Taxon: Warszewiczia coccinea (Vahl) Klotzsch **Family:** Rubiaceae

Common Name(s): chaconier
Trinidad-pride
wild poinsettia

Synonym(s): Macrocnemum coccineum Vahl

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 21 May 2020

WRA Score: **-7.0** **Designation:** L **Rating:** Low Risk

Keywords: Tropical Tree, Ornamental, Butterfly-Pollinated, Self-Incompatible, 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	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	n
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed	n=0, y = 1*multiplier (see Appendix 2)	n
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	y=1, n=0	n
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		

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	n
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	y=1, n=-1	n
605	Requires specialist pollinators	y=-1, n=0	y
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)		
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	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	y
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	n
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)		

Supporting Data:

Qsn #	Question	Answer
101	**Is the species highly domesticated?**	**n**
	Source(s)	**Notes**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	[No evidence of domestication] "Warszewiczia coccinea ranges from Nicaragua south to Bolivia. It is also found in Trinidad."

102	**Has the species become naturalized where grown?**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	NA

103	**Does the species have weedy races?**	
	Source(s)	**Notes**
	WRA Specialist. (2020). 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**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	"Warszewiczia coccinea ranges from Nicaragua south to Bolivia. It is also found in Trinidad."

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	

203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**
	Gargiullo, M.B., Magnuson, B.L & Kimball, L.D. 2008. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	"Habitat: Understories of wet to moist, usually lowland, forests, second growth. Altitude: Sea level to 500 m rarely to 1600 m."
	Plant This. (2020). Warszewiczia coccinea. http://plantthis.com. [Accessed 20 May 2020]	"Hardiness zones: 10-13"

Qsn #	Question	Answer
204	**Native or naturalized in regions with tropical or subtropical climates**	**y**
	Source(s)	**Notes**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	"Warszewiczia coccinea ranges from Nicaragua south to Bolivia. It is also found in Trinidad."

205	**Does the species have a history of repeated introductions outside its natural range?**	**y**
	Source(s)	**Notes**
	Brisdon, D. (1988). Flora of Tropical East Africa -Rubiaceae Volume 2. Routledge, UK	"has been grown occasionally" [Tropical East Africa]
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"It is usually planted alone as a colorful specimen plant." [Cultivated as an ornamental and landscaping tree in the Hawaiian Islands]
	Dave's Garden. (2020). Warszewiczia Species, Chaconia, Macaw's Tail, Pride of Trinidad, Tobago, Wild Poinsettia - Warszewiczia coccinea. https://davesgarden.com/guides/pf/go/57570/. [Accessed 20 May 2020]	"This plant has been said to grow in the following regions: Loxahatchee, Florida Miami, Florida Hawaiian Paradise Park, Hawaii Hilo, Hawaii KAILUA KONA, Hawaii Keaau, Hawaii Orchidlands Estates, Hawaii"

301	**Naturalized beyond native range**	**n**
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"References: Eastern Caribbean-N-1742." [Cited as naturalized in "Plants of the Eastern Caribbean" website. A subsequent search of that site lists Warszewiczia coccinea as "Introduced" but provides no additional information on naturalized status]
	Broome, R, Sabir, K, & Carrington, S. (2007) Plants of the Eastern Caribbean. http://ecflora.cavehill.uwi.edu/index.html. [Accessed 20 May 2020]	"Warszewiczia coccinea … Found in the Lesser Antilles in Grenada … Status: Introduced"
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence

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

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

304	**Environmental weed**	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	**Congeneric weed**	n
	Source(s)	**Notes**
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

401	**Produces spines, thorns or burrs**	n
	Source(s)	**Notes**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	[No evidence] "Trees to 12 m tall, the branches stout, angular, drying brown or black brown, relatively smooth, rimose, minutely puberulent to appressed pilose. Leaves oblong, 5-45(-60) cm long, 10 -20(-23) cm wide, tapering acutely or deltoidly at the apex, acuminate, the acumen to 2 cm long, the costa plane or prominent above, prominent beneath, the lateral veins 15-24, widely arcuate or arising from the costa almost perpendicularly, stiffly papyraceous, glabrate above, puberulent on the veins beneath; petioles 2-5 cm long, 0.8-1. 1 cm wide, acute, golden puberulent, striate."

