

<b>Taxon:</b> Clerodendrum trichotomum Thunb.	<b>Family:</b> Lamiaceae
<b>Common Name(s):</b> glorytree harlequin glorybower peanut butter tree	<b>Synonym(s):</b> Clerodendrum serotinum Carrière Ovieda trichotoma (Thunb.) Baill. Siphonanthus trichotomus (Thunb.) .....

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 3 Sep 2021
<b>WRA Score:</b> 15.0	<b>Designation:</b> H(HPWRA)	<b>Rating:</b> High Risk

**Keywords:** Shrub/Tree, Weedy, Dense Stands, Suckers, Bird-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	y
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed		
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	y
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	y=1, n=-1	y
405	Toxic to animals	y=1, n=0	y
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	y
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	y

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	n
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	y
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	y
603	Hybridizes naturally		
604	Self-compatible or apomictic		
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
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	y
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed		
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides	y=-1, n=1	y
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

**Supporting Data:**

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Wu, Z. Y. & P. H. Raven, (eds). (1994). Flora of China. Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	[No evidence of domestication] "Below 2400 m. Throughout China except Nei Mongol, Xinjiang, and Xizang [India, Japan, Korea; SE Asia]."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2021). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2021). 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. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 1 Sep 2021]	"Native Asia-Temperate CHINA: China [Anhui Sheng, Zhejiang Sheng, Fujian Sheng, Heilongjiang Sheng, Henan Sheng, Hebei Sheng, Hunan Sheng, Hubei Sheng, Gansu Sheng, Jiangxi Sheng, Jiangsu Sheng, Jilin Sheng, Guangdong Sheng, Guizhou Sheng, Liaoning Sheng, Shanxi Sheng, Shandong Sheng, Shaanxi Sheng, Sichuan Sheng, Qinghai Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Ningxia Huizi Zizhiqu, Hainan Sheng] EASTERN ASIA: Korea, Japan [Hokkaidô, Honshu, Kyushu, Ryukyu Islands, Shikoku], Taiwan Asia-Tropical INDIAN SUBCONTINENT: India"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 1 Sep 2021]	

203	Broad climate suitability (environmental versatility)	y
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 2 Sep 2021]	"Native Asia-Temperate CHINA: China [Anhui Sheng, Zhejiang Sheng, Fujian Sheng, Heilongjiang Sheng, Henan Sheng, Hebei Sheng, Hunan Sheng, Hubei Sheng, Gansu Sheng, Jiangxi Sheng, Jiangsu Sheng, Jilin Sheng, Guangdong Sheng, Guizhou Sheng, Liaoning Sheng, Shanxi Sheng, Shandong Sheng, Shaanxi Sheng, Sichuan Sheng, Qinghai Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Ningxia Huizi Zizhiqu, Hainan Sheng] EASTERN ASIA: Korea, Japan [Hokkaidō, Honshu, Kyushu, Ryukyu Islands, Shikoku], Taiwan Asia-Tropical INDIAN SUBCONTINENT: India"
	Missouri Botanical Garden. (2021). <i>Clerodendrum trichotomum</i> . <a href="http://www.missouribotanicalgarden.org">http://www.missouribotanicalgarden.org</a> . [Accessed 2 Sep 2021]	"Zone: 7 to 10"

204	<b>Native or naturalized in regions with tropical or subtropical climates</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Nelson, G. (2010). <i>The Trees of Florida. A Reference and Field Guide. 2nd Edition.</i> Pineapple Press Inc, Sarasota, FL	"Distribution: Disturbed sites; sparingly naturalized in the western panhandle, documented for Escambia and Jackson counties."
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 2 Sep 2021]	"Native Asia-Temperate CHINA: China [Anhui Sheng, Zhejiang Sheng, Fujian Sheng, Heilongjiang Sheng, Henan Sheng, Hebei Sheng, Hunan Sheng, Hubei Sheng, Gansu Sheng, Jiangxi Sheng, Jiangsu Sheng, Jilin Sheng, Guangdong Sheng, Guizhou Sheng, Liaoning Sheng, Shanxi Sheng, Shandong Sheng, Shaanxi Sheng, Sichuan Sheng, Qinghai Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Ningxia Huizi Zizhiqu, Hainan Sheng] EASTERN ASIA: Korea, Japan [Hokkaidō, Honshu, Kyushu, Ryukyu Islands, Shikoku], Taiwan Asia-Tropical INDIAN SUBCONTINENT: India"
	Randall, R.P. (2017). <i>A Global Compendium of Weeds. 3rd Edition.</i> Perth, Western Australia. R.P. Randall	"Preferred Climate/s: Mediterranean, Subtropical, Tropical"
	Imada, C. (2019). <i>Hawaiian Naturalized Vascular Plants Checklist (February 2019 update).</i> Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence as of 2019 publication

