SCORE: *4.0*

RATING: Evaluate

Taxon: Radermachera	a sinica (Han	ce) Hemsl.	Family: Bignon	iaceae	
Common Name(s):	China doll emerald tr serpent tre	ee ee	Synonym(s):	Stereospermu	um sinicum Hance
Assessor: Chuck Chin WRA Score: 4.0	nera	Status: Approved Designation: EVALU	JATE	End Date: Rating:	11 Feb 2025 <mark>Evaluate</mark>

Keywords: Tropical Tree, Naturalized, Unarmed, Ornamental, Wind-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y = -3, n = 0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	0 = low, 1 = intermediate, 2 = high (see Appendix 2)	High
202	Quality of climate match data	0 = low, 1 = intermediate, 2 = high (see Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y = 1, n = 0	n
204	Native or naturalized in regions with tropical or subtropical climates	y = 1, n = 0	у
205	Does the species have a history of repeated introductions outside its natural range?	y= -2, ? = -1, n = 0	у
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n = question 205	у
302	Garden/amenity/disturbance weed	y = 1*multiplier (see Appendix 2), n = 0	n
303	Agricultural/forestry/horticultural weed	y = 2*multiplier (see Appendix 2), n = 0	n
304	Environmental weed		
305	Congeneric weed		
401	Produces spines, thorns or burrs	y = 1, n = 0	n
402	Allelopathic		
403	Parasitic	y = 1, n = 0	n
404	Unpalatable to grazing animals		
405	Toxic to animals		
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y = 1, n = 0	n
408	Creates a fire hazard in natural ecosystems	y = 1, n = 0	n
409	Is a shade tolerant plant at some stage of its life cycle	y = 1, n = 0	n

SCORE: 4.0

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
411	Climbing or smothering growth habit	y = 1, n = 0	n
412	Forms dense thickets		
501	Aquatic	y = 5, n = 0	n
502	Grass	y = 1, n = 0	n
503	Nitrogen fixing woody plant	y = 1, n = 0	n
504	Geophyte (herbaceous with underground storage organs bulbs, corms, or tubers)	y = 1, n = 0	n
601	Evidence of substantial reproductive failure in native habitat	y = 1, n = 0	n
602	Produces viable seed	y = 1, n = -1	у
603	Hybridizes naturally		
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y = -1, n = 0	n
606	Reproduction by vegetative fragmentation		
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	3
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y = 1, n = -1	n
702	Propagules dispersed intentionally by people	y = 1, n = -1	у
703	Propagules likely to disperse as a produce contaminant	y = 1, n = -1	n
704	Propagules adapted to wind dispersal	y = 1, n = -1	У
705	Propagules water dispersed		
706	Propagules bird dispersed	y = 1, n = -1	У
707	Propagules dispersed by other animals (externally)	y = 1, n = -1	n
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

SCORE: 4.0

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Slopes and forests; 300-800 m. Guangdong, Guangxi, Guizhou, Taiwan, Yunnan [Bhutan, India (Assam, Darjeeling), N Myanmar, Vietnam]"

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	NA

201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2025). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars- grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 5 Feb 2025]	"Native Asia-Temperate CHINA: China [Guangdong Sheng, Guangxi Zhuangzu Zizhiqu, Guizhou Sheng, Yunnan Sheng] EASTERN ASIA: Japan [Ryukyu Islands (s.)], Taiwan Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India [Assam, West Bengal (n.)] INDO-CHINA: Myanmar (n.), Vietnam"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2025). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars- grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 5 Feb 2025]	"Native Asia-Temperate CHINA: China [Guangdong Sheng, Guangxi Zhuangzu Zizhiqu, Guizhou Sheng, Yunnan Sheng] EASTERN ASIA: Japan [Ryukyu Islands (s.)], Taiwan Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India [Assam, West Bengal (n.)] INDO-CHINA: Myanmar (n.), Vietnam"

SCORE: 4.0

Qsn #	Question	Answer
203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Slopes and forests; 300-800 m."
	Missouri Botanical Garden. (2025). Radermachera sinica. http://www.missouribotanicalgarden.org/plantfinder/PlantFi nderDetails.aspx?taxonid=277931. [Accessed 5 Feb 2025]	"Zone: 10 to 12"

