

Taxon: <i>Leea indica</i> (Burm. f.) Merr.	Family: Vitaceae
Common Name(s): bandicoot berry	Synonym(s): <i>Leea sambucina</i> Willd. <i>Staphylea indica</i> Burm. f.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 7 Oct 2019
WRA Score: 4.0	Designation: EVALUATE	Rating: Evaluate

Keywords: Tropical Shrub, Naturalized, Stilt-Rooted, Bird-Dispersed, Coppices

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	n
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)	n
303	Agricultural/forestry/horticultural weed		
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	y=1, n=-1	n
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		
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		
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 ²)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides		
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 & D. Y. Hong, eds. 2007. Flora of China. Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence of domestication] "Forests, shrublands; 200–1200 m. Guangdong, Guangxi, Guizhou, Hainan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, Pacific islands]."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2019). 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. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 4 Oct 2019]	"Native Asia-Temperate CHINA: China [Guangdong Sheng, Guizhou Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Hainan Sheng] Asia-Tropical INDIAN SUBCONTINENT: Bangladesh, Bhutan, India, [Sikkim, Andhra Pradesh, Assam, Bihar, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Odisha, Punjab, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal, Goa, Mizoram, Arunachal Pradesh] Nepal, Sri Lanka PAPUASIA: Papua New Guinea, Solomon Islands INDO-CHINA: Cambodia, India, [Andaman and Nicobar Islands] Laos, Myanmar, Thailand, Vietnam MALESIA: Indonesia, Malaysia, Philippines, Singapore Australasia AUSTRALIA: Australia [Queensland (n.), Northern Territory (n.)] Pacific SOUTHWESTERN PACIFIC: Fiji, Vanuatu"

Qsn #	Question	Answer
202	Quality of climate match data	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 4 Oct 2019]	

203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes
	Steenis, C.G.G.J. van (ed.). (1976). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 4. Sijthoff & Noordhoff International Publishers, Leiden, The Netherlands	"Ecol. Wide-spread and common throughout the area, secondary forest and villages (often coppiced), primary forest, wet areas to ridges up to 1700 m, in the Himalayas ascending to 2500 m."
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. Flora of China. Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Forests, shrublands; 200–1200 m. Guangdong, Guangxi, Guizhou, Hainan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, Pacific islands]."
	Lok, A. F. S. L., Ang, W. F., Ng, B. Y. Q., Suen, S. M., Yeo, C. K., & Tan, H. T. (2011). <i>Leea</i> L.(Vitaceae) of Singapore. Nature in Singapore, 4, 55-71	"This species has extremely large ecological amplitude and is extremely widespread: it is found in back mangroves, secondary forests, primary forests in the lowlands and wet ridges up to 1,700 m in altitude. In Singapore, this species is found in many habitats: in coastal vegetation, back mangroves, secondary forests, freshwater swamp forests near the edges or in gaps, and also in the undergrowth of primary forests."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Daehler, C. C. & Baker, R. F. 2006. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mānoa Valley, O'ahu. Bishop Museum Occasional Papers 87: 3-18	" <i>Leea indica</i> (Burm. f.) Merr. This sprawling shrub from tropical Indo-Asia was first planted in 1931 under the synonym <i>L. sambucina</i> . Seedlings were first noted around planted specimens in the Lyon Arboretum 1943 annual report. In our current survey, roughly a dozen seedlings were seen within 100 m of planted specimens. It is surprising that this species has not spread further given that its small berries appear to be attractive to birds. Material examined: O'AHU: Mature, unplanted shrub ca. 3 m tall, growing ca. 10 m off side of road leading to the waterfall, Lyon Arboretum, C. Daehler 1203 (BISH); UH campus Magoon greenhouse facility (cultivated), 16 Oct 1985, J. Lau 1529 (BISH)."