205	<b>Does the species have a history of repeated introductions outside its natural range?</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Serviss, B. E., Hardage, J. W., Serviss, K. B., & Peck, J. H. (2018). <i>Clerodendrum</i> (Lamiaceae) in the Arkansas flora. <i>Phytoneuron</i> , 69, 1-4	" <i>Clerodendrum trichotomum</i> sometimes is cultivated in the southern USA, including Arkansas, and previously has been reported as a component of the naturalized floras of Alabama, Florida, Georgia, Louisiana, and North Carolina (Poindexter et al. 2011; Wunderlin and Hansen 2011; Kartesz 2015; Weakley 2015; Keener et al. 2018; USDA, NRCS 2018)."
	Imada, C.T., Staples, G.W. & Herbst, D.R. 2005. Annotated Checklist of Cultivated Plants of Hawai'i. <a href="http://www2.bishopmuseum.org/HBS/botany/cultivatedplants/">http://www2.bishopmuseum.org/HBS/botany/cultivatedplants/</a> . [Accessed 3 Sep 2021]	" <i>Clerodendrum trichotomum</i> Thunberg (Confirmed) First Collected: 1985 Locations: Foster Botanical Garden (Confirmed) Ho'omaluhia Botanical Garden (Confirmed) Waimea Arboretum & Botanical Garden (Confirmed)"
	Lance, R. (2004). <i>Woody Plants of the Southeastern United States: A Winter Guide</i> . University of Georgia Press, Athens, GA	"The most commonly encountered species in the SE. A shrub often planted for the sweetly aromatic summer flowers. May spread by the roots in loose soils."

301	Naturalized beyond native range	y
	Source(s)	Notes
	Webb, C. J., Sykes, W. R., & Garnock-Jones, P. J. (1988). <i>Flora of New Zealand Volume IV</i> . Botany Division, DSIR, Christchurch, New Zealand	" <i>C. trichotomum</i> is a garden escape which tends to naturalise and often forms small thickets by producing suckers freely when the main plant is injured or killed. It is valued for its fragrant white fls which are followed by porcelain blue frs surrounded by a crimson calyx. The fr. colour is said to distinguish var. <i>trichotomum</i> from var. <i>fargesii</i> (Dode) Rehder which is also cultivated and has a green calyx and paler blue frs. Most plants in cultivation in N.Z. have the characters of var. <i>trichotomum</i> and probably all wild plants belong to this var. also. "
	Serviss, B. E., Hardage, J. W., Serviss, K. B., & Peck, J. H. (2018). <i>Clerodendrum</i> (Lamiaceae) in the Arkansas flora. <i>Phytoneuron</i> , 69, 1-4	" <i>Clerodendrum trichotomum</i> Thunb. is reported here as new to the Arkansas flora. This represents the first documented occurrence of the genus <i>Clerodendrum</i> outside of cultivation in the state. One, large colony of escaped/naturalized plants of <i>C. trichotomum</i> was discovered growing at an expansive dumpsite for horticultural waste and edge of adjacent greenbelt in Clark County." ... " <i>Clerodendrum trichotomum</i> sometimes is cultivated in the southern USA, including Arkansas, and previously has been reported as a component of the naturalized floras of Alabama, Florida, Georgia, Louisiana, and North Carolina (Poindexter et al. 2011; Wunderlin and Hansen 2011; Kartesz 2015; Weakley 2015; Keener et al. 2018; USDA, NRCS 2018)."
	Nelson, G. (2010). <i>The Trees of Florida. A Reference and Field Guide</i> . 2nd Edition. Pineapple Press Inc, Sarasota, FL	"Distribution: Disturbed sites; sparingly naturalized in the western panhandle, documented for Escambia and Jackson counties."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"References: United States of America-N-101, New Zealand-N-280, Japan-W-286, United Kingdom-C-314, China-W-431, New Zealand-N-919, Europe-N-819, Belgium-U-1220, Italy-U-251, New Zealand-X-1311, New Zealand-X-1542, Global-CD-1611, Italy-U-1887, Switzerland-U-1990, New Zealand-N-2048, New Zealand-Q-2086, Belgium-W-1977, Italy-W-1977."

Qsn #	Question	Answer
	Poindexter, D. B., Weakley, A. S., & Denslow, M. W. (2011). New exotic additions and other noteworthy records for the flora of North Carolina. <i>Phytoneuron</i> , 42, 1-14	"This plant (formerly placed within the Verbenaceae) is very attractive and presumably entered the regional flora through the nursery trade. Harlequin Glory-bower has been collected from legitimately naturalized colonies in Ashe and Wilkes County. It seems to prefer disturbed riparian areas and is showing up with greater regularity, which suggests that this taxon is increasing in its invasiveness, particularly in the mountains and adjacent foothills of North Carolina."
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No records of naturalization in the Hawaiian Islands at the time of publication

302	Garden/amenity/disturbance weed	y
	Source(s)	Notes
	Dave's Garden. (2021). Harlequin Glory Bower, Japanese Clerodendrum, Peanut Butter Shrub - <i>Clerodendrum trichotomum</i> . <a href="https://davesgarden.com/guides/pf/go/772/">https://davesgarden.com/guides/pf/go/772/</a> . [Accessed 2 Sep 2021]	[Anecdotal report of weediness/invasiveness in yards and landscapes] "On Jul 11, 2011, trynfindit from Jacksonville, FL wrote: INVASIVE !!! This plant will come up EVERYWHERE (thanks to birds, squirrels, the wind, you name it) and it's impossible to get rid of." ... "On Aug 11, 2015, Jennigma from Seattle, WA (Zone 9a) wrote: My neighbor has one of these. It's gorgeous and smells delightful, and suckers like mad. It also releases masses of seeds which are spreading down the hill into little matts of their own. Quite impressively aggressive." ... "On Jul 24, 2003, Waterguy wrote: I really love this tree, but very, very invasive in Virginia Beach, VA. Planted 2 about 2' in height and 4 years later I have 6 at about 12' to 18' and countless sprouts in my yard I must pull up through out the year. Non stop Butterfly interaction. BUT I must get to the sprouts quickly, they grow very fast and in any place---like the rose of sharon.... I am experimenting with shaping, and I am amazed at the different ways I can make them look!!! Hard work keeping after them. If I let them go they would take over my yard and make it a forest in no time!!"
	Serviss, B.E. & Tumlison, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. <i>Phytoneuron</i> 2021-29: 1-193	[Invades disturbed sites] "Similar to <i>C. bungei</i> , this species spreads rapidly via asexual reproduction from a suckering root system which may produce a substantial colony of plants over time. <i>Clerodendrum trichotomum</i> is shade tolerant and will invade into wooded or open habitats from areas of cultivation. Plants are tolerant of well drained sites, but moist habitats seem to be preferred." ... "The fruits are bird dispersed. Habitat : disturbed sites and waste places, urban woods and greenbelts, and rubbish heaps where horticultural waste is dumped."