204	Native or naturalized in regions with tropical or subtropical climates	У
	Source(s)	Notes
	Madhukar, V. K., Srivastava, S. K., & Dubey, N. K. (2012). Enumeration of family Bignoniaceae in India. Indian Journal of Forestry, 35(4), 521-534	"Distribution: INDIA: (Arunachal Pradesh, Nagaland). Grows in deciduous forests."
	Wunderlin, R. P., Hansen, B. F., Franck, A. R., Bradley, K. A., & Kunzer, J. M. (2010). Plants new to Florida. Journal of the Botanical Research Institute of Texas, 4(1): 349-355	"Native to subtropical Asia. it is cultivated widely as a houseplant and outdoors in the Old and New world tropics as an ornamental. It is naturalized in Hawaii. This is the first report of it naturalized in the continental United States." "Voucher specimen. Miami-Dade Co.: Fire suppressed pine rockland at SW corner of SW 296 St. & 197 Ave., frequent in understory, 25.490747°N, 80.510248°W, 24 Jun 2009, Bradley 2677 (FTG, USF)."
	USDA, Agricultural Research Service, National Plant Germplasm System. (2025). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars- grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 5 Feb 2025]	"Native Asia-Temperate CHINA: China [Guangdong Sheng, Guangxi Zhuangzu Zizhiqu, Guizhou Sheng, Yunnan Sheng] EASTERN ASIA: Japan [Ryukyu Islands (s.)], Taiwan Asia-Tropical INDIAN SUBCONTINENT: Bhutan, India [Assam, West Bengal (n.)] INDO-CHINA: Myanmar (n.), Vietnam"
	Frohlich, D. & Lau, A. (2008). New plant records from O'ahu for 2007. Bishop Museum Occasional Papers 100: 3 -12	"Several individuals were found naturalizing on O'ahu in Waimea Botanical Garden along an access road about 150 m from the accessioned tree."

205	Does the species have a history of repeated introductions outside its natural range?	У
	Source(s)	Notes
	Wunderlin, R. P., Hansen, B. F., Franck, A. R., Bradley, K. A., & Kunzer, J. M. (2010). Plants new to Florida. Journal of the Botanical Research Institute of Texas, 4(1): 349-355	"Native to subtropical Asia. it is cultivated widely as a houseplant and outdoors in the Old and New world tropics as an ornamental. It is naturalized in Hawaii. This is the first report of it naturalized in the continental United States."
	Gallaher, T.J., Brock, K., Kennedy, B.H., Imada, C.T., Imada, K., & Walvoord, N. (2025). Plants of Hawai'i. http://www.plantsofhawaii.org. [Accessed 5 Feb 2025]	Kaua'i Only found in cultivation O'ahu Potentially Naturalizing
	Dave's Garden. (2025). China Doll, Serpent Tree, Emerald Tree - Radermachera sinica. https://davesgarden.com/guides/pf/go/54477. [Accessed 5 Feb 2025]	Widely planted as an ornamental