Qsn #	Question	Answer
	<p>USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/. [Accessed 4 Oct 2019]</p>	<p>"Native Asia-Temperate CHINA: China [Guangdong Sheng, Guizhou Sheng, Yunnan Sheng, Guangxi Zhuangzu Zizhiqu, Hainan Sheng] Asia-Tropical INDIAN SUBCONTINENT: Bangladesh, Bhutan, India, [Sikkim, Andhra Pradesh, Assam, Bihar, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Odisha, Punjab, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal, Goa, Mizoram, Arunachal Pradesh] Nepal, Sri Lanka PAPUASIA: Papua New Guinea, Solomon Islands INDO-CHINA: Cambodia, India, [Andaman and Nicobar Islands] Laos, Myanmar, Thailand, Vietnam MALESIA: Indonesia, Malaysia, Philippines, Singapore Australasia AUSTRALIA: Australia [Queensland (n.), Northern Territory (n.)] Pacific SOUTHWESTERN PACIFIC: Fiji, Vanuatu"</p>
	Parker, J. (2019). BIISC Early Detection Botanist. Pers. Comm. 02 Oct	"We found it naturalizing at Akaka Falls SP."

205	Does the species have a history of repeated introductions outside its natural range?	n
	Source(s)	Notes
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"rarely grown in Hawai'i."

301	Naturalized beyond native range	y
	Source(s)	Notes
	Daehler, C. C. & Baker, R. F. 2006. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mānoa Valley, Oʻahu. Bishop Museum Occasional Papers 87: 3-18	"Leeaceae <i>Leea indica</i> (Burm. f.) Merr. This sprawling shrub from tropical Indo-Asia was first planted in 1931 under the synonym <i>L. sambucina</i> . Seedlings were first noted around planted specimens in the Lyon Arboretum 1943 annual report. In our current survey, roughly a dozen seedlings were seen within 100 m of planted specimens. It is surprising that this species has not spread further given that its small berries appear to be attractive to birds. Material examined: OʻAHU: Mature, unplanted shrub ca. 3 m tall, growing ca. 10 m off side of road leading to the waterfall, Lyon Arboretum, C. Daehler 1203 (BISH); UH campus Magoon greenhouse facility (cultivated), 16 Oct 1985, J. Lau 1529 (BISH)."
	Parker, J. (2019). BIISC Early Detection Botanist. Pers. Comm. 02 Oct	"We found it naturalizing at Akaka falls SP."

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes

Qsn #	Question	Answer
	CSIRO. (2010). Australian Tropical Rainforest Plants Edition 6 - <i>Leea indica</i> . http://keys.trin.org.au/ . [Accessed 7 Oct 2019]	[A disturbance-adapted native plant of Australia and other regions] "Occurs in NT, CYP, NEQ and southwards to coastal central Queensland. Altitudinal range from near sea level to 300 m. Grows in disturbed areas of lowland and upland rain forest. Also occurs in Asia, "
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

303	Agricultural/forestry/horticultural weed	
	Source(s)	Notes
	Galinato, M.I., Moody, K. & Piggim, C.M. 1999. Upland rice weeds of south and southeast Asia. International Rice Research Institute, Los Baños, Philippines	"Appendix 4. An inventory of spontaneous and cultivated vegetation occurring in upland rice in South and Southeast Asia." [<i>Leea indica</i> listed as a weed of rice crops in Thailand. Impacts have not been specified]

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 to date

305	Congeneric weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"References: India-W-1977" [Reference cited indicates no evidence of impacts]
	Global Register of Introduced and Invasive Species. (2019). <i>Leea guineense</i> . http://griis.org/ . [Accessed 7 Oct 2019]	Recorded in India and the Seychelles with no evidence of impacts

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. Flora of China. Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[No evidence] "Erect shrubs to small trees. Branchlets terete, longitudinal ridges obtuse, glabrous. Leaves 2- or 3-pinnate, glabrous; stipules broadly obovate, 2.5–4.5 × 2–3.5 cm, apex rounded, glabrous; petiole 13–23 cm, central petiolules 2–5 cm, lateral petiolules shorter, 0.2–0.5 cm, glabrous; leaf axis 14–30 cm, glabrous; leaflets elliptic, elongate elliptic, or elliptic-lanceolate, 6–32 × 2.5–8 cm, base rounded, or rarely broadly cuneate, margin with irregular or slightly regular teeth, teeth sharp, apex acuminate or caudate; lateral veins 6–11 pairs, abaxial veinlets conspicuous but not protruding."

