

<b>Taxon:</b> <i>Psychotria elata</i> (Sw.) Hammel	<b>Family:</b> Rubiaceae
<b>Common Name(s):</b> hooker's lips hot lips sexy lips	<b>Synonym(s):</b> <i>Cephaelis elata</i> f. <i>lutea</i> Standl. <i>Cephaelis elata</i> Sw.

<b>Assessor:</b> Chuck Chimera	<b>Status:</b> Assessor Approved	<b>End Date:</b> 7 Dec 2016
<b>WRA Score:</b> 0.0	<b>Designation:</b> L	<b>Rating:</b> Low Risk

**Keywords:** Tropical Tree, Shade-Tolerant, Self-Incompatible, Fleshy-Fruited, 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	?
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		
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	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)		
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	n
606	Reproduction by vegetative fragmentation		
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	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/m <sup>2</sup> )	y=1, n=-1	n
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
	Silva, C. A., & Segura, J. A. L. (2015). Reproductive Biology and Herkogamy of <i>Psychotria elata</i> (Rubiaceae), a Distylous Species of the Tropical Rain Forests of Costa Rica. <i>American Journal of Plant Sciences</i> , 6(03), 433-444	[Not domesticated] " <i>Psychotria elata</i> (Sw.) Hammel is a distylous shrub with a height of 0.5 to 5 m; glabrous leaves; solitary terminal, inflorescences capitate to semi-hemispheric globose, surrounded by orange red basal bracts. The flowers are surrounded by about 16 mm high glabrous, sessile, white bracteoles. The flowers are visited by butterflies and hummingbirds, have sessile ovary; and blue ovoid fruits that become black at maturity. <i>P. elata</i> is distributed along forest edges and interiors of 30 to 1700 m elevation from Central America to Colombia. It flowers and fruits year-round with flowering peak from January to August [16]."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2016. 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, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 6 Dec 2016]	"Native: Northern America : Mexico Southern America Caribbean: Jamaica Central America: Belize; Costa Rica; Honduras; Nicaragua; Panama Western South America: Colombia; Ecuador"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 6 Dec 2016]	

203	Broad climate suitability (environmental versatility)	y
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Iremonger, S. (2002). A Guide to Plants in the Blue Mountains of Jamaica. University of the West Indies Press, Kingston, Jamaica	"Sheltered parts of montane woodland, 300 to 1,380 m (1,000 to 4,500 ft)." [Elevation range exceeds 1000 m, demonstrating environmental versatility]
	Tropicos.org. 2016. Tropicos [Online Database]. Missouri Botanical Garden. <a href="http://www.tropicos.org/">http://www.tropicos.org/</a> . [Accessed 6 Dec 2016]	Collected at elevations from 0 - 3000 m

204	Native or naturalized in regions with tropical or subtropical climates	y
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 6 Dec 2016]	"Native: Northern America : Mexico Southern America Caribbean: Jamaica Central America: Belize; Costa Rica; Honduras; Nicaragua; Panama Western South America: Colombia; Ecuador"

205	Does the species have a history of repeated introductions outside its natural range?	?
	<b>Source(s)</b>	<b>Notes</b>
	DHgate.com. (2016). <i>Psychotria elata</i> Seeds. <a href="http://www.dhgate.com/wholesale/psychotria+elata+seeds.html">http://www.dhgate.com/wholesale/psychotria+elata+seeds.html</a> . [Accessed 7 Dec 2016]	Seeds sold online. Unclear how widespread this tree has been introduced & cultivated outside native range

301	Naturalized beyond native range	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence
	Wagner, W.L., Herbst, D.R. & Lorence, D.H. 2016. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. <a href="http://botany.si.edu/">http://botany.si.edu/</a> . [Accessed 6 Dec 2016]	No evidence to date

302	Garden/amenity/disturbance weed	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

303	Agricultural/forestry/horticultural weed	n
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

304	Environmental weed	n
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

305	Congeneric weed	
	<b>Source(s)</b>	<b>Notes</b>
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	Psychotria barbiflora (Rubiaceae) [listed as a weed]; Psychotria curviflora [listed as an agricultural weed]; Psychotria nervosa [listed as an agricultural weed]; Psychotria pubescens [listed as an agricultural weed]; Psychotria punctata [listed as a weed]; Psychotria ruelliaefolia [listed as a weed] [no further information on impacts or control efforts on any of the preceding species was found]