301	Naturalized beyond native range	У
	Source(s)	Notes

SCORE: 4.0

Qsn #	Question	Answer
	Nelson, G. (2010). The Trees of Florida. A Reference and Field Guide. 2nd Edition. Pineapple Press Inc, Sarasota, FL	"China doll or serpent tree (Radermachera sinica (Hance) Hemsley), an Asian species known in the United States mostly as a house plant, is naturalized in Miami-Dade County. It has the potential to become a tree 30 m tall in subtropical climates."
	PlantNET. (2025). New South Wales Flora Online - Radermachera sinica (Hance) Hemsl. https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl? page=nswfl&lvl=sp&name=Radermachera~sinica. [Accessed 6 Feb 2025]	"Description: China Doll Radermachera sinica (Hance) Hemsl., often grown as a houseplant, is possibly naturalised in the Sydney region as a garden escape. It can grow to be a tree to 10 m tall (and possibly up to 30 m) with usually bipinnate, glossy green leaves to 70 cm long, ovate to narrowly ovate or elliptic-ovate leaflets 2.5-7 cm long, and flowers with usually white, campanulate-funnelform corolla to c. 10 cm long. "
	Serviss, B. E. (2001). A monograph of the Bignoniaceae in the United States. PhD Dissertation. Mississippi State University, Mississippi State, MS	"It can reproduce prolifically in the United States, and spontaneous plants should be expected in areas of cultivation. There are a few possible records of spontaneity in Dade County, Florida, but R. sinica is probably not truly established in the flora"
	Nelson, G. (2011). Botanical Keys to Florida's Trees, Shrubs, and Woody Vines. Pineapple Press Inc., Sarasota, FL	"Radermachera sinica (Hance) Hemsley. China Doll, Serpent Tree. Disturbed sites, escaped from cultivation. Extreme southern peninsula. China, Taiwan."
	Wilton, A. D. et al. (2016). Checklist of the New Zealand Flora - Seed Plants. Manaaki Whenua-Landcare Research, Lincoln. http://dx.doi.org/10.7931/P1PP42. [Accessed]	"ζ Radermachera Zoll. & Moritzi ζ Radermachera sinica (Hance) Hemsl. = Stereospermum sinicum Hance = exotic, occasional ('casual');"
	Frohlich, D. & Lau, A. (2008). New plant records from O'ahu for 2007. Bishop Museum Occasional Papers 100: 3 -12	[Oahu] "This species is native to Asia and was previously uncollected as naturalized in the state." "Several individuals were found naturalizing on O'ahu in Waimea Botanical Garden along an access road about 150 m from the accessioned tree. Material examined. O'AHU: Waimea Botanical Garden, naturalizing along access road to water treatment facility, ca 150 m from accessioned tree, disturbed site with several pig wallows, tree seedling, ca 0.5 m, no fruit or flowers seen, several small (<1 m tall) seedlings growing along road, 2 m, 25 Jan 2007, D. Frohlich & A. Lau s.n. (BISH 725935)."

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[No evidence] "Radermachera sinica (Hance) Hemsl. Bignoniaceae Total N° of Refs: 4 Global Risk Score: 0.24 Rating: Low Habit: Tree Preferred Climate/s: Mediterranean, Subtropical, Tropical Origin: C Asia, E Asia Major Pathway/s: Ornamental Dispersed by: Humans References: Australia-E-201, North America-N-1760, New Zealand- U-2048, Australia-W-1977."

304	Environmental weed	
	Source(s)	Notes

Report Generated: 11 Feb 2025

SCORE: 4.0

Qsn #	Question	Answer
	Noosa Council. (2020). Noosa Plan 2020. https://www.noosa.qld.gov.au. [Accessed 6 Feb 2025]	"Listed below in Table SC6.3.5.1 are species that are not acceptable for inclusion in landscape plans that require Council approval, and their use elsewhere is discouraged. Those species marked with an asterisk (*) are highly invasive through vegetative reproduction and rampant growth habit. They should be removed where possible and should NEVER be disposed of as garden waste in bushland." [Radermachera sinica is included in "Table SC6.3.5.1 Undesirable Plant Species", but is not listed among those that are highly invasive. Reasons for inclusion of Radermachera sinica have not been specified]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"References: Australia-E-201, North America-N-1760, New Zealand- U-2048, Australia-W-1977." [Listed as an environmental weed. Impacts unable to be verified]
	Caloundra City Council. 2004. Caloundra City Plan. Sunshine Coast Regional Council. https://www.sunshinecoast.qld.gov.au/. [Accessed 27 Jul 2016]	"Table 11.B Environmental Weeds" [Includes Radermachera sinica. No impacts specified]

305	Congeneric weed	
	Source(s)	Notes
	Randall, R.P. (2012). A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Listed as a weed of unspecified impacts] "Radermachera pentandra Hemsl. Bignoniaceae Cultivated Refs: 4 919-U, 824-N, 823-N, 280-UW"
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Listed as a weed of unspecified impacts] "Radermachera pentandra Hemsl. Bignoniaceae Total N° of Refs: 4 Habit: Tree Origin: E Asia Major Pathway/s: Ornamental Dispersed by: Humans References: New Zealand-UW-280, New Zealand-N-823, New Zealand-N-824, New Zealand-U-919."