Qsn #	Question	Answer
402	Allelopathic	
	Source(s)	Notes
	Fujii, Y., Parvez, S. S., Parvez, M., Ohmae, Y., & Iida, O. 2003. Screening of 239 medicinal plant species for allelopathic activity using the sandwich method. <i>Weed Biology and Management</i> , 3(4): 233-241	"Table 1. Screening of leaf litter of 239 medicinal plant species under different families using the sandwich method" [Unknown for <i>L. indica</i> . <i>Leea guineense</i> extracts evaluated for allelopathy, but results were not significant]

403	Parasitic	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. <i>Flora of China</i> . Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Erect shrubs to small trees." [No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	Nardelli, F. (2013). The mega-folivorous mammals of the Rainforest: feeding ecology in nature and in a controlled environment: A contribution to their conservation. <i>International Zoo News</i> 60(5): 323-339	[Consumed by Sumatran rhinos] "The four principal species eaten, 44 per cent of the total, are <i>Spondia pinnata</i> , an herbaceous <i>Amomum</i> species, <i>Leea sambucina</i> , and <i>Dillenia excelsa</i> ."
	Chen, J., Deng, X., Zhang, L., & Bai, Z. (2006). Diet composition and foraging ecology of Asian elephants in Shangyong, Xishuangbanna, China. <i>Acta Ecologica Sinica</i> , 26(2): 309-316	[Palatable to Asian elephants] "Some species, such as <i>Spondias pinnata</i> (Anacardiaceae), <i>Microstegium ciliatum</i> (Gramineae), <i>Curculigo capitatum</i> (Hypoxidaceae), and <i>Amomum glabrum</i> (Zingiberaceae) were consumed more during the wet season. On the other hand, other plants such as <i>Castanopsis mekongensis</i> root (Fagaceae), <i>Acacia</i> sp. stem (Mimosaceae), <i>Leea indica</i> (Vitaceae) were consumed more during the dry season"
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	[Palatable to humans] "tender shoots cooked as vegetable, ripe fruits eaten"

405	Toxic to animals	n
	Source(s)	Notes
	Tropical Plants Database, Ken Fern. (2019). <i>Leea indica</i> . http://tropical.theferns.info/viewtropical.php?id=Leea+indica . [Accessed 7 Oct 2019]	"Known Hazards - None known"
	Quattrocchi, U. 2012. <i>CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology</i> . CRC Press, Boca Raton, FL	[No evidence] "tender shoots cooked as vegetable, ripe fruits eaten"

406	Host for recognized pests and pathogens	
	Source(s)	Notes

Qsn #	Question	Answer
	Uji, T. (2001). <i>Leea van Royen</i> ex L.. In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	[Unknown for <i>L. indica</i>] "In Hawaii cultivated <i>Leea guineensis</i> is susceptible to <i>Phytophthora meadii</i> causing leaf spot, blight, defoliation and death of young plants, and <i>Calonectria crotalariae</i> causing collar rot and leaf spot. In France, <i>Phytophthora nicotianae</i> var. <i>nicotiana</i> may cause problems in <i>Leea guineensis</i> ."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Tropical Plants Database, Ken Fern. (2019). <i>Leea indica</i> . http://tropical.theferns.info/viewtropical.php?id=Leea+indica . [Accessed 7 Oct 2019]	"Known Hazards - None known"
	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. Edible and medicinal uses] "Spreading shrub or tree, small tree, ovate or oblong-lanceolate leaflets, greenish white flowers, pinkish black globose fruits, tender shoots cooked as vegetable, ripe fruits eaten, lac plant" ... Used in Ayurveda and Sidha. Whole plant crushed, made into a paste and applied on body to increase disease resistance power in children. Leaves febrifuge, apply as a poultice; for cuts, bleeding wounds, caterpillar itch, skin complaints, pound the leaves and poultice; leaves roasted and applied to head in vertigo. Expectorant, root extract with honey; root paste made along with the roots of <i>Oreocnide integrifolia</i> and <i>Cissus repens</i> given in bubo and boils; to relieve toothache boil the roots of <i>Leea gigantea</i> with the bark of <i>Dracontomelon mangiferum</i> and gargle; root decoction given in colic, diarrhea and chronic dysentery."