402	**Allelopathic**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown

403	**Parasitic**	n
	Source(s)	**Notes**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	"Trees to 12 m tall, the branches stout, angular, drying brown or black brown, relatively smooth, rimose, minutely puberulent to appressed pilose." [Rubiaceae. No evidence]

404	**Unpalatable to grazing animals**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown

405	**Toxic to animals**	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2020). Warszewiczia coccinea. http://tropical.theferns.info/viewtropical.php?id=Warszewiczia+coccinea. [Accessed 20 May 2020]	"Known Hazards - None known"
	Plant This. (2020). Warszewiczia coccinea. http://plantthis.com. [Accessed 20 May 2020]	"No hazards currently listed."
	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

406	**Host for recognized pests and pathogens**	
	Source(s)	**Notes**
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"Baker and Dale (1951) reported the occurrence of a fungal disease caused by Lembrosia warszewiczia P. Herr on plants of the wild type in the Arena Forest." … "Duncan (1983) recorded damage done to the leaves and calyx lobes of the cultivar by the eriophyoid mite Caryoloptes sp." … "Leaf miner has been found on the sepals of the cultivar"

407	**Causes allergies or is otherwise toxic to humans**	**n**
	Source(s)	**Notes**
	Plant This. (2020). Warszewiczia coccinea. http://plantthis.com. [Accessed 20 May 2020]	"No hazards currently listed."
	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**
	Gargiullo, M.B., Magnuson, B.L & Kimball, L.D. 2008. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	[No evidence. Unlikely given habitat] "Habitat: Understories of wet to moist, usually lowland, forests, second growth. Altitude: Sea level to 500 m rarely to 1600 m."

409	**Is a shade tolerant plant at some stage of its life cycle**	
	Source(s)	**Notes**
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"Moist but well-drained soils in sunny places are preferred."

Qsn #	Question	Answer
	Tropical Plants Database, Ken Fern. (2020). Warszewiczia coccinea. http://tropical.theferns.info/viewtropical.php?id=Warszewiczia+coccinea. [Accessed 20 May 2020]	"Succeeds in full sun to moderate shade"
	Plant This. (2020). Warszewiczia coccinea. http://plantthis.com. [Accessed 20 May 2020]	"Sunlight: hot overhead sun"
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"Usually seen along roads, not inside the forest." [High light environments]

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	**Notes**
	Sunny Gardens. (2020). Warszewiczia coccinea. http://www.sunnygardens.com. [Accessed 20 May 2020]	"Enrich loamy soil with peat moss or other organic material."
	Tropical Plants Database, Ken Fern. (2020). Warszewiczia coccinea. http://tropical.theferns.info/viewtropical.php?id=Warszewiczia+coccinea. [Accessed 20 May 2020]	"Prefers a moist, fertile, clayey soil"
	Plant This. (2020). Warszewiczia coccinea. http://plantthis.com. [Accessed 20 May 2020]	"Soil Moisture: dry between watering to constantly moist Soil: enriched soil, mildly acidic to mildly alkaline "

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	"Trees to 12 m tall, the branches stout, angular, drying brown or black brown, relatively smooth, rimose, minutely puberulent to appressed pilose."

412	Forms dense thickets	n
	Source(s)	**Notes**
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"In lowland wet forest in e. Panama and throughout Costa Rica. Occurs around Gamboa near the Canal, though not common. Usually seen along roads, not inside the forest." [No evidence]
	Gargiullo, M.B., Magnuson, B.L & Kimball, L.D. 2008. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	"Understories of wet to moist, usually lowland, forests, second growth. Altitude: Sea level to 500 m rarely to 1600 m." [No evidence]
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"Warszewiczia coccinea – a member of the angiosperm family Rubiaceae – is an evergreen shrub to small tree found growing primarily in Central and South America (Costa Rica to equatorial Peru) and Trinidad, where it grows in abundance in moist, semi-shaded flat lands and the lower wooded hillsides (Williams and Cheesman 1928)." [No evidence]
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	"Warszewiczia coccinea ranges from Nicaragua south to Bolivia. It is also found in Trinidad." [No evidence]

501	Aquatic	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Gargiullo, M.B., Magnuson, B.L & Kimball, L.D. 2008. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	[Terrestrial tree] "Habitat: Understories of wet to moist, usually lowland, forests, second growth. Altitude: Sea level to 500 m rarely to 1600 m."