401	Produces spines, thorns or burrs	n
	<b>Source(s)</b>	<b>Notes</b>
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1-256	[No evidence] "Shrubs or trees to 8 m tall, the branches few to many, smooth, terete or angular, glabrate, occasionally constricted below the nodes, the nodes often swollen (persistent stipules). Leaves narrowly oblong or obovate oblong, 10-25 cm long, 1.5-7.0 cm wide, obtuse, widely deltoid or rounded at the apex, acuminate, the acumen short, acute, basally cuneate to obtuse, the costa prominent, prominulous to subplane above, prominent beneath, the lateral veins (12-)16-22, widely arcuate or at first widely divergent and then arcuate marginally, the margin often slightly revolute, stiffly papyraceous to subcoriaceous, not herbaceous (Panama), lustrous and glabrous above, glabrous or pubescent on the costa and the veins beneath; stipules persistent, connate, turgid, cupshaped, to 1.2 cm long, each part of the sheath bilobed, the lobes usually hemispherical, as long as or longer than the sheath, obtuse, coriaceous, glabrous, the margins scarious, often widely so."

402	Allelopathic	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. 2016. Personal Communication	Unknown

Qsn #	Question	Answer
403	Parasitic	n
	Source(s)	Notes
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"A shrub or treelet of wet-forest understory." [Rubiaceae]
404	Unpalatable to grazing animals	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown
405	Toxic to animals	n
	Source(s)	Notes
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence
	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, although other species may be toxic
406	Host for recognized pests and pathogens	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown
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
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"A shrub or treelet of wet-forest understory." [No evidence, & unlikely given wet habitat]
409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes

Qsn #	Question	Answer
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"A shrub or treelet of wet-forest understory." [Understory habitat suggests some shade tolerance, although classified as shade intolerant in other publications]
	Farji-Brener, A. G. (2001). Why are leaf-cutting ants more common in early secondary forests than in old-growth tropical forests? An evaluation of the palatable forage hypothesis. <i>Oikos</i> , 92(1), 169-177	"Pioneer, shade-intolerant species selected were <i>Hampea appendiculata</i> , <i>Rollinia pittieri</i> , <i>Castilla elastica</i> , <i>Cecropia obtusifolia</i> , <i>Laetia procera</i> , <i>Luehea seemanii</i> , <i>Casearia arborea</i> , <i>Goethalsia meiantha</i> , and <i>Psychotria elata</i> ."
	Guzmán Q., J.A. & Cordero, R. A. (2016). Neighbourhood structure and light availability influence the variations in plant design of shrubs in two cloud forests of different successional status. <i>Annals of Botany</i> , 118: 23–34	"We conducted field research to analyse how the surrounding environment of neighbourhood structure and related effects on light availability are associated with changes in plant design in two understory plants ( <i>Palicourea padifolia</i> and <i>Psychotria elata</i> ) within two successional stages of a cloud forest in Costa Rica." ... "Conclusions Although it has been proposed that plant design varies according to plant density and light availability, we found that neighbour size and distance-dependence interference are associated with changes in biomechanics, allometry and branching, and they must be considered as key factors that contribute to the adaptation and coexistence of these plants in this highly diverse forest community." ... " <i>Psychotria elata</i> is an understory shrub (5–8 m in height) of premontane and wet forests from southern Mexico to Ecuador, easy to recognize by its inflorescences surrounded by two ovate red involucre bracts."
	Busby, W. H. (1987). Flowering phenology and density-dependent pollination success in <i>Cephaelis elata</i> (Rubiaceae). PhD Dissertation. University of Florida, Gainesville, FL	[Flowers profusely in gaps] " <i>Cephaelis elata</i> plants in forest gaps often flower profusely. High light availability is generally temporary, however, because the canopy closes over and light levels return to near pre-perturbation levels within a very few years (R. Lawton, personal communication )."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	World of Flowering Plants. (2016). <i>Psychotria elata</i> – Hot Lips. <a href="http://worldoffloweringplants.com/psychotria-elata-hot-lips-flower-lips/">http://worldoffloweringplants.com/psychotria-elata-hot-lips-flower-lips/</a> . [Accessed 7 Dec 2016]	"Hot Lips grows where the soil is rich and humid from leaf litter, moist and sheltered from the most powerful sun rays by upper story trees." ... "Most potting soil will not have both the excellent drainage and moisture retentiveness necessary to raise these plants."
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"Very widespread in lower montane and wet forests." [Substrate and soil type unspecified]

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"A shrub or treelet of wet-forest understory."