408	Creates a fire hazard in natural ecosystems	
	Source(s)	Notes
	Slik, J. F., Bernard, C. S., Van Beek, M., Breman, F. C., & Eichhorn, K. A. (2008). Tree diversity, composition, forest structure and aboveground biomass dynamics after single and repeated fire in a Bornean rain forest. <i>Oecologia</i> , 158 (3), 579–588	"Forest fires remain a devastating phenomenon in the tropics that not only affect forest structure and biodiversity, but also contribute significantly to atmospheric CO ₂ . Fire used to be extremely rare in tropical forests, leaving ample time for forests to regenerate to pre-fire conditions. In recent decades, however, tropical forest fires occur more frequently and at larger spatial scales than they used to. We studied forest structure, tree species diversity, tree species composition, and aboveground biomass during the first 7 years since fire in unburned, once burned and twice burned forest of eastern Borneo to determine the rate of recovery of these forests." [Unknown, but <i>L. indica</i> common in twice-burned forests]
	Steenis, C.G.G.J. van (ed.). (1976). <i>Flora Malesiana</i> . Series I, Spermatophyta: Flowering plants. Volume 7, part 4. Sijthoff & Noordhoff International Publishers, Leiden, The Netherlands	[Unknown, but common in wet areas which may not be naturally fire prone] "Wide-spread and common throughout the area, secondary forest and villages (often coppiced), primary forest, wet areas to ridges up to 1700 m, in the Himalayas ascending to 2500 m."

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes

Qsn #	Question	Answer
	Uji, T. (2001). <i>Leea van Royen ex L.</i> . In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	" <i>Leea</i> can be propagated by stem cuttings, air-layering or by seed. It is best grown in light shade in moderately fertile and freely draining but moisture-retentive soils."
	Oakman, H. 1995. <i>Harry Oakman's what flowers when: the complete guide to flowering times in tropical and subtropical gardens</i> . Univ. of Queensland Press, St. Lucia, Australia	"Is a strong grower, shade tolerant and pest free; native to North Queensland and Asia."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	Uji, T. (2001). <i>Leea van Royen ex L.</i> . In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	"It is best grown in light shade in moderately fertile and freely draining but moisture-retentive soils."
	Flora Fauna Web. (2019). <i>Leea indica</i> . https://www.nparks.gov.sg/florafaunaweb/flora/2/1/2191 . [Accessed 7 Oct 2019]	"Moist Soils, Well-Drained Soils, Saline Soils / Salt Spray, Fertile Loamy Soils, Easy to Grow"
	Tropical Plants Database, Ken Fern. (2019). <i>Leea indica</i> . http://tropical.theferns.info/viewtropical.php?id=Leea+indica . [Accessed 7 Oct 2019]	"Succeeds in full or partial sun, preferring a moist, fertile, well-drained soil"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. <i>Flora of China</i> . Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Erect shrubs to small trees."

412	Forms dense thickets	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. <i>Flora of China</i> . Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Forests, shrublands; 200–1200 m." [No evidence]
	Steenis, C.G.G.J. van (ed.). (1976). <i>Flora Malesiana</i> . Series I, Spermatophyta: Flowering plants. Volume 7, part 4. Sijthoff & Noordhoff International Publishers, Leiden, The Netherlands	"Wide-spread and common throughout the area, secondary forest and villages (often coppiced), primary forest, wet areas to ridges up to 1700 m, in the Himalayas ascending to 2500 m." [No evidence]

501	Aquatic	n
	Source(s)	Notes

Qsn #	Question	Answer
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. Flora of China. Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	[Terrestrial] "Erect shrubs to small trees." ... "Forests, shrublands; 200–1200 m."

