

Family: *Arecaceae*

Taxon: *Pinanga coronata*

Synonym: *Common Name* Ivory Cane Palm

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation: EVALUATE
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score 2
101	Is the species highly domesticated?		y=-3, n=0	n
102	Has the species become naturalized where grown?		y=1, n=-1	
103	Does the species have weedy races?		y=1, n=-1	
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"		(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data		(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)		y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates		y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?		y=-2, ?=-1, n=0	y
301	Naturalized beyond native range		y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed		n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed		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		y=1, n=0	n
403	Parasitic		y=1, n=0	n
404	Unpalatable to grazing animals		y=1, n=-1	
405	Toxic to animals		y=1, n=0	n
406	Host for recognized pests and pathogens		y=1, n=0	
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
411	Climbing or smothering growth habit		y=1, n=0	n

412	Forms dense thickets	y=1, n=0	y
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	
605	Requires specialist pollinators	y=-1, n=0	y
606	Reproduction by vegetative fragmentation	y=1, n=-1	
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	>3
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	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)	y=1, n=-1	n
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: EVALUATE

WRA Score 2

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**Supporting Data:**

101	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No evidence
101	2010. O'Connor, D.. Palms: <i>Pinanga coronata</i> . PACSOA (Palm and Cycad Society of Australia), <a href="http://www.pacsoa.org.au/palms/Pinanga/coronata.html">http://www.pacsoa.org.au/palms/Pinanga/coronata.html</a>	Previously split into 2 species, ( <i>P. kuhli</i> being the other), it is now thought to be just a highly variable single species. <i>P. kuhli</i> is the form found in the lower elevations, whilst <i>P. coronata</i> is found at higher altitudes.
201	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	Native to the Indonesian islands of Java & Sumatra, this beautiful palm grows in the understory of humid rainforests.
202	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	Native to the Indonesian islands of Java & Sumatra, this beautiful palm grows in the understory of humid rainforests.
203	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	It is also intolerant of cold & is adaptable only to zones 10b & 11.
204	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	Native to the Indonesian islands of Java & Sumatra, this beautiful palm grows in the understory of humid rainforests.
205	2008. Meyer, J-Y./Lavergne, C./Hodel, D. R.. Time Bombs in Gardens: Invasive Ornamental Palms in Tropical Islands, with Emphasis on French Polynesia (Pacific Ocean) and the Mascarenes (Indian Ocean). <i>Palms</i> . 52: 71-83.	Another species, <i>Pinanga coronata</i> , from Indonesia & introduced around 1980, may pose a threat because seedlings & saplings have been observed in the JBHS & in nearby private gardens. It has naturalized in similar wet habitats in Fiji (Hodel, pers. Obs.),
205	2010. Dave's Garden. PlantFiles: Kuhl's Palm, Ivory Cane Palm. Dave's Garden, <a href="http://davesgarden.com/guides/pf/go/59752/">http://davesgarden.com/guides/pf/go/59752/</a>	This plant has been said to grow in the following regions: California, Florida, Hawaii.
301	2006. Daehler, C. C./Baker, R. F.. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mānoa Valley, O'ahu. Bishop Museum Occasional Papers. 87: 3-18.	1st noted as volunteering in the Lyon Arboretum 1934 annual report. Very dense seedling thickets are common around planted specimens. >50 mature, naturalized plants were seen scattered throughout the Arboretum, including in unmanaged <i>Ardisia elliptica</i> forest on the upper slopes of Mānoa Valley. 2nd & perhaps 3rd-generation seedlings were also seen in the vicinity of these naturalized plants.
301	2008. Meyer, J-Y./Lavergne, C./Hodel, D. R.. Time Bombs in Gardens: Invasive Ornamental Palms in Tropical Islands, with Emphasis on French Polynesia (Pacific Ocean) and the Mascarenes (Indian Ocean). <i>Palms</i> . 52: 71-83.	Another species, <i>Pinanga coronata</i> , from Indonesia and introduced around 1980, may pose a threat because seedlings & saplings have been observed in the JBHS & in nearby private gardens. It has naturalized in similar wet habitats in Fiji (Hodel, pers. Obs.),
302	2006. Thomson, L. A. J.. Review of National Biodiversity Strategy and Action Plans for Fiji and Niue With reference to treatment of forest biodiversity, Especially forest genetic resources. (SPRIG 2 Milestone 59). Pacific Regional Environment Programme	It is strongly recommended that a program be implemented in Fiji to eradicate & control the spread of serious exotic invasives including African tulip tree ( <i>Spathodium campanulatum</i> ) & emerging serious invasives such as the ivory cane palm ( <i>Pinanga coronata</i> ), [invasive, with potential in Fiji to become an environmental weed]
302	2006. Wong, M.. Palms for Hawaii Landscapes. Landscape. L-19: .College of Tropical Agriculture and Human Resources, Honolulu, HI <a href="http://scholarspace.manoa.hawaii.edu/bitstream/10125/12320/1/L-19.pdf">http://scholarspace.manoa.hawaii.edu/bitstream/10125/12320/1/L-19.pdf</a>	Invasive species Recent increased awareness of the dangers invasive plants can pose to native Hawaiian ecosystems has resulted in evaluation of the invasiveness of plants used in landscaping. Based on conversations with experts on palms and invasive species, the following species should be avoided: [Includes <i>Pinanga kuhlii</i> , potential to form thickets & possibly compete]
303	2007. Randall, R.P.. Global Compendium of Weeds. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	No evidence (but see Meyer et al. 2008)
304	2007. Randall, R.P.. Global Compendium of Weeds. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	No evidence (but see Meyer et al. 2008)
305	2007. Randall, R.P.. Global Compendium of Weeds. <a href="http://www.hear.org/gcw/">http://www.hear.org/gcw/</a>	No evidence (but see Meyer et al. 2008)
401	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No spines, thorns, or burrs.
402	2002. Kimura, M./Simbolon, H.. Allometry and life history of a forest understory palm <i>Pinanga coronata</i> (Arecaceae) on Mount Halimun, West Java. <i>Ecological Research</i> . 17: 323-338.	No evidence of allelopathy
403	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Not parasitic
404	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Unknown palatability