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	"Distribution: Very widespread in lower montane and wet forests."

Qsn #	Question	Answer
	Standley, P. C., & Record, S. J. (1936). The forests and flora of British Honduras. Field Museum of Natural History, 12 (350), 1-432	[In thickets, but no evidence that this species forms pure stands] "Cephaelis elata Swartz. Frequent in forest and thickets; southern Mexico to Colombia; West Indies."
<b>501</b>	<b>Aquatic</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	[Terrestrial tree] "Distribution: Very widespread in lower montane and wet forests."
<b>502</b>	<b>Grass</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 6 Dec 2016]	Family: Rubiaceae Subfamily: Rubioideae Tribe: Psychotrieae
<b>503</b>	<b>Nitrogen fixing woody plant</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. <a href="http://www.ars-grin.gov/npgs/index.html">http://www.ars-grin.gov/npgs/index.html</a> . [Accessed 6 Dec 2016]	Family: Rubiaceae Subfamily: Rubioideae Tribe: Psychotrieae
<b>504</b>	<b>Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Woodson, R. E., Schery, R. W., & Dwyer, J. D. (1980). Flora of Panama. Part IX. Family 179. Rubiaceae--Part 1. Annals of the Missouri Botanical Garden, 67(1), 1-256	"Shrubs or trees to 8 m tall"
<b>601</b>	<b>Evidence of substantial reproductive failure in native habitat</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Rodríguez, A., Monro, A. K., Chacón, O., Solano, D., Santamaría, D., Zamora, N., Gonzalez, F. & Correa, M. (2011). Regional and global conservation assessments for 200 vascular plant species from Costa Rica and Panama. Phytotaxa, 21(1), 1-216	"Terrestrial shrubs or trees, flowers bisexual. Global distribution: Mexico to Ecuador, the Antilles. Known in Costa Rica and Panama from 485 herbarium collections. Elevational range for Costa Rica and Panama 0– 2000 m, and the proportion of the regional Extension of Occurrence in protected areas: 26%." ... "Regional threat category: Near Threatened (NT)"
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	[No evidence] "Distribution: Very widespread in lower montane and wet forests."
<b>602</b>	<b>Produces viable seed</b>	<b>y</b>

Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Silva, C. A., & Segura, J. A. L. (2015). Reproductive Biology and Herkogamy of <i>Psychotria elata</i> (Rubiaceae), a Distylous Species of the Tropical Rain Forests of Costa Rica. <i>American Journal of Plant Sciences</i> , 6(03), 433-444	"All studied populations of <i>P. elata</i> are distylous and anisoplethic. The absence of reciprocal herkogamy between floral morphs led to a wide variation in number of fruits and seeds between morphs and among populations. Hummingbirds, butterflies and bees were the main visitors of <i>P. elata</i> flowers."
	Busby, W. H. (1987). Flowering phenology and density-dependent pollination success in <i>Cephaelis elata</i> (Rubiaceae). PhD Dissertation. University of Florida, Gainesville, FL	"Fruits mature after 4 to 6 months, becoming blue-black berries about 2 cm in length. A variety of bird species, including <i>Myadestes melanops</i> , <i>Chlorospingus ophthalmicus</i> , and <i>Turdus plebejus</i> , consume the fruits and disperse the seeds (Wheelwright et al. 1984; Busby, personal observation )."