Qsn #	Question	Answer
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] "References: United States of America-N-101, New Zealand-N-280, Japan-W-286, United Kingdom-C-314, China-W-431, New Zealand-N-919, Europe-N-819, Belgium-U-1220, Italy-U-251, New Zealand-X-1311, New Zealand-X-1542, Global-CD-1611, Italy-U-1887, Switzerland-U-1990, New Zealand-N-2048, New Zealand-Q-2086, Belgium-W-1977, Italy-W-1977."

304	Environmental weed	
	Source(s)	Notes
	Serviss, B.E. & Tumlison, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. Phytoneuron 2021-29: 1–193	[Invades disturbed sites, with the potential to become an environmental weed] "Similar to <i>C. bungei</i> , this species spreads rapidly via asexual reproduction from a suckering root system which may produce a substantial colony of plants over time. <i>Clerodendrum trichotomum</i> is shade tolerant and will invade into wooded or open habitats from areas of cultivation. Plants are tolerant of well drained sites, but moist habitats seem to be preferred." ... "The fruits are bird dispersed. Habitat : disturbed sites and waste places, urban woods and greenbelts, and rubbish heaps where horticultural waste is dumped."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	[Not cited as an environmental weed] "References: United States of America-N-101, New Zealand-N-280, Japan-W-286, United Kingdom-C-314, China-W-431, New Zealand-N-919, Europe-N-819, Belgium-U-1220, Italy-U-251, New Zealand-X-1311, New Zealand-X-1542, Global-CD-1611, Italy-U-1887, Switzerland-U-1990, New Zealand-N-2048, New Zealand-Q-2086, Belgium-W-1977, Italy-W-1977."

305	Congeneric weed	y
	Source(s)	Notes
	CABI. (2021). <i>Aculops fuchsiae</i> (Fuchsia gall mite). In: Invasive Species Compendium. Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	" <i>C. chinense</i> is a highly invasive weed in tropical and subtropical ecosystems. " ..." <i>C. indicum</i> is a small shrub which is listed in the Global Compendium of Weeds as 'environmental weed' 'naturalized' and 'weed' (Randall, 2012)." ..." <i>C. speciosissimum</i> is an attractive shrub or subshrub listed as an environmental weed, naturalized weed, and cultivation escape" ..." <i>C. quadriloculare</i> is a highly invasive perennial shrub."

401	Produces spines, thorns or burrs	n
	Source(s)	Notes

Qsn #	Question	Answer
	Wu, Z. Y. & P. H. Raven, (eds). (1994). Flora of China. Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	[No evidence] "Shrubs or small trees, 1.5–10 m tall. Branchlets lenticellate. Petiole 2–8 cm; leaf blade greenish abaxially and dark green adaxially, ovate-elliptic, triangular-ovate, or ovate, 5–16 × 2–13 cm, papery, base broadly cuneate, truncate, or rarely cordate, margin entire or rarely undulate, apex acuminate, veins 3–5 pairs. Inflorescences axillary or terminal, lax, corymbose cymes, dichotomous, 8–18 cm; peduncle 3–6 cm; bracts elliptic, deciduous. Flowers fragrant. Calyx greenish, becoming purple, deeply 5-lobed; lobes triangular-lanceolate to ovate, acute. Corolla white or pinkish, ca. 2 cm, tube slender; lobes oblong, 5–10 × 3–5 mm. Style shorter than stamens, both exserted. Drupes blue-purple, subglobose, ca. 6–8 mm in diam."