502	Grass	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 20 May 2020]	Family: Rubiaceae Subfamily: Ixoroideae Tribe: Condamineeae

503	Nitrogen fixing woody plant	n
	Source(s)	**Notes**
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 20 May 2020]	Family: Rubiaceae Subfamily: Ixoroideae Tribe: Condamineeae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	"Trees to 12 m tall, the branches stout, angular, drying brown or black brown, relatively smooth, rimose, minutely puberulent to appressed pilose."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	**Notes**
	Botanic Gardens Conservation International (BGCI) & IUCN SSC Global Tree Specialist Group. (2019). Warszewiczia coccinea. The IUCN Red List of Threatened Species 2019: e.T149999880A149999882. https://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T149999880A149999882.en. [Accessed 20 May 2020]	"This tree species has a very wide distribution, large population, is not currently experiencing any major threats and no significant future threats have been identified. This species is therefore assessed as Least Concern."

602	Produces viable seed	y
	Source(s)	**Notes**
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"Propagate by cuttings or seeds."

Qsn #	Question	Answer
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The seed thus exhibits morphological dormancy (underdeveloped embryo) and requires a period of 10 -12 days in sunlight before it germinates. On germination, the hypocotyl emerges, pushing the cotyledons aloft still enclosed within the testa. As the cotyledons expand, the testa falls off (Fig. 12)." … "Menninger (1962) with reference to the wild type recommends that the minute seeds should be dusted on to finely sifted soil in pots or seed flats and watered with a syringe. He further suggests that the pots or flats should be covered with glass to ensure warmth and a saturated atmosphere. Under those conditions germination takes place within ten days. From the foregoing it would appear that seeds of the wild type exhibit morphological dormancy as do those of the cultivar. Menninger reports that the seedlings may be transplanted after two months and are about 6 inches tall after a year's growth."

603	Hybridizes naturally	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	n
	Source(s)	**Notes**
	Bawa, K., & Beach, J. (1983). Self-Incompatibility Systems in the Rubiaceae of a Tropical Lowland Wet Forest. American Journal of Botany, 70(9), 1281-1288	"Each of the four monomorphic species investigated was found to be self-incompatible (Table 2). In Hamelia, self-pollinated flowers on a few plants produced fruits; however, the proportion of such flowers was much less than that of crosspollinated flowers on the same plants. In three of the four species, self-pollinated flowers aborted within 7 days after pollination was effected. In Warszewiczia however, the fruits produced by self-pollinated flowers persisted on the plants for three weeks before abscissing. During this period they increased in size, though less rapidly than fruits of cross-pollinated flowers."
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The anthers dehisce after the bud has opened by which time the stigma is no longer receptive and has withered (Figure 4:4). This means that autogamy (self fertilization) is not possible; a flower must be pollinated with pollen from an older flower."

605	Requires specialist pollinators	y
	Source(s)	**Notes**
	Fogden, M. & Fogden, P. (2018). The Natural History of Flowers. Texas A&M University Press, College Station	"In the tropics, numerous plants belonging to the butterfly pollination syndrome attract butterflies with red flowers or flowers with additional red structures such as bracts or calyxes. A few rubiaceous species, including hot lips (Psychotria) and Warszewiczia coccinea, are good examples (fig. 227). Hot lips has small white flowers surrounded by a pair of red liplike bracts, while Warszewiczia has inconspicuous yellow flowers and enlarged red calyx lobes. Both species inevitably attract small hummingbirds, such as snowcaps and green thorntails, as well as butterflies."

Qsn #	Question	Answer
606	**Reproduction by vegetative fragmentation**	**n**
	Source(s)	**Notes**
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"Propagate by cuttings or seeds." [No evidence of natural vegetative spread]
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	[No evidence] "Menninger (1962) with reference to the wild type recommends that the minute seeds should be dusted on to finely sifted soil in pots or seed flats and watered with a syringe. He further suggests that the pots or flats should be covered with glass to ensure warmth and a saturated atmosphere. Under those conditions germination takes place within ten days. From the foregoing it would appear that seeds of the wild type exhibit morphological dormancy as do those of the cultivar. Menninger reports that the seedlings may be transplanted after two months and are about 6 inches tall after a year's growth. Plants may also be propagated from greenwood cuttings"

