Taxon: Licuala distans Ridl. **Family:** Arecaceae

Common Name(s): paw si tip (Thailand) **Synonym(s):**

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 9 Sep 2020

WRA Score: **0.0** **Designation:** L **Rating:** Low Risk

Keywords: Tropical Palm, Solitary Trunk, Spiny Petiole, Shade-Tolerant, Fleshy-Fruited

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	?
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	y
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
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	n

Qsn #	Question	Answer Option	Answer
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	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	n
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
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**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	[No evidence of domestication] "DISTRIBUTION. Endemic to Peninsular Thailand, only recorded between 8° - 10° N latitude."

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**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"DISTRIBUTION. Endemic to Peninsular Thailand, only recorded between 8° - 10° N latitude."

202	**Quality of climate match data**	**High**
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	

Qsn #	Question	Answer
203	**Broad climate suitability (environmental versatility)**	**n**
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"DISTRIBUTION. Endemic to Peninsular Thailand, only recorded between 8° - 10° N latitude."
	Dave's Garden. (2020). Licuala Species, Palm - Licuala distans. https://davesgarden.com/guides/pf/go/60846/. [Accessed 8 Sep 2020]	"Hardiness: USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	Henderson, A. 2009. Palms of Southern Asia. Princeton University Press, Princeton, NJ	"Range and habitat. Thailand (Peninsular) and probably Myanmar (Tanintharyi); lowland rain forest to850 m elevation. Uses. None recorded. Notes. Endemic to the west coast of central Peninsular Thailand."

204	**Native or naturalized in regions with tropical or subtropical climates**	**y**
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"DISTRIBUTION. Endemic to Peninsular Thailand, only recorded between 8° - 10° N latitude."

205	**Does the species have a history of repeated introductions outside its natural range?**	**?**
	Source(s)	**Notes**
	Dave's Garden. (2020). Licuala Species, Palm - Licuala distans. https://davesgarden.com/guides/pf/go/60846/. [Accessed 8 Sep 2020]	"On Dec 9, 2003, palmbob from Acton, CA (Zone 8b) wrote: This is one of the few palms I have seen in the wild (Thailand) and it was an impressive sight. It has long, spiny petioles topped off with circular, deeply split leaves. It is relatively newly described yet already in cultivation due to its heavy seed collection over the last 6-7 years."

301	**Naturalized beyond native range**	**n**
	Source(s)	**Notes**
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	Licuala spinose is the only species reported to be naturalized in the Hawaiian Islands (Oahu)
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	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

303	**Agricultural/forestry/horticultural weed**	**n**

Qsn #	Question	Answer
	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	
	Source(s)	**Notes**
	Dawson, W., Mndolwa, A. S., Burslem, D. F., & Hulme, P. E. (2008). Assessing the risks of plant invasions arising from collections in tropical botanical gardens. Biodiversity and Conservation, 17(8): 1979-1995	"Table 3 Regenerating species with known planting history in ABG" [Licuala peltata Roxb. ex Buch.-Ham. - Location found is indicated—P = found in plantation compartments originally planted only]
	Lau, A. and Frohlich, D. 2012. New plant records from O'ahu for 2009. Bishop Museum Occasional Papers 113: 7-26	[L. spinosa naturalized] "Licuala spinosa Wurmb New naturalized record This species, native to indonesia, is a clump forming fan palm to 10 feet tall with fronds more or less circular in outline. It looks similar to the more common Licuala grandis but differs in having its fronds divided nearly to the base. This species was first collected in Hawai'i from Foster Botanical Garden in 1949. it was noted here very sparingly naturalized sprouting from a hedged row of adventive and naturalized Tabebuia heterophylla saplings, as well as other naturalized species and garden escapes near Foster Botanical Garden (Henderson 2009; Hodel 2009)."
	Meyer, J. Y., Lavergne, C., & Hodel, D. R. 2008. Time bombs in gardens: invasive ornamental palms in tropical islands, with emphasis on French Polynesia (Pacific Ocean) and the Mascarenes (Indian Ocean). Palms, 52(2): 71-83	[Potentially Licuala grandis] "In 1999, Meyer officially advised the Department of the Environment of French Polynesia to ban introduction of Licuala grandis, Washingtonia spp. and Elaeis guineensis." [Recommended ban due to potential negative ecological impacts]
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	Licuala grandis, Licuala peltate & Licuala spinose listed as naturalized or potentially weedy in certain locations. Evidence of impacts has not been verified