405	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No evidence of toxicity to animals in genus
406	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Unknown
407	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No evidence of toxicity to humans
408	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	Native to the Indonesian islands of Java & Sumatra, this beautiful palm grows in the understory of humid rainforests. [no evidence, & unlikely given rainforest habitat]
409	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The species does not tolerate full sun, esp. in hot climates...comfortable only in partially shaded sites...
410	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	It needs constant & abundant moisture & a rich, but fast-draining soil.
411	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	It is a small to medium, variable clumping palm with slender trunks & yellowish crownshafts.
412	2002. Kimura, M./Simbolon, H.. Allometry and life history of a forest understory palm <i>Pinanga coronata</i> (Arecaceae) on Mount Halimun, West Java. Ecological Research. 17: 323-338.	produces many sprouting shoots and forms clumps.
412	2008. Meyer, J-Y./Lavergne, C./Hodel, D. R.. Time Bombs in Gardens: Invasive Ornamental Palms in Tropical Islands, with Emphasis on French Polynesia (Pacific Ocean) and the Mascarenes (Indian Ocean). Palms. 52: 71-83.	Dense stands of this palm species are observed in the Lyon Arboretum in Hawaii
501	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Terrestrial
502	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Arecaceae
503	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Arecaceae (not nitrogen fixing)
504	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	It is a small to medium, variable clumping palm with slender trunks & yellowish crownshafts. [not a geophyte]
601	2002. Kimura, M./Simbolon, H.. Allometry and life history of a forest understory palm <i>Pinanga coronata</i> (Arecaceae) on Mount Halimun, West Java. Ecological Research. 17: 323-338.	No evidence of substantial reproductive failure in native habitat
602	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	Fresh seed germinates in 2 to 3 months with bottom heat.
602	2008. Riffle, R. L.. Timber Press Pocket Guide to Palms. Timber Press, Portland, OR.	Seed germination: easy in a warm, moist medium; within one month.
603	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Unknown [no information pro or con]
604	1986. Henderson, A.. A Review of Pollination Studies in the Palmae. Botanical Review. 52: 221-259.	Unknown for <i>Pinanag</i> spp.
605	1986. Henderson, A.. A Review of Pollination Studies in the Palmae. Botanical Review. 52: 221-259.	Throughout pistillate & staminate anthesis nitidulid & curculionid beetles were present on the inflorescences... The closely related <i>Nenga</i> & <i>Pinanga</i> may both be beetle pollinated.
606	2002. Kimura, M./Simbolon, H.. Allometry and life history of a forest understory palm <i>Pinanga coronata</i> (Arecaceae) on Mount Halimun, West Java. Ecological Research. 17: 323-338.	The palm also produced clonal sprouting shoots & formed small clumps. Each clump contained an average of 7.5 shoots. [clump forming, but unknown how far from parten shoots can develop]
607	2003. Webshots. <i>Pinanga coronata</i> . American Greetings, <a href="http://outdoors.webshots.com/photo/1088877025049191173EHcOTA">http://outdoors.webshots.com/photo/1088877025049191173EHcOTA</a>	"These are 3 P. <i>Coronata</i> that I grew from seed. They are about 2 years old now and been in the ground under other plants for about 1 year." [Comment from grower; 2 year old plants <1 m tall; reproductive maturity likely 4+ years]
607	2008. Riffle, R. L.. Timber Press Pocket Guide to Palms. Timber Press, Portland, OR.	Growth rate medium [age to first flower unknown; probably at least 4+ years]
701	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are ovoid, 0.5 inch long, & jet black when ripe. [no means of external attachment]