607	**Minimum generative time (years)**	
	Source(s)	**Notes**
	Tropical Plants Database, Ken Fern. (2020). Warszewiczia coccinea. http://tropical.theferns.info/viewtropical.php?id=Warszewiczia+coccinea. [Accessed 20 May 2020]	"Growth Rate - Medium"

701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**n**
	Source(s)	**Notes**
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The fruits split septicidally under dry atmospheric conditions and the seeds are wind dispersed."
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	[Occurs along roads, but seeds are wind-dispersed. Small size could theoretically result in attachment to footwear or vehicles in soil, but direct evidence is lacking] "Distribution: In lowland wet forest in e. Panama and throughout Costa Rica. Occurs around Gamboa near the Canal, though not common. Usually seen along roads, not inside the forest."

702	**Propagules dispersed intentionally by people**	**y**
	Source(s)	**Notes**
	Whistler, W.A. 2000. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"It is usually planted alone as a colorful specimen plant." [Ornamental and landscaping tree]

Qsn #	Question	Answer
703	**Propagules likely to disperse as a produce contaminant**	**n**
	Source(s)	**Notes**
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The fruits split septicidally under dry atmospheric conditions and the seeds are wind dispersed." [No evidence. Possible, but unlikely]

704	Propagules adapted to wind dispersal	y
	Source(s)	**Notes**
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The fruit, as in the wild type, is a globose capsule with a scabrous surface (Fig. 9). The seeds are minute and possess a highly ornamented testa (Fig. 10). The fruits split septicidally under dry atmospheric conditions and the seeds are wind dispersed."

705	Propagules water dispersed	n
	Source(s)	**Notes**
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"grows in abundance in moist, semi-shaded flat lands and the lower wooded hillsides" … "The fruits split septicidally under dry atmospheric conditions and the seeds are wind dispersed." [Secondary dispersal by water is theoretically possible, but tree is primarily wind-dispersed and does not primarily occur in riparian areas]

706	Propagules bird dispersed	n
	Source(s)	**Notes**
	Woodson, R., Schery, R., & Dwyer, J. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae-- Part 2. Annals of the Missouri Botanical Garden, 67(2), 257-522	"Fruits capsular, septicidally dehiscent, pilosulose; seeds to 1 mm long."
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The fruits split septicidally under dry atmospheric conditions and the seeds are wind dispersed."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The fruit, as in the wild type, is a globose capsule with a scabrous surface (Fig. 9). The seeds are minute and possess a highly ornamented testa (Fig. 10). The fruits split septicidally under dry atmospheric conditions and the seeds are wind dispersed." [No evidence]

Qsn #	Question	Answer
708	**Propagules survive passage through the gut**	**n**
	Source(s)	**Notes**
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The fruit, as in the wild type, is a globose capsule with a scabrous surface (Fig. 9). The seeds are minute and possess a highly ornamented testa (Fig. 10). The fruits split septicidally under dry atmospheric conditions and the seeds are wind dispersed." [No evidence]

801	**Prolific seed production (>1000/m2)**	
	Source(s)	**Notes**
	Gargiullo, M.B., Magnuson, B.L & Kimball, L.D. 2008. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	"Fruit dry, woody, to 0.5 cm, splitting open to release numerous tiny seeds." [Densities unknown]

802	**Evidence that a persistent propagule bank is formed (>1 yr)**	
	Source(s)	**Notes**
	Duncan, E. J. (2007). A Review on Warszewiczia coccinea (Vahl) Klotzsch–the 'Chaconia'. Living World, Journal of the Trinidad and Tobago Field Naturalists' Club, 2007, 01-07	"The seed thus exhibits morphological dormancy (underdeveloped embryo) and requires a period of 10 -12 days in sunlight before it germinates." [Unknown if seeds can perform a persistent seed bank]

803	**Well controlled by herbicides**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown

805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown. Cultivated in Hawaii, but no significant pests or pathogens found

Summary of Risk Traits:

High Risk / Undesirable Traits
• Thrives in tropical climates
• Reproduces by wind-dispersed seeds, and intentionally cultivated by people

Low Risk Traits
• No confirmed reports of invasiveness or naturalization
• Unarmed (no spines, thorns, or burrs)
• Non-toxic
• Self-incompatible
• Pollinated by butterflies and hummingbirds, which may minimize seed set where cultivated outside native range
• Not reported to spread vegetatively