401	Produces spines, thorns or burrs	y
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"Solitary palm 3 - 5 m tall. Stem about 5.5 - 7 cm diam. Leaves 15 - 20 in crown, armed petiole bases persistent; leaf sheaths 120 - 130 cm long, dark brown, glabrous, extended about 70 cm above petiole insertion in a chartaceous, light brown, glabrous ocrea; petiole up to 2.3 m long, basal 60 - 70 cm armed with flattened, more or less recurved triangular spines, black at the apices, inserted 1.5 - 2.0 cm apart, mostly evenly sized, the basal ones 7 - 8 mm long (leaving marks on the ocrea), unarmed part of petiole greenish brown with scattered ramenta, 6 - 8 mm diam. below the insertion of blade."

402	Allelopathic	

Qsn #	Question	Answer
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"Solitary palm 3 - 5 m tall." [Arecaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown. Fruit presumably eaten by frugivores, but palatability of foliage unknown

405	Toxic to animals	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

406	Host for recognized pests and pathogens	
	Source(s)	**Notes**
	WRA Specialist. (2020). 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

Qsn #	Question	Answer
408	**Creates a fire hazard in natural ecosystems**	**n**
	Source(s)	**Notes**
	Henderson, A. 2009. Palms of Southern Asia. Princeton University Press, Princeton, NJ	"lowland rain forest to 850 m elevation." [No evidence. A palm of wet habitats]
	Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia	[No evidence] "Endemic to Thailand, this beautiful palm inhabits the undergrowth of moist rainforest."

409	**Is a shade tolerant plant at some stage of its life cycle**	**y**
	Source(s)	**Notes**
	Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia	"Endemic to Thailand, this beautiful palm inhabits the undergrowth of moist rainforest." … "In cultivation it requires a shaded location with adequate moisture, preferring a humid tropical climate, and makes an attractive potted specimen for a sheltered position."

410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**n**
	Source(s)	**Notes**
	Dave's Garden. (2020). Licuala Species, Palm - Licuala distans. https://davesgarden.com/guides/pf/go/60846/. [Accessed 9 Sep 2020]	"Soil pH requirements: 6.6 to 7.5 (neutral)"
	Henderson, A. 2009. Palms of Southern Asia. Princeton University Press, Princeton, NJ	[Limestone soils] "Although many of the palm species in Peninsular Thailand are Malaysian species that reach their northern limit in southern Thailand, there also appears to be a center of endemism in the central part of Peninsular Thailand and southern Myanmar. Such species as Calamus platyspathus, Caryota kiriwongensis, Iguanura tenuis, Kerriodoxa elegans, Licuala distans, L. merguensis, Pinanga fractifl exa, P. wataniana, and Wallichia marianneae are all restricted to this area, mostly on the western side of the peninsula, possibly associated with limestone soils."

411	**Climbing or smothering growth habit**	**n**
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"Solitary palm 3 - 5 m tall."

412	**Forms dense thickets**	**n**
	Source(s)	**Notes**
	Barfod, A. S., Burholt, T., & Borchsenius, F. (2003). Contrasting pollination modes in three species of Licuala (Arecaceae: Coryphoideae). Telopea, 10(1), 207-223	[Locally common, but no description of thicket or dense stand formation] "Licuala distans Ridl. (subgenus Libericula) is a solitary palm restricted to the peninsular part of Thailand from Ranong in the north to Krabi in the south. It occurs in hill dipterocarp forest where it is locally very common, especially on ridges."

Qsn #	Question	Answer
	Henderson, A. 2009. Palms of Southern Asia. Princeton University Press, Princeton, NJ	[No evidence] "Range and habitat. Thailand (Peninsular) and probably Myanmar (Tanintharyi); lowland rain forest to 850 m elevation. Uses. None recorded. Notes. Endemic to the west coast of central Peninsular Thailand."