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	[No evidence] "Trees ca. 10 m tall. Petioles, leaf axis, and inflorescences glabrous. Leaves 2(or 3)-pinnately compound; leaf rachis ca. 30 cm; lateral petiolules less than 5 mm, terminal one 1-2 cm; leaflets ovate to ovate-lanceolate, 4-7 X 2-3.5 cm, glabrous, base broadly cuneate, margin entire, apex caudate-acuminate; lateral veins 5 or 6 on each side of midrib."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	Unknown. No evidence found

SCORE: *4.0*

Qsn #	Question	Answer
403	Parasitic	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Trees ca. 10 m tall." [Bignoniaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	Tang, C., Huang, L., Huang, Z., Krzton, A., Lu, C., & Zhou, Q. (2016). Forest seasonality shapes diet of limestone- living rhesus macaques at Nonggang, China. Primates, 57 (1), 83-92	[Palatable to macaques] "Table 2 List of the major food species that each accounted for[1 % of all feeding records for rhesus macaques at Nonggang" [Radermachera sinica - Part(s) eaten = YL young leaf, ML mature leaf, F flower, ST stem, P petiole]
	WRA Specialist. (2025). Personal Communication	Palatability to grazing animals unknown

405	Toxic to animals	
	Source(s)	Notes
	Rabbit Hole Hay. (2025). China Doll. https://eatingguide.rabbitholehay.com/article/china-doll/? utm_source=chatgpt.com. [Accessed 6 Feb 2025]	[Potentially toxic or harmful to rabbits] "For Your Pet: This plant may cause increased blood pressure or irregular heartbeat if ingested by your pet. Warning: Do not feed your pet China Doll as they may become ill."
	Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. (2008). International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence
	WRA Specialist. (2025). Personal Communication	Some sources indicate that the plant is non-toxic to pets such as cats and dogs. However, one source suggests potential health risks if ingested by rabbits, including increased blood pressure or irregular heartbeat.

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Missouri Botanical Garden. (2025). Radermachera sinica. http://www.missouribotanicalgarden.org/plantfinder/PlantFi nderDetails.aspx?taxonid=277931. [Accessed 6 Feb 2025]	"Problems - No serious insect or disease problems. Watch for aphids and spider mites on indoor plants."
	Poole, R.T., Chase, A.R. & Osborne, L.S. (2025). China Doll Production Guide. CFREC-A Foliage Plant Research Note RH-91-11. University of Florida, IFAS, Apopka, FL. http://mrec.ifas.ufl.edu/foliage/folnotes/chinadol.htm. [Accessed 6 Feb 2025]	A number of fungal pathogens & insect pests are documented for this species.

SCORE: 4.0

Qsn #	Question	Answer
407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Quattrocchi, U. (2012). CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. (2008). International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Slopes and forests; 300-800 m" [No evidence that this tree occurs in fire prone habitat]

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Missouri Botanical Garden. (2025). Radermachera sinica. http://www.missouribotanicalgarden.org/plantfinder/PlantFi nderDetails.aspx?taxonid=277931. [Accessed 6 Feb 2025]	"Sun: Full sun to part shade"
	Kuo, Y. L., Lin, T. Y., Yang, Y. Y., Chen, H. L., Yang, C. K., & Yu, S. Y. (2021). Photosynthetic characteristics and shade tolerance of 440 native woody species in Taiwan. Taiwan Journal of Forest Science 36(3): 189-220	"Table 1. Photosynthetic characteristics and shade-tolerance level (STL) of 440 woody species of Taiwan. A max , photosynthetic capacity (underlined values of A max were reported by Kuo and Yeh 2015); R d , dark respiration rate (μmol CO 2 m -2 s -1); LSP, light saturation point; LCP, light compensation point (μmol photon m -2 s -1); STL, I very intolerant, II intolerant, III moderately tolerant, IV tolerant, V very tolerant" [Radermachera sinica - shade-tolerance level (STL) = II intolerant]

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	The Royal Horticultural Society. (2025). Radermachera sinica. https://www.rhs.org.uk/plants/106221/radermachera- sinica/details. [Accessed 10 Feb 2025]	"Growing conditions Loam Moisture Moist but well-drained pH Neutral"
	Missouri Botanical Garden. (2025). Radermachera sinica. http://www.missouribotanicalgarden.org/plantfinder/PlantFinderDetails.aspx?taxonid=277931. [Accessed 10 Feb 2025]	"Winter hardy to USDA Zones 10-12 where it is best grown in rich, evenly moist, well-drained soils in full sun to part shade."