Qsn #	Question	Answer
402	<b>Allelopathic</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Hong, N. H., Xuan, T. D., Tsuzuki, E., Terao, H., Matsuo, M., & Khanh, T. D. (2004). Weed control of four higher plant species in paddy rice fields in Southeast Asia. <i>Journal of Agronomy and Crop Science</i> , 190(1), 59-64	[Dried material demonstrates allelopathic potential] "Four higher plants, namely glory bowers ( <i>Clerodendrum trichotomum</i> L.), jimsonweed ( <i>Datura stramonium</i> L.), beggarweed ( <i>Desmodium triflorum</i> L.) and Chinaberry ( <i>Melia azedarach</i> L.), with the strong allelopathic potential among 19 allelopathic species from Southeast Asia, were tested for their effects on weed emergence in paddy soil and field. In a greenhouse experiment, <i>D. stramonium</i> , <i>D. triflorum</i> and <i>M. azedarach</i> exhibited similar inhibitory magnitude at 1 t ha <sup>1</sup> achieving more than 90 % weed control. <i>C. trichotomum</i> achieved about 70 % weed reduction at 2 t ha <sup>1</sup> . In paddy fields, <i>D. triflorum</i> was the most promising material for weed control and attained the highest rice yield among treatments, at the concentration of 2 t ha <sup>1</sup> , whereas the inhibition of <i>D. stramonium</i> and <i>M. azedarach</i> was weakened in the greenhouse. No injury of rice plants was observed. These plants might be used as natural herbicides to reduce the dependence on synthetic herbicides."
	Zheng, B., & Lu, J. (2012). Inhibitory effects of harlequin glory-bower ( <i>Clerodendrum trichotomum</i> ) extract on growth of water hyacinth ( <i>Eichhornia crassipes</i> ). <i>Journal of Zhejiang University (Agriculture and Life Sciences)</i> , 38 (3), 279-287	[Extracts exhibit allelopathic potential] "Abstract The inhibitory effects of harlequin glory-bower ( <i>Clerodendrum trichotomum</i> ) water extract on the growth of water hyacinth ( <i>Eichhornia crassipes</i> ), an invasive aquatic weed which had resulted in enormous ecological and economic consequences in China, were explored and its inhibition mechanism was analyzed by measuring chlorophyll content, catalase activity and malondialdehyde content of water hyacinth leaves. The results showed that the healthy leaf proportion (less than 1%) of water hyacinth which was sprayed the extract was significantly lower than that of the blank group and control group ( $P < 0.01$ ), and the dead leaf proportion (more than 85%) of water hyacinth was significantly higher than theirs ( $P < 0.01$ ), and the chlorophyll content of leaves from treated groups was decreased ( $P < 0.05$ ), and the catalase activity was enhanced ( $P < 0.05$ ), and the malondialdehyde content was significantly increased ( $P < 0.01$ ). The extract of harlequin glory-bower acted on leaves of water hyacinth, so that the chlorophyll content was decreased, and the reactive oxygen was accumulated to damage biofilm system, resulting in leaves dry rot and decay. In conclusion, the extract of harlequin glory-bower inhibits effectively the growth of water hyacinth, which provides a new biological approach to control water hyacinth."

403	<b>Parasitic</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Shrubs or small trees, 1.5–10 m tall." [No evidence]

404	<b>Unpalatable to grazing animals</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>

Qsn #	Question	Answer
	Plant Lust. (2021). <i>Clerodendrum trichotomum</i> . <a href="https://plantlust.com/plants/10317/clerodendrum-trichotomum/">https://plantlust.com/plants/10317/clerodendrum-trichotomum/</a> . [Accessed 3 Sep 2021]	"deer resistant"
	Kato, M., & Okuyama, Y. (2004). Changes in the biodiversity of a deciduous forest ecosystem caused by an increase in the Sika deer population at Ashiu, Japan. <i>Contributions from the Biological Laboratory, Kyoto University</i> , 29(4), 437-448	[Presumably unpalatable. Referred to as "deer-repellant, and increasing in cover in deer-browsed habitat] "In the natural forest at Ashiu, deer browsing has caused decreases in almost all understory plant species except for deer-repellant plant species such as <i>Arachniodes standishii</i> , <i>Clerodendrum trichotomum</i> , and <i>Pterostyrax hispida</i> . The latter two species, which were uncommon before the 1980s, are now abundant in Ashiu."

405	Toxic to animals	y
	Source(s)	Notes
	The Spruce. (2021). How to Grow Peanut Butter Bush. <a href="https://www.thespruce.com/harlequin-glorybower-plant-profile-4802476">https://www.thespruce.com/harlequin-glorybower-plant-profile-4802476</a> . [Accessed 3 Sep 2021]	"Toxicity - Berries and seeds are toxic to humans and animals if ingested; handling may irritate skin"

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	CABI. (2021). <i>Invasive Species Compendium</i> . Wallingford, UK: CAB International. <a href="http://www.cabi.org/isc">www.cabi.org/isc</a>	"Host of (source - data mining): <i>Scirtothrips dorsalis</i> (chilli thrips); <i>Tetranychus kanzawai</i> (kanzawa spider mite)"
	Missouri Botanical Garden. (2021). <i>Clerodendrum trichotomum</i> . <a href="http://www.missouribotanicalgarden.org">http://www.missouribotanicalgarden.org</a> . [Accessed 2 Sep 2021]	"Problems No serious insect or disease problems."

407	Causes allergies or is otherwise toxic to humans	y
	Source(s)	Notes
	Dave's Garden. (2021). Harlequin Glory Bower, Japanese <i>Clerodendrum</i> , Peanut Butter Shrub - <i>Clerodendrum trichotomum</i> . <a href="https://davesgarden.com/guides/pf/go/772/">https://davesgarden.com/guides/pf/go/772/</a> . [Accessed 3 Sep 2021]	"Parts of plant are poisonous if ingested."
	The Spruce. (2021). How to Grow Peanut Butter Bush. <a href="https://www.thespruce.com/harlequin-glorybower-plant-profile-4802476">https://www.thespruce.com/harlequin-glorybower-plant-profile-4802476</a> . [Accessed 3 Sep 2021]	"Toxicity - Berries and seeds are toxic to humans and animals if ingested; handling may irritate skin"
	Usman, R., Salgar, S.D., Nagpal, N. & Shaikh, M.Z. (2016). <i>Poisonous Herbal Plants</i> . Educreation Publishing, New Delhi	[ <i>Clerodendrum trichotomum</i> . Toxic part Fruit] "Chemical Constituents The chemical constituents are sterols, sugars, flavonoids and saponins. Fumaric acid, caffeic acid, esters, B sitosterol and B sitosterol glycosides were isolated from the flowers. Saponin is one of the major compounds of the leaf. Sigmasterol is one of the components of the aerial parts. Toxic part Fruit"

Qsn #	Question	Answer
408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Serviss, B.E. & Tumlison, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. Phytoneuron 2021-29: 1–193	[Unlikely. Prefers moist habitats] "Clerodendrum trichotomum is shade tolerant and will invade into wooded or open habitats from areas of cultivation. Plants are tolerant of well drained sites, but moist habitats seem to be preferred."