501	Aquatic	n
	Source(s)	**Notes**
	Quattrocchi, U. (2017). CRC World Dictionary of Palms: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[Terrestrial] "in wet forests, low mountainous rain forest, hill dipterocarp forest"

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 8 Sep 2020]	Family: Arecaceae Subfamily: Coryphoideae Tribe: Trachycarpeae Subtribe: Livistoninae

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 8 Sep 2020]	Family: Arecaceae Subfamily: Coryphoideae Tribe: Trachycarpeae Subtribe: Livistoninae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Quattrocchi, U. (2017). CRC World Dictionary of Palms: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Solitary-trunked, understory, moderate, ringed, slender, protandrous, covered with old persistent deeply split leaf sheaths, large spreading crown of deep green spreading palmate leaves finely divided into up to 35 segments, blade orbicular, conspicuous ocrea, petiole basally armed with triangular dark thorns, wedge-shaped segments folded two to three times, segment tip oblique and deeply indented, interfoliar inflorescences long-arching and drooping below the leaves, partial inflorescences branched with up to five stiff pendent rachillae"

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

Qsn #	Question	Answer
	Barfod, A. S., Burholt, T., & Borchsenius, F. (2003). Contrasting pollination modes in three species of Licuala (Arecaceae: Coryphoideae). Telopea, 10(1), 207-223	[No evidence] "Licuala distans Ridl. (subgenus Libericula) is a solitary palm restricted to the peninsular part of Thailand from Ranong in the north to Krabi in the south. It occurs in hill dipterocarp forest where it is locally very common, especially on ridges."

602	Produces viable seed	y
	Source(s)	**Notes**
	Dave's Garden. (2020). Licuala Species, Palm - Licuala distans. https://davesgarden.com/guides/pf/go/60846/. [Accessed 8 Sep 2020]	"On Dec 9, 2003, palmbob from Acton, CA (Zone 8b) wrote: This is one of the few palms I have seen in the wild (Thailand) and it was an impressive sight. It has long, spiny petioles topped off with circular, deeply split leaves. It is relatively newly described yet already in cultivation due to its heavy seed collection over the last 6-7 years."
	Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia	"The mature fruits are red and seeds germinate in 4 to 6 months.

603	Hybridizes naturally	
	Source(s)	**Notes**
	Miyamoto, J., Nakayama, M., Watanabe, N. M., & Suzuki, E. (2006). Genetic and morphological variation in Licuala paludosa Griff. and the related taxa in the Tasek Merimbun Heritage Park, Borneo. Tropics, 15(2), 237-243	[Possible hybrid suspected in genus] "Further study is needed to clarify whether the third group represents an independent species, or a hybrid between L. paludosa and L. bruneiana."
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	
	Source(s)	**Notes**
	Barfod, A. S., Burholt, T., & Borchsenius, F. (2003). Contrasting pollination modes in three species of Licuala (Arecaceae: Coryphoideae). Telopea, 10(1), 207-223	[Unknown. Related species potentially self-compatible] "Rachillae bagged with nets impenetrable to insects (6 rachillae with a total of 187 flowers) showed a fruiting success of 3.4%, comparable with that of unbagged inflorescences from adjacent palms growing in shady conditions (5.5%; 2 rachillae with a total of 145 flowers). Licuala spinosa is thus potentially self-compatible."

605	Requires specialist pollinators	n
	Source(s)	**Notes**
	Quattrocchi, U. (2017). CRC World Dictionary of Palms: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	[Insect pollinated] "Ornamental, producing large amounts of nectar. Licuala spinosa, Licuala peltata and Licuala distans visited by flies, bees, wasps, ants, beetles, spiders, moths and birds, calliphorid and tachinid flies, halictid and Trigona bees, and eumenid wasps are the suggested pollinators. Probably pollinated by bees, mostly stingless Trigona spp. and also Apis. Species of Trigona bees collected in the flowers of Licuala distans and Licuala peltata had high pollen loads. They were present during anthesis and the receptive phase of the flowers and are probably responsible for pollination."