502	Grass	n
Source(s)		Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 4 Oct 2019]	Family: Vitaceae Subfamily: Leeoideae Alternate family(ies): Leeaceae

503	Nitrogen fixing woody plant	n
Source(s)		Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2019). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 4 Oct 2019]	Family: Vitaceae Subfamily: Leeoideae Alternate family(ies): Leeaceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
Source(s)		Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. Flora of China. Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Erect shrubs to small trees."

601	Evidence of substantial reproductive failure in native habitat	n
Source(s)		Notes
	Ridsdale, C. E. (1974). A revision of the family Leeaceae. <i>Blumea</i> , 22(1), 57-100	"The genus is centered in Malesia, extending westward to Africa and Madagascar, and eastward to Fiji. The two most common species of secondary vegetation, <i>L. indica</i> and <i>L. guineensis</i> , show the widest distribution and the greatest range of variation."
	Lok, A. F. S. L., Ang, W. F., Ng, B. Y. Q., Suen, S. M., Yeo, C. K., & Tan, H. T. (2011). <i>Leea</i> L.(Vitaceae) of Singapore. <i>Nature in Singapore</i> , 4, 55-71	[No evidence] "This species is very widely distributed, found in India, Sri Lanka, Nepal, Bangladesh, Burma, Thailand, Cambodia, Laos, Vietnam, China, throughout Malesia, and extending east towards New Guinea, north Australia, Solomon Islands, Santa Cruz Island, New Hebrides, and Fiji (Ridsdale, 1974; 1976)."

602	Produces viable seed	y
Source(s)		Notes

Qsn #	Question	Answer
	Lok, A. F. S. L., Ang, W. F., Ng, B. Y. Q., Suen, S. M., Yeo, C. K., & Tan, H. T. (2011). <i>Leea</i> L.(Vitaceae) of Singapore. <i>Nature in Singapore</i> , 4, 55-71	" <i>Leea angulata</i> , <i>Leea indica</i> , and <i>Leea rubra</i> all grow easily from seed."
	Uji, T. (2001). <i>Leea van Royen ex L.</i> . In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): <i>Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2</i> . PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	" <i>Leea</i> can be propagated by stem cuttings, air-layering or by seed."

603	Hybridizes naturally	
	Source(s)	Notes
	Molina, J. E. (2009). <i>Evolution, Pollination Biology, and Biogeography of the Grape Relative Leea</i> (Leeaceae, Vitales). PhD Dissertation. Rutgers University, New Brunswick, New Jersey	[Hybridization may be possible in genus] " <i>Leea asiatica</i> , as circumscribed by Ridsdale (1974, 1980), may be a species complex composed of two distinct morphotypes: <i>L. crispa</i> and <i>L. aspera</i> (Molina, chapter 1). <i>Leea asiatica</i> s. str. (= <i>L. crispa</i> sensu Lawson 1875) is a polyploid (2n=48). It is characterized by petioles and peduncles with crisped wings and acutely serrate leaves that are glabrous above. On the other hand, <i>L. aspera</i> (sensu Lawson 1875) displays the common ploidy level of 2n=24. It differs from <i>L. asiatica</i> s. str. in having leaves with white scattered appressed hairs between nerves and generally crenate-serrate margin (Lawson 1875). I have personally seen intermediates, probably hybrids, which may have prompted Ridsdale (1974) to combine these entities. Detailed cytological and phylogeographic work are needed to resolve this species complex."
	Molina, J. (2009). <i>Floral biology of Philippine morphospecies of the grape relative Leea</i> (Leeaceae). <i>Plant Species Biology</i> , 24(1), 53-60	[No reports of interspecific hybridization] "The two morphospecies of <i>L. indica</i> had synchronous flowering phenologies. It is possible that these two morphospecies hybridize because they share the same pollinator assemblage. The existence of a third white-flowered form of <i>L. indica</i> (not examined in the present study) that is intermediate in height and pubescence between the two studied morphospecies (J. Molina, pers. obs., 2005), within the vicinity of the plot, might be evidence of this possible hybridization."