702	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	It makes a beautiful small hedge or wall in semishady sites & is a near perfect accent in borders [ornamental]
703	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are ovoid, 0.5 inch long, & jet black when ripe. [no evidence, & seeds relatively large]
704	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are ovoid, 0.5 inch long, & jet black when ripe. [fleshy-fruited]
705	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are ovoid, 0.5 inch long, & jet black when ripe. [no evidence]
706	2002. Kimura, M./Simbolon, H.. Allometry and life history of a forest understory palm <i>Pinanga coronata</i> (Arecaceae) on Mount Halimun, West Java. <i>Ecological Research</i> . 17: 323-338.	Ridley (1930) noted that it is highly likely that birds & fruit-bats eat the fruits of <i>Pinanga</i> due to their size & color.
706	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are ovoid, 0.5 inch long, & jet black when ripe. [fleshy-fruited]
707	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are ovoid, 0.5 inch long, & jet black when ripe. [no means of external attachment; adapted for consumption & internal dispersal]
708	2002. Kimura, M./Simbolon, H.. Allometry and life history of a forest understory palm <i>Pinanga coronata</i> (Arecaceae) on Mount Halimun, West Java. <i>Ecological Research</i> . 17: 323-338.	The seedlings on the ridges were probably germinated from the feces of frugivorous animals. Bartels (1964) studied the food preference & feeding habits of a common palm civet, <i>Paradoxurus hermaphroditus javanicum</i> Horsfield, in West Java. His intensive study found that the fruits of <i>P. coronata</i> were one of the major foods of palm civets, & he confirmed seedling germination from old droppings.
801	2002. Kimura, M./Simbolon, H.. Allometry and life history of a forest understory palm <i>Pinanga coronata</i> (Arecaceae) on Mount Halimun, West Java. <i>Ecological Research</i> . 17: 323-338.	Based on the counts of the scars of abandoned female flowers, the total number of female flowers produced was estimated to be 730.4 (SD = 457.9). Fruit set of inflorescence ranged from 34.8% to 77.0%. [although able to produce large #s of fruit, seeds are still relatively large & unlikely to achieve such high densities]
802	2010. Dave's Garden. PlantFiles: Kuhl's Palm, Ivory Cane Palm. Dave's Garden, <a href="http://davesgarden.com/guides/pf/go/59752/">http://davesgarden.com/guides/pf/go/59752/</a>	Seed does not store well; sow as soon as possible.
803	2010. WRA Specialist. Personal Communication.	Unknown [no information found on control of <i>Pinanga</i> spp.]
804	2010. WRA Specialist. Personal Communication.	Unknown whether <i>Pinanga coronata</i> tolerates, or benefits from, mutilation, cultivation, or fire
805	2010. WRA Specialist. Personal Communication.	Unknown if effective natural enemies present locally