<b>603</b>	<b>Hybridizes naturally</b>	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. 2016. Personal Communication	Unknown. No evidence

<b>604</b>	<b>Self-compatible or apomictic</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Bawa, K., & Beach, J. (1983). Self-Incompatibility Systems in the Rubiaceae of a Tropical Lowland Wet Forest. <i>American Journal of Botany</i> , 70(9), 1281-1288	"TABLE 3. Pollen/pistil interaction and the nature of the breeding system in distylous species" [ <i>Cephaelis elata</i> - Inferred nature of the breeding system = SI = Self-incompatible. <i>Cephaelis elata</i> Sw. Synonym of <i>Psychotria elata</i> ]

<b>605</b>	<b>Requires specialist pollinators</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Silva, C. A., & Segura, J. A. L. (2015). Reproductive Biology and Herkogamy of <i>Psychotria elata</i> (Rubiaceae), a Distylous Species of the Tropical Rain Forests of Costa Rica. <i>American Journal of Plant Sciences</i> , 6(03), 433-444	"According to our visitation records, hummingbirds, butterflies and moths are the main pollinators of <i>P. elata</i> flowers." ... "The pollinators recorded in <i>P. elata</i> populations have been commonly reported in other <i>Psychotria</i> species, hummingbirds [41] [42], butterflies [43], moths [44], and bees [37] [45]."

<b>606</b>	<b>Reproduction by vegetative fragmentation</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Riffle, R.L. 1998. <i>The Tropical Look - An Encyclopedia of Dramatic Landscape Plants</i> . Timber Press, Portland, OR	"Propagation by seed" [Genus description]

<b>607</b>	<b>Minimum generative time (years)</b>	
	<b>Source(s)</b>	<b>Notes</b>
	WRA Specialist. 2016. Personal Communication	Unknown. Other <i>Psychotria</i> species reach maturity in 2+ years

<b>701</b>	<b>Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)</b>	<b>n</b>
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Qsn #	Question	Answer
	<b>Source(s)</b>	<b>Notes</b>
	Busby, W. H. (1987). Flowering phenology and density-dependent pollination success in <i>Cephaelis elata</i> (Rubiaceae). PhD Dissertation. University of Florida, Gainesville, FL	[No evidence. Fruits & seeds lack means of external attachment] "Fruits mature after 4 to 6 months, becoming blue-black berries about 2 cm in length. A variety of bird species, including <i>Myadestes melanops</i> , <i>Chlorospingus ophthalmicus</i> , and <i>Turdus plebejus</i> , consume the fruits and disperse the seeds (Wheelwright et al. 1984; Busby, personal observation )."

<b>702</b>	<b>Propagules dispersed intentionally by people</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	DHgate.com. (2016). <i>Psychotria elata</i> Seeds. <a href="http://www.dhgate.com/wholesale/psychotria+elata+seeds.html">http://www.dhgate.com/wholesale/psychotria+elata+seeds.html</a> . [Accessed 7 Dec 2016]	Seeds sold online

<b>703</b>	<b>Propagules likely to disperse as a produce contaminant</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Busby, W. H. (1987). Flowering phenology and density-dependent pollination success in <i>Cephaelis elata</i> (Rubiaceae). PhD Dissertation. University of Florida, Gainesville, FL	"The plant is typically 2 to 3 m tall, but it occasionally reaches 8 m (Woodson and Shery 1980)." ... "Fruits mature after 4 to 6 months, becoming blue-black berries about 2 cm in length." [No evidence. Unlikely given form and relative size of fruit & seeds]

<b>704</b>	<b>Propagules adapted to wind dispersal</b>	<b>n</b>
	<b>Source(s)</b>	<b>Notes</b>
	Busby, W. H. (1987). Flowering phenology and density-dependent pollination success in <i>Cephaelis elata</i> (Rubiaceae). PhD Dissertation. University of Florida, Gainesville, FL	"Fruits mature after 4 to 6 months, becoming blue-black berries about 2 cm in length. A variety of bird species, including <i>Myadestes melanops</i> , <i>Chlorospingus ophthalmicus</i> , and <i>Turdus plebejus</i> , consume the fruits and disperse the seeds (Wheelwright et al. 1984; Busby, personal observation )."

<b>705</b>	<b>Propagules water dispersed</b>	
	<b>Source(s)</b>	<b>Notes</b>
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"A shrub or treelet of wet-forest understory." [Unknown if fruit or seeds are moved by water, but possible if occurring in wet habitats]

<b>706</b>	<b>Propagules bird dispersed</b>	<b>y</b>
	<b>Source(s)</b>	<b>Notes</b>
	Blake, J., & Loiselle, B. (1992). Fruits in the Diets of Neotropical Migrant Birds in Costa Rica. <i>Biotropica</i> , 24(2), 200-210	"APPENDIX. Plant species recorded in the diets of birds captured in mist nets." [ <i>Cephaelis elata</i> Sw. Synonym of <i>Psychotria elata</i> ]
	Condit, R., Pérez, R. & Daguerre, N. 2010. Trees of Panama and Costa Rica. Princeton University Press, Princeton, NJ	"Fruits are oval berries that turn blue or black when mature."