604	Self-compatible or apomictic	
	Source(s)	Notes

Qsn #	Question	Answer
	Molina, J. (2009). Floral biology of Philippine morphospecies of the grape relative <i>Leea</i> (Leeaceae). <i>Plant Species Biology</i> , 24(1), 53-60	[Possibly yes, but results inconclusive] "I observed the floral biology of three <i>Leea</i> morphospecies in a Philippine natural forest habitat. The red-flowered morphospecies <i>Leea guineensis</i> limits selfing through synchronized dichogamy, with male and female flowers temporally separated in the same inflorescence, whereas the two morphospecies of the white-flowered <i>Leea indica</i> might be prone to geitonogamous selfing." ... "Significantly diminished fruit set in the bagged treatments demonstrates the inability of <i>Leea</i> to be autogamous and its need for insect-mediated pollination, although it is unclear whether it requires insect-mediated selfing, outcrossing or both. Previous flower emasculations by hand to determine <i>Leea</i> 's potential reliance on insect-mediated outcrossing were futile, resulting in aborted flowers the following day (J. Molina, pers. obs., 2005), perhaps because of inadvertent mechanical injury or a lack of pollen gatherers, which might be necessary to progress to the female phase."
	Molina, J. E. (2009). Evolution, Pollination Biology, and Biogeography of the Grape Relative <i>Leea</i> (Leeaceae, Vitales). PhD Dissertation. Rutgers University, New Brunswick, New Jersey	[Possibly] " <i>Leea</i> species are bisexual and bear inflorescences with simultaneously blooming flowers that are possibly self-compatible (J. Molina, unpubl.), making them susceptible to geitonogamy (Hessing 1988)."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Molina, J. (2009). Floral biology of Philippine morphospecies of the grape relative <i>Leea</i> (Leeaceae). <i>Plant Species Biology</i> , 24(1), 53-60	"In addition to bees and flies, <i>Leea</i> is visited by wasps, butterflies, beetles, bugs and spiders." ... "The spider wasp (Fig. 3i) was observed on all three <i>Leea</i> species, comprising 50% of visitations for the glabrous <i>L. indica</i> , but only 9 and 34% for the hairy <i>L. indica</i> and <i>L. guineensis</i> , respectively. The bee, <i>Nomia</i> sp. (L), was also a constant visitor, constituting 40, 4 and 10% of visitations to the hairy <i>L. indica</i> , the glabrous <i>L. indica</i> and <i>L. guineensis</i> , respectively."
	Uji, T. (2001). <i>Leea van Royen ex L.</i> . In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): <i>Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2</i> . PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	"In general flowers of <i>Leea</i> are pollinated by flies and the fruits are dispersed by birds. The inconspicuous, scentless flowers of the greenish-white flowered species are frequented by short tongued bees and sylphids."

606	Reproduction by vegetative fragmentation	
	Source(s)	Notes
	Uji, T. (2001). <i>Leea van Royen ex L.</i> . In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): <i>Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2</i> . PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	" <i>Leea</i> can be propagated by stem cuttings, air-layering or by seed." ... " <i>Leea indica</i> responds well to coppicing." [Unknown. Propagated vegetatively and able to coppice]

Qsn #	Question	Answer
607	Minimum generative time (years)	
	Source(s)	Notes
	Flora Fauna Web. (2019). <i>Leea indica</i> . https://www.nparks.gov.sg/florafaunaweb/flora/2/1/2191 . [Accessed 7 Oct 2019]	"Plant Growth Rate: Moderate"