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Trees ca. 10 m tall. Petioles, leaf axis, and inflorescences glabrous. Leaves 2(or 3)-pinnately compound; leaf rachis ca. 30 cm; lateral petiolules less than 5 mm, terminal one 1-2 cm; leaflets ovate to ovate-lanceolate, 4-7 X 2-3.5 cm, glabrous, base broadly cuneate, margin entire, apex caudate-acuminate; lateral veins 5 or 6 on each side of midrib."

SCORE: *4.0*

Qsn #	Question	Answer
412	Forms dense thickets	
	Source(s)	Notes
	Datta, A., & Rawat, G. S. (2008). Dispersal modes and spatial patterns of tree species in a tropical forest in Arunachal Pradesh, northeast India. Tropical Conservation Science, 1(3): 163-185	"Appendix 1. List of identified tree species, fruit type and color, dispersal mode, major consumers and tree density (trees per ha)." [Radermachera sinica - Tree density = 1.14 trees per hectare]
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Slopes and forests; 300-800 m. Guangdong, Guangxi, Guizhou, Taiwan, Yunnan [Bhutan, India (Assam, Darjeeling), N Myanmar, Vietnam]." [No evidence found in native range]
	WRA Specialist. (2025). Personal Communication	In its native habitat, it typically grows as an understory tree in forests and does not usually form dense thickets. Instead, it tends to grow as a single or scattered tree, often in well-drained, fertile soils.

501	Aquatic	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	[Terrestrial] "Trees ca. 10 m tall." "Slopes and forests; 300-800 m."

502	Grass	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2025). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars- grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 10 Feb 2025]	Family: Bignoniaceae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2025). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars- grin.gov/gringlobal/taxon/taxonomysearch. [Accessed 10 Feb 2025]	Family: Bignoniaceae

504	Geophyte (herbaceous with underground storage organs bulbs, corms, or tubers)	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Trees ca. 10 m tall."

SCORE: 4.0

RATING: Evaluate

Qsn #	Question	Answer
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Guangdong, Guangxi, Guizhou, Taiwan, Yunnan [Bhutan, India (Assam, Darjeeling), N Myanmar, Vietnam]." [Widely ditributed. No evidence]

602	Produces viable seed	У
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Capsule terete, nodding, angular, ca. 85 X 1 cm; pericarp thin leathery, indistinctly lenticellate; septum terete, slightly compressed. Seeds ellipsoid, including wing ca. 2 cm X 5 mm."
	Bell, S., & Yamanaka, M. (2022). 1031. Radermachera sinica: Bignoniaceae. Curtis's Botanical Magazine, 39(3): 443-453	"Propagation. The home grower may easily increase their stock by carefully dividing the multiple stems that normally comprise one potted houseplant, and it may also be propagated from cuttings or by seed." "Most commercially produced plants in Europe are grown from seeds which are sometimes available in the UK either online or from catalogues."
	Serviss, B. E. (2001). A monograph of the Bignoniaceae in the United States. PhD Dissertation. Mississippi State University, Mississippi State, MS	"Radermachera sinica is propagated commercially for the ornamental trade by seed."

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Inflorescences paniculate, terminal, erect, 25-35 cm; bracts linear- lanceolate, ca. 10 cm, deciduous, bractlets linear, 4-6 cm. Calyx teeth 5, ovate-lanceolate, ca. 12 mm. Corolla white to pale yellow, campanulate-funnelform, 6-8 cm; lobes rounded, ca. 2.5 cm. Stamens 4, didynamous; staminode present, filiform. Ovules 2-rowed. Style exserted; stigma 2-lobed."
	Serviss, B. E. (2001). A monograph of the Bignoniaceae in the United States. PhD Dissertation. Mississippi State University, Mississippi State, MS	"The majority of Bignoniaceae are hummingbird, bee, wasp, butterfly, moth, beetle, or bat-pollinated. Nearly all species in the family are self-incompatible, with outcrossing essential for fertility and successful reproduction in most Bignoniaceae species (Gentry 1990). One notable exception to this is Tecoma capensis. which can undergo self- pollination and not suffer inbreeding depression, at least as far as the F, progeny. Self-incompatibility appears to be the usual pattern in woody tropical plants, whereas in temperate regions several genera and even certain families are largely self-compatible (Gentry 1990; Stebbins 1971). In this case, self-pollination resulting in homozygous lines for a given species is often the norm (Gentry 1990)."
	Frohlich, D. & Lau, A. (2008). New plant records from Oʻahu for 2007. Bishop Museum Occasional Papers 100: 3 -12	[Possibly Yes. Only one parent tree identified in the area] "Several individuals were found naturalizing on O'ahu in Waimea Botanical Garden along an access road about 150 m from the accessioned tree."

