, or burned	Yes: 1 pt
	4 pts. 2 unknowns
	B (4 pts)
Note any related traits: enter text here	

Worksheet C - California Ecological Types

[back](#)

Major Ecological Types	Minor Ecological Types	Code*
Marine Systems	marine systems	score
Freshwater and Estuarine Aquatic Systems	lakes, ponds, reservoirs	score
	rivers, streams, canals	score
	estuaries	score
Dunes	coastal	score
	desert	score
	interior	score
Scrub and Chaparral	coastal bluff scrub	score
	coastal scrub	score
	Sonoran desert scrub	score
	Mojavean desert scrub (incl. Joshua tree woodland)	score
	Great Basin scrub	score
	chenopod scrub	score
	montane dwarf scrub	score
	Upper Sonoran subshrub scrub	score
	chaparral	score
Grasslands, Vernal Pools, Meadows, and other Herb Communities	coastal prairie	score
	valley and foothill grassland	score
	Great Basin grassland	score
	vernal pool	score
	meadow and seep	score
	alkali playa	score
	pebble plain	score
Bog and Marsh	bog and fen	score
	marsh and swamp	score
Riparian and Bottomland	riparian forest	D
	riparian woodland	D
	riparian scrub (incl. desert washes)	D
Woodland	cismontane woodland	score
	piñon and juniper woodland	score
	Sonoran thorn woodland	score
Forest	broadleaved upland forest	score
	North Coast coniferous forest	score
	closed cone coniferous forest	score
	lower montane coniferous forest	score
	upper montane coniferous forest	score
	subalpine coniferous forest	score
Alpine Habitats	alpine boulder and rock field	score
	alpine dwarf scrub	score

* A. means >50% of type occurrences are invaded; B means >20% to 50%; C. means >5% to 20%; D. means present but ≤5%; U. means unknown (unable to estimate percentage of occurrences invaded).