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Serviss, B.E. & Tumlison, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. Phytoneuron 2021-29: 1–193	"Clerodendrum trichotomum is shade tolerant and will invade into wooded or open habitats from areas of cultivation. Plants are tolerant of well drained sites, but moist habitats seem to be preferred."
	Koller, G. (1981). Shrubs for Hillsides and Embankments. <i>Arnoldia</i> , 41(5), 168-194	"I have seen <i>Clerodendrum trichotomum</i> in areas where it has naturalized itself into the edge of woodlands. There, with shade, it becomes more open and less likely to quell vigorous weedy competitors."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	Dave's Garden. (2021). Harlequin Glory Bower, Japanese Clerodendrum, Peanut Butter Shrub - <i>Clerodendrum trichotomum</i> . <a href="https://davesgarden.com/guides/pf/go/772/">https://davesgarden.com/guides/pf/go/772/</a> . [Accessed 2 Sep 2021]	"Soil pH requirements: 4.6 to 5.0 (highly acidic) 5.1 to 5.5 (strongly acidic) 5.6 to 6.0 (acidic) 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral)"
	The Spruce. (2021). How to Grow Peanut Butter Bush. <a href="https://www.thespruce.com/harlequin-glorybower-plant-profile-4802476">https://www.thespruce.com/harlequin-glorybower-plant-profile-4802476</a> . [Accessed 3 Sep 2021]	"This plant likes a rich, loamy, slightly sandy, well-drained soil. Persistently soggy soil can cause root-rot or other damage, so choose the planting location well. "
	Missouri Botanical Garden. (2021). <i>Clerodendrum trichotomum</i> . <a href="http://www.missouribotanicalgarden.org">http://www.missouribotanicalgarden.org</a> . [Accessed 2 Sep 2021]	"Winter hardy to USDA Zones 7-10 where it is grown in organically rich, well-drained soils"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Shrubs or small trees, 1.5–10 m tall."

412	Forms dense thickets	y
	Source(s)	Notes
	Webb, C. J., Sykes, W. R., & Garnock-Jones, P. J. (1988). <i>Flora of New Zealand</i> Volume IV. Botany Division, DSIR, Christchurch, New Zealand	"C. <i>trichotomum</i> is a garden escape which tends to naturalise and often forms small thickets by producing suckers freely when the main plant is injured or killed."

Qsn #	Question	Answer
	Serviss, B. E., Hardage, J. W., Serviss, K. B., & Peck, J. H. (2018). <i>Clerodendrum</i> (Lamiaceae) in the Arkansas flora. <i>Phytoneuron</i> , 69, 1-4	" <i>Clerodendrum trichotomum</i> aggressively spreads via root suckers, with plants forming large clonal stands over time. Root suckers sometimes are produced a distance of several meters from the original plant."

501	Aquatic	n
	Source(s)	Notes
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	[Terrestrial] "Shrubs or small trees, 1.5–10 m tall" ... Below 2400 m."

502	Grass	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). <i>Germplasm Resources Information Network (GRIN-Taxonomy)</i> . National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 1 Sep 2021]	Genus: <i>Clerodendrum</i> Family: Lamiaceae (alt. Labiatae) Subfamily: Ajugoideae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). <i>Germplasm Resources Information Network (GRIN-Taxonomy)</i> . National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 1 Sep 2021]	Genus: <i>Clerodendrum</i> Family: Lamiaceae (alt. Labiatae) Subfamily: Ajugoideae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Shrubs or small trees, 1.5–10 m tall."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes

Qsn #	Question	Answer
	USDA, Agricultural Research Service, National Plant Germplasm System. (2021). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. <a href="https://npgsweb.ars-grin.gov/">https://npgsweb.ars-grin.gov/</a> . [Accessed 2 Sep 2021]	[No evidence] "Native Asia-Temperate CHINA: China [Anhui Sheng, Zhejiang Sheng, Fujian Sheng, Heilongjiang Sheng, Henan Sheng, Hebei Sheng, Hunan Sheng, Hubei Sheng, Gansu Sheng, Jiangxi Sheng, Jiangsu Sheng, Jilin Sheng, Guangdong Sheng, Guizhou Sheng, Liaoning Sheng, Shanxi Sheng, Shandong Sheng, Shaanxi Sheng, Sichuan Sheng, Qinghai Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Ningxia Huizi Zizhiqu, Hainan Sheng] EASTERN ASIA: Korea, Japan [Hokkaidō, Honshu, Kyushu, Ryukyu Islands, Shikoku], Taiwan Asia-Tropical INDIAN SUBCONTINENT: India"
	IUCN. (2021). The IUCN Red List of Threatened Species. Version 2021-1. <a href="https://www.iucnredlist.org">https://www.iucnredlist.org</a> . [Accessed 2 Sep 2021]	No evidence. Not among the assessed species of <i>Clerodendrum</i>