605 Requires specialist pollinators n

SCORE: 4.0

Qsn #	Question	Answer
	Source(s)	Notes
	Murali, K. S., & Sukumar, R. (1994). Reproductive phenology of a tropical dry forest in Mudumalai, southern India. Journal of Ecology, 82(4): 759-767	"Appendix I List of species studied, occurrence, pollination and dispersal modes" [Related taxon Radermachera xylocarpa pollinated by bees]
	Serviss, B. E. (2001). A monograph of the Bignoniaceae in the United States. PhD Dissertation. Mississippi State University, Mississippi State, MS	"Radermachera sinica is pollinated by moths, and Pandorea iasminoides mostly by bees (van Steenis 1977). Evidently, pollination is occurring in these species in the United States, because ample fruit is set in P. cruciaerum. and R. sinica."
	Singaravelan, N., Marimuthu, G., & Racey, P. A. (2009). Do fruit bats deserve to be listed as vermin in the Indian Wildlife (Protection) & Amended Acts? A critical review. Oryx, 43(04), 608-613	"TABLE 2 List of plants that are pollinated by the three ubiquitous fruit bats C. sphinx, R. leschenaultii and P. giganteus, and pollination of these plants by other bat species." [Related taxon Radermachera xylocarpa visited and pollinated by fruit bats]
	Frohlich, D. & Lau, A. (2008). New plant records from O'ahu for 2007. Bishop Museum Occasional Papers 100: 3 -12	[Indicates some effective pollinator is present] Several individuals were found naturalizing on O'ahu in Waimea Botanical Garden along an access road about 150 m from the accessioned tree."

606	Reproduction by vegetative fragmentation	
	Source(s)	Notes
	Missouri Botanical Garden. (2025). Radermachera sinica. http://www.missouribotanicalgarden.org/plantfinder/PlantFi nderDetails.aspx?taxonid=277931. [Accessed 10 Feb 2025]	[Refers to indoor plants. Unknown if natural vegetative reproduction occurs] " Prune as needed to prevent legginess. Propagate by stem cuttings in summer."

607	Minimum generative time (years)	3
	Source(s)	Notes
	Dave's Garden. (2025). China Doll, Serpent Tree, Emerald Tree - Radermachera sinica. https://davesgarden.com/guides/pf/go/54477. [Accessed 10 Feb 2025]	"Carlsbad, CA September 2009 positive Great house plant, but be careful about putting in the ground, it grows like a weed here in Carlsbad CA. Mine grew to ~30 feet in about 3-4 years, and it's flowering, and I see a lot of seed pods! Very nice foliage. Will upload a picture of the flowers and seed pods. "

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Seeds ellipsoid, including wing ca. 2 cm X 5 mm." [No evidence. Seeds lack means of external attachment]