Qsn #	Question	Answer
	Busby, W. H. (1987). Flowering phenology and density-dependent pollination success in <i>Cephaelis elata</i> (Rubiaceae). PhD Dissertation. University of Florida, Gainesville, FL	"Fruits mature after 4 to 6 months, becoming blue-black berries about 2 cm in length. A variety of bird species, including <i>Myadestes melanops</i> , <i>Chlorospingus ophthalmicus</i> , and <i>Turdus plebejus</i> , consume the fruits and disperse the seeds (Wheelwright et al. 1984; Busby, personal observation )."
	Wheelwright, N. T., Haber, W. A., Murray, K. G., & Guindon, C. (1984). Tropical fruit-eating birds and their food plants: a survey of a Costa Rican lower montane forest. <i>Biotropica</i> , 16(3): 173-192	"TABLE 2. Fruit species eaten by birds of Monteverde, Costa Rica." [Cephaelis elata recorded in the diets of the Prong-billed Barbet & Emerald Toucanet. <i>Cephaelis elata</i> Sw. Synonym of <i>Psychotria elata</i> ]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Wheelwright, N. T., Haber, W. A., Murray, K. G., & Guindon, C. (1984). Tropical fruit-eating birds and their food plants: a survey of a Costa Rican lower montane forest. <i>Biotropica</i> , 16(3): 173-192	[Internally dispersed] "TABLE 2. Fruit species eaten by birds of Monteverde, Costa Rica." [Cephaelis elata recorded in the diets of the Prong-billed Barbet & Emerald Toucanet. <i>Cephaelis elata</i> Sw. Synonym of <i>Psychotria elata</i> ]

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Wheelwright, N. T., Haber, W. A., Murray, K. G., & Guindon, C. (1984). Tropical fruit-eating birds and their food plants: a survey of a Costa Rican lower montane forest. <i>Biotropica</i> , 16(3): 173-192	"TABLE 2. Fruit species eaten by birds of Monteverde, Costa Rica." [Cephaelis elata recorded in the diets of the Prong-billed Barbet & Emerald Toucanet. <i>Cephaelis elata</i> Sw. Synonym of <i>Psychotria elata</i> ]
	Blake, J., & Loiselle, B. (1992). Fruits in the Diets of Neotropical Migrant Birds in Costa Rica. <i>Biotropica</i> , 24(2), 200-210	[Presumably Yes] "APPENDIX. Plant species recorded in the diets of birds captured in mist nets." [Cephaelis elata Sw. Synonym of <i>Psychotria elata</i> ]

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	Silva, C. A., & Segura, J. A. L. (2015). Reproductive Biology and Herkogamy of <i>Psychotria elata</i> (Rubiaceae), a Distylous Species of the Tropical Rain Forests of Costa Rica. <i>American Journal of Plant Sciences</i> , 6(03), 433-444	[Unlikely. Trees relatively small. Fruit one or two-seeded] "The number of fruits and seeds of each floral morph in the studied populations are listed in Table 4." ... "One-seeded fruits had normal development, however with the presence of a single embryo." ... "The populations QUE and RAR, with a morph ratio of $\geq 0.5$ (Table 1), produced the highest percentage of fruits with two seeds (Table 4)."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2016) Seed Information Database (SID). Version 7.1. <a href="http://data.kew.org/sid/">http://data.kew.org/sid/</a> . [Accessed 7 Dec 2016]	Unknown. No storage information available

Qsn #	Question	Answer
803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2016. 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. 2016. Personal Communication	Unknown

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

**Summary of Risk Traits:**

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Shade tolerant
- Reproduces by seeds
- Seeds dispersed by birds & intentionally by people
- Limited ecological information reduces accuracy or risk prediction

Low Risk Traits

- No reports of invasiveness or naturalization, but no evidence of widespread introduction outside native range
- Unarmed (no spines, thorns, or burrs)
- Ornamental
- Self-incompatible
- Pollinator limitation may limit seed set outside native range