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Uji, T. (2001). <i>Leea van Royen</i> ex L.. In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	"In general flowers of <i>Leea</i> are pollinated by flies and the fruits are dispersed by birds." [No evidence. No means of external attachment]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"Rock was apparently responsible for introducing this specie to Hawai'i (under the name <i>L. sambucina</i>) from Java."
	Trade Winds Fruit. (2019). <i>Leea indica</i> - Bandicoot Berry. http://www.tradewindsfruit.com/leea-indica--seeds . [Accessed 7 Oct 2019]	[Seeds sold commercially] "10 seeds per pack. A shrub or small tree, native through India and portions of China. It bears large clusters of small red-purple fruits, which are said to be edible. The young shoots are also eaten and the plant has a number of important, traditional medicinal uses. Grows to 6-30 ft / 2-10 m."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. Flora of China. Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Erect shrubs to small trees." ... "Berry 0.8–1 cm in diam., 4–6-seeded." [Small seeded, but no evidence of produce contamination documented]
	Uji, T. (2001). <i>Leea van Royen</i> ex L.. In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	"In general flowers of <i>Leea</i> are pollinated by flies and the fruits are dispersed by birds." [No evidence]

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Steenis, C.G.G.J. van (ed.). (1976). Flora Malesiana. Series I, Spermatophyta: Flowering plants. Volume 7, part 4. Sijthoff & Noordhoff International Publishers, Leiden, The Netherlands	"Fruit 5 -10 (-15) mm Ø, purple-black: seeds usually 6, c. 5 by 4 mm, ruminant out line simple, endosperm simply ruminant." [Fleshy-fruited]

Qsn #	Question	Answer
	Uji, T. (2001). <i>Leea van Royen</i> ex L.. In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	"In general flowers of <i>Leea</i> are pollinated by flies and the fruits are dispersed by birds."

705	Propagules water dispersed	
	Source(s)	Notes
	Uji, T. (2001). <i>Leea van Royen</i> ex L.. In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	"In general flowers of <i>Leea</i> are pollinated by flies and the fruits are dispersed by birds."
	Shahimi, S., Salam, R., Salim, J. M., & Ahmad, A. (2019). Species richness of riparian vegetation after three decades of Kenyir dam establishment. Data in brief, 25, 104045	"Table 1 List of riparian plant species in four different streams at Kenyir hydroelectric dam." [Includes <i>Leea indica</i> . Presence suggests water disperse seeds]

706	Propagules bird dispersed	y
	Source(s)	Notes
	Sritongchuay, T., Gale, G. A., Stewart, A., Kerdkaew, T., & Bumrungsri, S. (2014). Seed rain in abandoned clearings in a lowland evergreen rain forest in southern Thailand. <i>Tropical Conservation Science</i> , 7(3), 572-585	"Appendix 1. Species that were found in seed rain at Khao Pra Bang Khram Wildlife Sanctuary (Krabi, Thailand). Seed dispersing animals were identified from fecal samples. SQ = squirrel; BD = bird; WD = wind; BT = bat; CV = civet." [<i>Leea indica</i> - Dispersal agents = bird]
	Wu, Z. Y., P. H. Raven & D. Y. Hong, eds. 2007. <i>Flora of China</i> . Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis	"Berry 0.8–1 cm in diam., 4–6-seeded."
	Lok, A. F. S. L., Ang, W. F., Ng, B. Y. Q., Suen, S. M., Yeo, C. K., & Tan, H. T. (2011). <i>Leea</i> L. (Vitaceae) of Singapore. <i>Nature in Singapore</i> , 4, 55-71	"Fig. 5. The straw-headed bulbul (<i>Pycnonotus zeylanicus</i>) eating <i>Leea indica</i> fruits. (Photograph by: Chan Wei Luen)."
	Daehler, C. C. & Baker, R. F. 2006. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mānoa Valley, Oahu. <i>Bishop Museum Occasional Papers</i> 87: 3-18	"In our current survey, roughly a dozen seedlings were seen within 100 m of planted specimens. It is surprising that this species has not spread further given that its small berries appear to be attractive to birds."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Steenis, C.G.G.J. van (ed.). (1976). <i>Flora Malesiana</i> . Series I, Spermatophyta: Flowering plants. Volume 7, part 4. Sijthoff & Noordhoff International Publishers, Leiden, The Netherlands	"Fruit 5 -10 (-15) mm Ø, purple-black: seeds usually 6, c. 5 by 4 mm, rumination out line simple, endosperm simply ruminant." [No means of external attachment]