SCORE: *4.0*

RATING: Evaluate

Qsn #	Question	Answer
702	Propagules dispersed intentionally by people	У
	Source(s)	Notes
	Missouri Botanical Garden. (2025). Radermachera sinica. http://www.missouribotanicalgarden.org/plantfinder/PlantFi nderDetails.aspx?taxonid=277931. [Accessed 10 Feb 2025]	"In cultivation in frost free climates, this tree usually grows to a much smaller 25-30' tall. In more temperate climates, China doll has become a very popular foliage houseplant (it rarely produces flowers indoors) which often tops out at 4-6' tall."
	Serviss, B. E. (2001). A monograph of the Bignoniaceae in the United States. PhD Dissertation. Mississippi State University, Mississippi State, MS	"Native from India and Assam to Myanmar, Vietnam, China, and Taiwan; often cultivated in southern peninsular Florida and Hawaii, also in California. This species is commonly sold in the ornamental trade as a shade tolerant foliage plant for use in indoor landscaping. It can reproduce prolifically in the United States, and spontaneous plants should be expected in areas of cultivation. There are a few possible records of spontaneity in Dade County, Florida, but R. sinica is probably not truly established in the flora (Fig. 89). Radermachera sinica is propagated commercially for the ornamental trade by seed."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Lin, C. Y., & Lin, Y. (2007). PS 26-36: Comparative seed shadows of animal-and wind-dispersed species in a karst forest in Taiwan. Poster. The ESA/SER Joint Meeting (August 5 August 10, 2007), San Jose, CA	"The spatial distributions of seeds dispersed from a parent plant, known as seed shadows, translate spatial patterns of parent plants to those of their offspring, thus critically influencing ecological processes of plant populations and communities. Seed shadows vary greatly among species. Such variation may, to a certain extent, reflect the variation in dispersal agents. Our objective of this study is to compare seed shadows of animal- and wind- dispersed species in a karst forest in Taiwan. We set up 72 seed traps (0.5 m2) along 4 transects within a 10-ha permanent plot (400 x 250 m) in Kenting in summer, 2006. These seed traps have been checked weekly since August 2006. We choose one animal-dispersed species, Aglaia formosana, and its wind-dispersed counterpart, Radermachera sinica, based upon density of seeds and fruit characteristics. Applying the inverse- modeling approach, we develop seed dispersal functions via maximum likelihood methods. Exponential models with Poisson or negative binomial errors are used. The Akaike's Information Criterion (AIC) is used to determine the best-fit model. From August to November, 2006, mean number of seeds per trap is 5.3 for Aglaia formosana and 20.0 for Radermachera sinica. The results of maximum likelihood methods indicate that Radermachera sinica, the wind-dispersed species, has higher fecundity and longer dispersal distances. Furthermore, models with negative binomial errors fit better than Poisson errors for both species. In the future, we will conduct a community-wide comparison in dispersal functions to determine to which extent differences in dispersal functions to determine to which extent differences in dispersal functions can be explained by the variation in dispersal agents."
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Trees ca. 10 m tall." "Seeds ellipsoid, including wing ca. 2 cm X 5 mm." [No evidence. Unlikely. A wind-dispersed tree cultivated as a house plant. Unlikely to reach maturity indoors & not cultivated with produce]

704	Propagules adapted to wind dispersal	У
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	[Winged seeds] "Capsule terete, nodding, angular, ca. 85 X 1 cm; pericarp thin leathery, indistinctly lenticellate; septum terete, slightly compressed. Seeds ellipsoid, including wing ca. 2 cm X 5 mm."

705

Report Generated: 11 Feb 2025

Propagules water dispersed

(Radermachera sinica (Hance) Hemsl.)

SCORE: 4.0

Qsn #	Question	Answer
	Source(s)	Notes
	Ogle, C. (2025): Radermachera sinica Fact Sheet (content continuously updated). New Zealand Plant Conservation Network. https://www.nzpcn.org.nz/flora/species/radermachera- sinica/. [Accessed 10 Feb 2025]	"Short-lived winged seeds are dispersed by gravity and wind dispersed and possibly floating on water"
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	[Ability to float unknown] ":apsule terete, nodding, angular, ca. 85 X 1 cm; pericarp thin leathery, indistinctly lenticellate; septum terete, slightly compressed. Seeds ellipsoid, including wing ca. 2 cm X 5 mm."
	Bell, S., & Yamanaka, M. (2022). 1031. Radermachera sinica: Bignoniaceae. Curtis's Botanical Magazine, 39(3): 443-453	[Potentially water-dispersed. Occurs along riverbanks] 'Habitat. Forests, riverbanks and bushy slopes, 300-1800 m."

706	Propagules bird dispersed	У
	Source(s)	Notes
	Datta, A., & Rawat, G. S. (2008). Dispersal modes and spatial patterns of tree species in a tropical forest in Arunachal Pradesh, northeast India. Tropical Conservation Science, 1(3): 163-185	[Winged seeds, but identified as consumed & potentially dispersed by doves] "Appendix 1. List of identified tree species, fruit type and color, dispersal mode, major consumers and tree density (trees per ha). A total of 158 tree species are listed, of which 128 were represented in 21 vegetation plots and classified based on dispersal mode, 30 additional species were not recorded in sample plots, but observed to be consumed by animals" [Radermachera sinica - Dispersal mode = Birds; Known consumers and/or dispersers = Bar-tailed cuckoo dove]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Seeds ellipsoid, including wing ca. 2 cm X 5 mm." [No evidence. No means of external attachment]