602	Produces viable seed	Y
	Source(s)	Notes
	Serviss, B. E., Hardage, J. W., Serviss, K. B., & Peck, J. H. (2018). <i>Clerodendrum</i> (Lamiaceae) in the Arkansas flora. <i>Phytoneuron</i> , 69, 1-4	" <i>Clerodendrum trichotomum</i> aggressively spreads via root suckers, with plants forming large clonal stands over time. Root suckers sometimes are produced a distance of several meters from the original plant. Seed production, however, also occurs (observed in Arkansas plants of <i>C. trichotomum</i> ) and may contribute to naturalization."
	The Spruce. (2021). How to Grow Peanut Butter Bush. <a href="https://www.thespruce.com/harlequin-glorybower-plant-profile-4802476">https://www.thespruce.com/harlequin-glorybower-plant-profile-4802476</a> . [Accessed 3 Sep 2021]	"While it's possible to grow this plant from seeds, germination can be very slow and often fails to occur, making it a frustrating process. For successful seed germination, sow seeds in a greenhouse immediately after collection and maintain the temperature at around 68 degrees Fahrenheit. Given the right conditions, the seeds will germinate within 20 to 60 days. When the seedlings are large enough to handle (at least 1-inch high), transfer to individual pots."

603	Hybridizes naturally	
	Source(s)	Notes
	Rueda, R. M. (1993). The genus <i>Clerodendrum</i> (verbenaceae) in Mesoamerica. <i>Annals of the Missouri Botanical Garden</i> , 80(4): 870-890	[Interspecific hybrids documented in genus] "Many species seem to be closely related, with some hybridization reported. Some of the species are extremely variable, due to environmental factors and horticultural selection, which has led taxonomists to describe many taxa."
	Miyake, T., & Inoue, K. (2003). Character displacement in style length between pollinator-sharing <i>Clerodendrum trichotomum</i> and <i>C. izuinsulare</i> (Verbenaceae). <i>Plant Systematics and Evolution</i> , 243(1), 31-38	[Not in this study] "The results of our artificial pollinations suggest that no hybridization occurs between <i>C. trichotomum</i> and <i>C. izuinsulare</i> . Thus, interspecific pollen transfer between the two species may have detrimental effects on both species."

604	Self-compatible or apomictic	

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Sakamoto, R. L., Ito, M., & Kawakubo, N. (2012). Contribution of pollinators to seed production as revealed by differential pollinator exclusion in <i>Clerodendrum trichotomum</i> (Lamiaceae). <i>PLoS One</i> , 7(3), e33803	[A low level of selfing may be possible. Self pollination reduces seed set compared to outcrossed plants] "In the self-pollination treatment, few fruits and seeds were produced in both 2009 and 2010" ... "In addition, because the fruit/flower and seed/ovule ratios in the self-pollinating treatment were significantly lower than in the outcross pollination treatment (Table 2), <i>C. trichotomum</i> requires pollinators for reproductive success. Furthermore, not all ovules matured to seeds, even if flowers received pollen grains in the outcross pollination treatment"

605	Requires specialist pollinators	n
	<b>Source(s)</b>	<b>Notes</b>
	Serviss, B.E. & Tumilson, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. <i>Phytoneuron</i> 2021-29: 1–193	"The flowers of <i>C. trichotomum</i> are sweetly fragrant and highly attractive to hummingbirds, butterflies, and moths."
	Miyake, T., & Inoue, K. (2003). Character displacement in style length between pollinator-sharing <i>Clerodendrum trichotomum</i> and <i>C. izuinulare</i> (Verbenaceae). <i>Plant Systematics and Evolution</i> , 243(1), 31-38	"We examined this possibility by comparing flower morphology of the sympatric population of <i>Clerodendrum trichotomum</i> and its co-flowering congener, <i>C. izuinulare</i> , with that of the allopatric populations. The two species were visited in common by such insects as diurnal hawkmoths, bees, swallowtails and nocturnal hawkmoths, and were pollinated nocturnally as well as diurnally."

606	Reproduction by vegetative fragmentation	y
	<b>Source(s)</b>	<b>Notes</b>
	Serviss, B. E., Hardage, J. W., Serviss, K. B., & Peck, J. H. (2018). <i>Clerodendrum</i> (Lamiaceae) in the Arkansas flora. <i>Phytoneuron</i> , 69, 1-4	"In 2009, escaped plants of <i>Clerodendrum trichotomum</i> Thunb. (harlequin glorybower) were documented at a large dumpsite for horticultural waste in the city of Arkadelphia in Clark County, Arkansas. The origin of the escaped <i>C. trichotomum</i> population is presumed to be from horticultural discards, with subsequent establishment. Over the past nine years, plants have increased in number, where at present (2018), a large, presumably clonally established population of <i>C. trichotomum</i> , consisting of several dozen stems/plants, ranging from less than 1 m to ca. 4–5 m in height, are present at the dumpsite and along the edge of an adjacent greenbelt; a number of the plants had mature fruits (Figs. 1–2). Although reproductive, spread appeared to be mostly or completely via root suckering. No <i>C. trichotomum</i> plants were observed in the disturbed woods that borders the site."
	Serviss, B.E. & Tumilson, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. <i>Phytoneuron</i> 2021-29: 1–193	"Similar to <i>C. bungei</i> , this species spreads rapidly via asexual reproduction from a suckering root system which may produce a substantial colony of plants over time."
	Lance, R. (2004). <i>Woody Plants of the Southeastern United States: A Winter Guide</i> . University of Georgia Press, Athens, GA	"The most commonly encountered species in the SE. A shrub often planted for the sweetly aromatic summer flowers. May spread by the roots in loose soils."