606	Reproduction by vegetative fragmentation	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"Solitary palm 3 - 5 m tall." [No evidence]

607	Minimum generative time (years)	
	Source(s)	**Notes**
	WRA Specialist. (2020). Personal Communication	Unknown

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	**Notes**
	Henderson, A. 2009. Palms of Southern Asia. Princeton University Press, Princeton, NJ	"fruits ovoid, to 1.7 cm long and 1.2 cm diameter, pink, the petals remaining erect as the fruits develop." [No evidence. Single-seeded fruit lack means of external attachment]

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**
	Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia	"In cultivation it requires a shaded location with adequate moisture, preferring a humid tropical climate, and makes an attractive potted specimen for a sheltered position."
	Dave's Garden. (2020). Licuala Species, Palm - Licuala distans. https://davesgarden.com/guides/pf/go/60846/. [Accessed 8 Sep 2020]	"On Dec 9, 2003, palmbob from Acton, CA (Zone 8b) wrote: This is one of the few palms I have seen in the wild (Thailand) and it was an impressive sight. It has long, spiny petioles topped off with circular, deeply split leaves. It is relatively newly described yet already in cultivation due to its heavy seed collection over the last 6-7 years."
	Quattrocchi, U. (2017). CRC World Dictionary of Palms: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	"Ornamental, producing large amounts of nectar."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	[No Evidence] "The one-seeded fruits ripen from green to red. They are globose and less than 1 cm in diam." [Genus description] "Fruit 1.5 - 1. 7 x 1 - 1.2 cm, ovoid" [Species description. Adapted for animal dispersal and unlikely to become a produce contaminant]

704	Propagules adapted to wind dispersal	n
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"The one-seeded fruits ripen from green to red. They are globose and less than 1 cm in diam." [Genus description] "Fruit 1.5 - 1. 7 x 1 - 1.2 cm, ovoid" [Species description. Adapted for animal dispersal and unlikely to become a produce contaminant]

Qsn #	Question	Answer
705	**Propagules water dispersed**	**n**
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	[No Evidence] "The one-seeded fruits ripen from green to red. They are globose and less than 1 cm in diam." [Genus description] "Fruit 1.5 - 1. 7 x 1 - 1.2 cm, ovoid" [Species description. Although fruits may potentially float, adaptation is for vertebrate (i.e. bird & bat) dispersal. Species also not described as riparian]

706	Propagules bird dispersed	y
	Source(s)	**Notes**
	Dennis, A.J., Schupp, E.W., Green, R.A. & Westcott, D.A. (eds.). (2007). Seed Dispersal: Theory and its Application in a Changing World. CABI, Wallingford, UK	"Appendix 1. List of plant genera with mean seed dimensions, including length (L), width (W) and roundness (R) and number of species known to be consumed and dispersed by frugivores in four rain forests on different continents (N)." [Includes genus Licuala. Presumably bird dispersed or dispersed by other frugivorous animals]
	Henderson, A. 2009. Palms of Southern Asia. Princeton University Press, Princeton, NJ	"fruits ovoid, to 1.7 cm long and 1.2 cm diameter, pink" [Presumably yes]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	**Notes**
	Henderson, A. 2009. Palms of Southern Asia. Princeton University Press, Princeton, NJ	"fruits ovoid, to 1.7 cm long and 1.2 cm diameter, pink, the petals remaining erect as the fruits develop." [No evidence. Single-seeded fruit lack means of external attachment]

708	Propagules survive passage through the gut	y
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"Fruit 1.5 - 1. 7 x 1 - 1.2 cm, ovoid." [Presumably adapted for internal animal dispersal. Seeds might also be spit out after pulp removal by frugivorous animals]

801	Prolific seed production (>1000/m2)	
	Source(s)	**Notes**
	Barfod, A. S., & Guan, S. L. (2002). The genus Licuala (Arecaceae, Coryphoideae) in Thailand. Kew Bulletin, 57 (4): 827-852	"flowers up to c. 130 on longest rachillae," ... "Fruit 1.5 - 1. 7 x 1 - 1.2 cm, ovoid." [Unknown, but possibly no due to single-seeded fruit]

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	**Notes**
	Ellison, D. & Ellison, A. 2001. Cultivated Palms of the World. UNSW Press, Sydney, Australia	"The mature fruits are red and seeds germinate in 4 to 6 months."

803	Well controlled by herbicides	

Qsn #	Question	Answer
	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

Summary of Risk Traits:

High Risk / Undesirable Traits
• Thrives in tropical climates
• Spiny petioles
• Shade Tolerant
• Tolerates many soil types
• Reproduces by seeds
• Seed dispersed by frugivorous animals and people

Low Risk Traits
• No reports of invasiveness or naturalization, but limited evidence of widespread introduction outside native range
• Non-toxic
• Not reported to spread vegetatively