708	Propagules survive passage through the gut	
	Source(s)	Notes
	Tang, C., Huang, L., Huang, Z., Krzton, A., Lu, C., & Zhou, Q. (2016). Forest seasonality shapes diet of limestone- living rhesus macaques at Nonggang, China. Primates, 57 (1), 83-92	"Table 2 List of the major food species that each accounted for[1 % of all feeding records for rhesus macaques at Nonggang" [Radermachera sinica - Part(s) eaten = YL young leaf, ML mature leaf, F flower, ST stem, P petiole. No evidence of fruit or seed consumption]
	Datta, A., & Rawat, G. S. (2008). Dispersal modes and spatial patterns of tree species in a tropical forest in Arunachal Pradesh, northeast India. Tropical Conservation Science, 1(3): 163-185	[Winged seeds, but identified as consumed & potentially dispersed by doves] "Appendix 1. List of identified tree species, fruit type and color, dispersal mode, major consumers and tree density (trees per ha). A total of 158 tree species are listed, of which 128 were represented in 21 vegetation plots and classified based on dispersal mode, 30 additional species were not recorded in sample plots, but observed to be consumed by animals" [Radermachera sinica - Dispersal mode = Birds; Known consumers and/or dispersers = Bar-tailed cuckoo dove]

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Wu, Z. Y., & P. H. Raven, (eds). 1998. Flora of China. Vol. 18 (Scrophulariaceae through Gesneriaceae). Missouri Botanical Garden Press, St. Louis	"Trees ca. 10 m tall." "Seeds ellipsoid, including wing ca. 2 cm X 5 mm." [Unknown]

SCORE: 4.0



Qsn #	Question	Answer
	Bell, S., & Yamanaka, M. (2022). 1031. Radermachera sinica: Bignoniaceae. Curtis's Botanical Magazine, 39(3): 443-453	"Whilst they are not supposed to be difficult, I have not yet succeeded in germinating them or seeds from the tree growing in Hackney which are produced in great profusion."
	Serviss, B. E. (2001). A monograph of the Bignoniaceae in the United States. PhD Dissertation. Mississippi State University, Mississippi State, MS	[Seed densities unknown] "It can reproduce prolifically in the United States, and spontaneous plants should be expected in areas of cultivation. There are a few possible records of spontaneity in Dade County, Florida, but R. sinica is probably not truly established in the flora (Fig. 89). Radermachera sinica is propagated commercially for the ornamental trade by seed."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	Unknown

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	The efficacy of herbicides for controlling Radermachera sinica has not been studied or documented. There is currently no available data on the use of herbicides to manage this species. Further research is needed to evaluate potential control methods.

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	Missouri Botanical Garden. (2025). Radermachera sinica. http://www.missouribotanicalgarden.org/plantfinder/PlantFi nderDetails.aspx?taxonid=277931. [Accessed 10 Feb 2025]	"Prune as needed to prevent legginess." [Tolerates some pruning]

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2025). Personal Communication	Unknown

Summary of Risk Traits:

Radermachera sinica (China Doll Plant) is a tropical evergreen tree or shrub native to subtropical regions of southern China and Taiwan. It is widely cultivated as an ornamental houseplant and garden plant due to its attractive, glossy, bipinnate leaves and occasional clusters of trumpet-shaped, white or pale yellow flowers.

It reproduces by wind-dispersed seeds, and is reported to escape from cultivation and to be potentially naturalized on the Hawaiian island of Oahu and in Florida, but has not been documented to have any negative impacts to date.

High Risk / Undesirable Traits

- Grows in tropical climates
- Naturalized on Oahu, Hawaiian Islands & in Florida
- Cited as an environmental weed (but no impacts specified)
- Reproduces by seeds
- Seeds dispersed by wind, possibly birds & intentionally by people
- Reaches maturity in 3+ years
- · Limited ecological information limits accuracy of risk prediction

Low Risk Traits

• Unarmed (no spines, thorns or burrs)

- Ornamental
- May have limited shade tolerance

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Unknown. Not known to form dense stands. Described as growing in full sun to partial shade, but may be able to establish in Hawaiian forests with higher light levels in understory

- (B) Bird or clearly wind-dispersed?> Dispersed by wind & possibly by birds
- (C) Life cycle <4 years? Yes. Reaches maturity in 3+ years

Outcome = Evaluate