708	Propagules survive passage through the gut	y
	Source(s)	Notes

Qsn #	Question	Answer
	Uji, T. (2001). <i>Leea van Royen</i> ex L.. In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	"In general flowers of <i>Leea</i> are pollinated by flies and the fruits are dispersed by birds." [Presumably yes]

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Steenis, C.G.G.J. van (ed.). (1976). <i>Flora Malesiana</i> . Series I, Spermatophyta: Flowering plants. Volume 7, part 4. Sijthoff & Noordhoff International Publishers, Leiden, The Netherlands	"Fruit 5 -10 (-15) mm Ø, purple-black: seeds usually 6, c. 5 by 4 mm, rumination out line simple, endosperm simply ruminant." [Densities unknown]

802	Evidence that a persistent propagule bank is formed (>1 yr)	n
	Source(s)	Notes
	Baskin, C.C. & Baskin, J.M. 2014. <i>Seeds Ecology, Biogeography, and Evolution of Dormancy and Germination</i> . Second Edition. Academic Press, San Francisco, CA	"TABLE 9.1 Dormancy class or nondormancy (D/ND) in seeds of nonpioneer trees of evergreen rainforests." [<i>Leea indica</i> - ND = Nondormant. Seeds germinate within about 4 wk after beginning of incubation]

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. (2019). Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Uji, T. (2001). <i>Leea van Royen</i> ex L.. In: van Valkenburg, J.L.C.H. and Bunyapraphatsara, N. (Editors): Plant Resources of South-East Asia No 12(2): Medicinal and poisonous plants 2. PROSEA Foundation, Bogor, Indonesia. prota4u.org/prosea	" <i>Leea</i> grown as ornamental can be pruned to shape. <i>Leea indica</i> responds well to coppicing."
	Steenis, C.G.G.J. van (ed.). (1976). <i>Flora Malesiana</i> . Series I, Spermatophyta: Flowering plants. Volume 7, part 4. Sijthoff & Noordhoff International Publishers, Leiden, The Netherlands	[Often coppiced] "Ecol. Wide-spread and common throughout the area, secondary forest and villages (often coppiced), primary forest, wet areas to ridges up to 1700 m, in the Himalayas ascending to 2500 m."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes

Qsn #	Question	Answer
	<p>Daehler, C. C. & Baker, R. F. 2006. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mānoa Valley, O‘ahu. Bishop Museum Occasional Papers 87: 3-18</p>	<p>[Unknown] "Leeaceae <i>Leea indica</i> (Burm. f.) Merr. This sprawling shrub from tropical Indo-Asia was first planted in 1931 under the synonym <i>L. sambucina</i>. Seedlings were first noted around planted specimens in the Lyon Arboretum 1943 annual report. In our current survey, roughly a dozen seedlings were seen within 100 m of planted specimens. It is surprising that this species has not spread further given that its small berries appear to be attractive to birds. Material examined: O‘AHU: Mature, unplanted shrub ca. 3 m tall, growing ca. 10 m off side of road leading to the waterfall, Lyon Arboretum, C. Daehler 1203 (BISH); UH campus Magoon greenhouse facility (cultivated), 16 Oct 1985, J. Lau 1529 (BISH)."</p>

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Naturalized on Oahu and Hawaii (Hawaiian Islands)
- Reported as a weed of rice crops in Thailand (but impacts unspecified)
- Shade tolerant
- Reproduces by seeds
- Potentially self-compatible
- Seeds dispersed by birds, other animals, and intentionally by people
- Able to coppice and resprout after cutting

Low Risk Traits

- Unarmed (no spines, thorns, or burrs)
- Palatable to browsing animals
- Edible and medicinal uses

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> Yes. Shade tolerant

(B) Bird or clearly wind-dispersed?> Yes. Dispersed by birds

(C) Life cycle <4 years? Unknown

Outcome = Evaluate further