607	Minimum generative time (years)	>3
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Jones, J.L. (1995). Arnold's Promise Fulfilled. <i>Arnoldia</i> 55 (2): 27-32	[Rooted cuttings started flowering after 10 years. Plants grown from seeds would presumably take longer] "I started my plants as cuttings in 1972. In general, I treat cuttings with a certain benign neglect, simply sticking a two-to-six-inch length in a sand and peat moss mix kept moist in a north-facing coldframe, without benefit of rooting hormone. Rooted cuttings are then kept in a coldframe or greenhouse, depending on species and degree of root development, until the following season. My <i>C. trichotomum</i> plants first bloomed in 1982 and grew to eight feet after several relatively mild winters."

<b>701</b>	<b>Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Serviss, B.E. & Tumilson, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. <i>Phytoneuron</i> 2021-29: 1-193	[Fruits and seeds lack means of external attachment, but spread accidentally as green waste] "Habitat : disturbed sites and waste places, urban woods and greenbelts, and rubbish heaps where horticultural waste is dumped."

<b>702</b>	<b>Propagules dispersed intentionally by people</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Serviss, B. E., Hardage, J. W., Serviss, K. B., & Peck, J. H. (2018). <i>Clerodendrum</i> (Lamiaceae) in the Arkansas flora. <i>Phytoneuron</i> , 69, 1-4	" <i>Clerodendrum trichotomum</i> sometimes is cultivated in the southern USA, including Arkansas, and previously has been reported as a component of the naturalized floras of Alabama, Florida, Georgia, Louisiana, and North Carolina (Poindexter et al. 2011; Wunderlin and Hansen 2011; Kartesz 2015; Weakley 2015; Keener et al. 2018; USDA, NRCS 2018)."
	Lance, R. (2004). <i>Woody Plants of the Southeastern United States: A Winter Guide</i> . University of Georgia Press, Athens, GA	"The most commonly encountered species in the SE. A shrub often planted for the sweetly aromatic summer flowers. May spread by the roots in loose soils."

<b>703</b>	<b>Propagules likely to disperse as a produce contaminant</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Serviss, B.E. & Tumilson, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. <i>Phytoneuron</i> 2021-29: 1-193	[Able to be spread as green waste. Not cultivated with produce, and unlikely to be spread as a seed contaminant] "Habitat : disturbed sites and waste places, urban woods and greenbelts, and rubbish heaps where horticultural waste is dumped."

<b>704</b>	<b>Propagules adapted to wind dispersal</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Drupes blue-purple, subglobose, ca. 6-8 mm in diam."

<b>705</b>	<b>Propagules water dispersed</b>	
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Poindexter, D. B., Weakley, A. S., & Denslow, M. W. (2011). New exotic additions and other noteworthy records for the flora of North Carolina. <i>Phytoneuron</i> , 42, 1-14	[Occurrence along streams suggests movement by water] "Harlequin Glory-bower has been collected from legitimately naturalized colonies in Ashe and Wilkes County. It seems to prefer disturbed riparian areas and is showing up with greater regularity, which suggests that this taxon is increasing in its invasiveness, particularly in the mountains and adjacent foothills of North Carolina." ... "Habitat: roadsides and streambanks."

706	Propagules bird dispersed	y
	<b>Source(s)</b>	<b>Notes</b>
	Serviss, B.E. & Tumilson, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. <i>Phytoneuron</i> 2021-29: 1–193	"The fruits are bird dispersed."
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	[Fleshy-fruited] "Drupes blue-purple, subglobose, ca. 6-8 mm in diam."

707	Propagules dispersed by other animals (externally)	n
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	"Drupes blue-purple, subglobose, ca. 6-8 mm in diam." [No means of external attachment]

708	Propagules survive passage through the gut	y
	<b>Source(s)</b>	<b>Notes</b>
	Serviss, B.E. & Tumilson, R. (2021). Guide to the naturalized, escaped, and adventive woody flora of Arkansas. <i>Phytoneuron</i> 2021-29: 1–193	"The fruits are bird dispersed."
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	[Fleshy-fruited] "Drupes blue-purple, subglobose, ca. 6-8 mm in diam."

801	Prolific seed production (>1000/m2)	
	<b>Source(s)</b>	<b>Notes</b>
	Wu, Z. Y. & P. H. Raven, (eds). (1994). <i>Flora of China</i> . Vol. 17 (Verbenaceae through Solanaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.	[Genus] "Fruit a drupe with 4 1-seeded pyrenes, sometimes separating into 2 2-loculed or 4 1-locular mericarps." [Species] "Drupes blue-purple, subglobose, ca. 6–8 mm in diam." [Unknown. Could possibly reach high seed densities in dense stands]

802	Evidence that a persistent propagule bank is formed (>1 yr)	



Qsn #	Question	Answer
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2021) Seed Information Database (SID). Version 7.1. <a href="http://data.kew.org/sid/">http://data.kew.org/sid/</a> . [Accessed 3 Sep 2021]	[Longevity under natural conditions unknown] "Storage Behaviour: Orthodox Storage Conditions: 75 % viability following drying to mc's in equilibrium with 15 % RH and freezing for approx. 1.75 years at -20°C at RBG Kew, WP"

Qsn #	Question	Answer
803	Well controlled by herbicides	y
	Source(s)	Notes
	Extension. (2021). When to remove my harlequin glorybower? <a href="https://ask2.extension.org/kb/faq.php?id=415012">https://ask2.extension.org/kb/faq.php?id=415012</a> . [Accessed 3 Sep 2021]	"Removing a suckering woody tree or shrub like <i>Clerodendrum trichotomum</i> (harlequin glorybower, glorytree, peanut butter tree) is best in the fall. This is because the plant is sending the energy from the top of the plant to the roots. Systemic herbicide, using the cut and paint method described on the label, is one method. Regular removal of the tree and all foliage will also weaken and eventually kill the root system. Choose an herbicide labeled for woody plants, and follow all the instructions for safety and use."
	DoMyOwn. (2021). Will Crossbow Herbicide work to get rid of Glory Bower ( <i>Clerodendrum trichotomum</i> )? <a href="https://www.domyown.com">https://www.domyown.com</a> . [Accessed 3 Sep 2021]	"Will Crossbow Herbicide work to get rid of Glory Bower ( <i>Clerodendrum trichotomum</i> )? We have glory bower that is sending out shoots everywhere and trying to get rid of it entirely. Will crossbow work or is there a better product? Answer: Crossbow Herbicide should kill Glory Bower as it is a woody plant. We cannot guarantee it however because it has not been tested for it. It may be best to spot treat the Shoots with Round up."
	Swarbrick, J.T. (1997). Weeds of the Pacific Islands. Technical paper no. 209. South Pacific Commission, Noumea, New Caledonia	[Control methods for <i>C. chinense</i> would likely be effective] "Probably susceptible to: 1) foliar application of arboricides such as picloram, metsulfuron methyl, glyphosate and triclopyr at standard rates and dilutions; 2) cut-stump application of the same herbicides; 3) soil application of hexazinone, karbutilate, fluroxypyr and bromacil at standard rates"
	Englberger, K. (2009). Invasive weeds of Pohnpei: A guide for identification and public awareness. Conservation Society of Pohnpei, Kolonia, FM	[Control methods for <i>C. chinense</i> would likely be effective] "Young plants can be sprayed by a herbicide such as triclopyr (Garlon 4). Undiluted herbicide can be applied to the cut stems of larger plants with woody stems"
	Motooka, P., Castro, L., Nelson, D., Nagai, G. & Ching, L. (2003). Weeds of Hawaii's Pastures and Natural Areas: An Identification and Management Guide. CTAHR, UH Manoa, Honolulu, HI	[Control methods for <i>C. chinense</i> would likely prove effective] "A little work done suggests hormone-type herbicides in timely repeat applications will control this weed"
	Waterhouse, D.F. (1993). Biological control: Pacific prospects. Supplement 2. Australian Centre for International Agricultural Research, Canberra, Australia	[Herbicides provide effective control for <i>C. chinense</i> . Likely would be effective on <i>C. trichotomum</i> ] "No detailed screening of herbicides has been carried out, although 2,4,5-T, or the more expensive Tordon 520 Brushkiller, are suggested as possible herbicides for Western Samoa. More recently a mixture of dicamba and 2,4-D has proved effective. Work carried out in Western Samoa has also shown that metsulfuron methyl ester produces effective control. It has been recommended that the plants be cut and the new growth sprayed. When herbicides were applied in Western Samoa to regrowth four weeks after it had been slashed to the ground, glyphosate partially destroyed the foliage, but complete regrowth had occurred by 4 to 6 weeks after application. Treatment with 2,4,5-T resulted in complete kill of foliage, but 5 to 15% of the plants had regrown after 8 weeks"

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes

Qsn #	Question	Answer
	Koller, G. (1981). Shrubs for Hillsides and Embankments. <i>Arnoldia</i> , 41(5), 168-194	[Tolerates and regrows after annual cutting or freeze back to soil line] "At the Arnold Arboretum, this plant appears to have a dense robust habit. Perhaps this is due to the fact that it freezes back to the soil line almost every year encouraging more suckering from the root system. Our plants have coarse, dark green foliage, robust new growth from soil level and, due to the strongly stoloniferous habit, a dense bushiness directly to the ground." ... "In localities where this plant is not likely to die back each winter due to the cold, it would probably be best to cut the shrub back to the soil level annually or biennially in the spring to encourage the large, robust foliage which is common to sucker growth, producing a plant five to eight feet tall by summer's end. With this plant, management techniques will clearly be an important factor in maintaining a dense canopy."

805	<b>Effective natural enemies present locally (e.g. introduced biocontrol agents)</b>	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. (2021). Personal Communication	Unknown

**Summary of Risk Traits:**

High Risk / Undesirable Traits

- Broad climate suitability
- Grows in temperate to tropical climates
- Naturalized in SE United States, New Zealand and possibly elsewhere
- A weed of yards, landscapes and disturbed habitats
- A potential environmental weed
- Other *Clerodendrum* species are invasive
- Potentially allelopathic
- Unpalatable to deer and probably other browsing animals
- Berries and seeds are reported to be toxic to humans and animals if ingested; handling may irritate skin
- Shade tolerant
- Forms small thickets to dense stands through clonal vegetative spread
- Reproduces by seeds and vegetatively by suckering
- Primarily outcrossing, but may be able to produce some seeds through self-pollination
- Seeds dispersed by birds, other frugivores, possibly by water and intentionally by people
- Able to be spread in green waste
- Able to resprout after repeated cutting or freezing back

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Herbicides may provide effective control