

Key Words: Low Risk, Ornamental Palm, Solitary trunk, Thicket-forming, Fleshy-fruit

Family: *Areaceae*

Taxon: *Satakentia liukuensis*

Synonym: *Gulubia liukuensis* Hatus.

Common Name: satake palm

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation: L
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	<b>WRA Score -2</b>
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	n
302	Garden/amenity/disturbance weed		n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed		n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed		n=0, y = 1*multiplier (see Appendix 2)	n
401	Produces spines, thorns or burrs		y=1, n=0	n
402	Allelopathic		y=1, n=0	
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	
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	n
604	Self-compatible or apomictic	y=1, n=-1	
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	n
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	
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	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	
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: L

WRA Score -2

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**Supporting Data:**

101	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Is the species highly domesticated? No evidence]
102	2012. WRA Specialist. Personal Communication.	NA
103	2012. WRA Specialist. Personal Communication.	NA
201	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Species suited to tropical or subtropical climate(s) 2-High] "Ryukyu Islands" [At approximately 26° latitude, sub-tropical]
202	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Quality of climate match data 2-High]
203	2012. Dave's Gardern. PlantFiles: Satake Palm - Satakentia liukiensis. <a href="http://davesgarden.com/guides/pf/go/67269/">http://davesgarden.com/guides/pf/go/67269/</a> [Accessed 27 Dec 2012]	[Broad climate suitability (environmental versatility)? No] "Hardiness: USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)" ... "VERY marginal in zone 10a! Does much better in the tropics."
204	2012. PACSOA. Palms: Satakentia liukiensis. Palm and Cycad Society of Australia, <a href="http://www.pacsoa.org.au/palms/Satakentia/liukiensis.html">http://www.pacsoa.org.au/palms/Satakentia/liukiensis.html</a> [Accessed 27 Dec 2012]	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Open forest on Ryukyu Islands, Japan." [Sub-tropical]
205	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	[Does the species have a history of repeated introductions outside its natural range? Yes] "...is now a popular landscaping palm."
205	2012. Dave's Gardern. PlantFiles: Satake Palm - Satakentia liukiensis. <a href="http://davesgarden.com/guides/pf/go/67269/">http://davesgarden.com/guides/pf/go/67269/</a> [Accessed 27 Dec 2012]	[Does the species have a history of repeated introductions outside its natural range? Florida] "This plant has been said to grow in the following regions: Big Pine Key, Florida Boca Del Mar, Florida Boca Raton, Florida Cape Coral, Florida Cutler Ridge, Florida Kendall, Florida Lake Worth, Florida"
301	2009. Chong, K.Y./Tan, H.T.W./Corlett, R.T.. A Checklist of the Total Vascular Plant Flora of Singapore: Native, Naturalized and Cultivated Species. Raffles Museum of Biodiversity Research, National University of Singapore, Singapore	[Naturalized beyond native range? Not Singapore] "Satakentia liukiensis (Hatus.) H.E. Moore; tree; exotic; cultivated only"
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No evidence]
301	2012. Wagner, W.L./Herbst, D.R./Khan, N./Flynn, T.. Hawaiian Vascular Plant Updates: A Supplement to the Manual of the Flowering Plants of Hawai'i & Hawai'i's Ferns & Fern Allies. <a href="http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/supplement.htm">http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/supplement.htm</a>	[Naturalized beyond native range? No evidence]
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No evidence]
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No evidence]
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No evidence]
305	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Congeneric weed? No] "Only one sp., S. liukiensis..."

401	2008. Dransfield, J./Uhl, N.W. et al.. Genera Palmarum: The evolution and classification of palms. Kew Publishing, Richmond, UK	[Produces spines, thorns or burrs? No evidence] "Moderate, solitary, unarmed, pleonanthic, monoecious palm."
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Parasitic? No] Arecaceae
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2000. Lewis, C.E./Zona, S.. A survey of cyanogenesis in palms (Arecaceae). Biochemical Systematics and Ecology. 28: 219-228.	[Toxic to animals? No evidence]
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No evidence]
406	2010. Takasu, K./Takano, S.-I./Konishi, K./Nakamura, S.. An invasive pest <i>Brontispa longissima</i> (Gestro) (Coleoptera: Chrysomelidae) attacks an endemic palm in the Yaeyama Islands, Japan. Applied Entomology and Zoology. 45 (1): 137-144.	[Host for recognized pests and pathogens? Potentially Yes] "Although <i>B. longissima</i> infested leaves of the young trees in most nurseries or roadsides on Ishigaki, Iriomote and Kohama islands, no serious damage was observed on wild mature trees of the <i>S. liukuensis</i> communities, which are protected as national natural monuments. All the developmental stages of <i>B. longissima</i> were found in November 2008 and May 2009. The present study first shows that <i>B. longissima</i> is common and attacks the endemic palm <i>S. liukuensis</i> as a main host in the Yaeyama Islands where <i>C. nucifera</i> is very rare."
406	2012. Takano, S.-i./Takasu, K./Fushimi, T./Ichiki, R.T./Nakamura, S.. Life history traits and damage potential of an invasive pest <i>Brontispa longissima</i> (Coleoptera: Chrysomelidae) on <i>Satakentia liukuensis</i> . Entomological Science. 15: 238-245.	[Host for recognized pests and pathogens? Potentially] "The coconut hispine beetle <i>Brontispa longissima</i> has been causing serious damage to the coconut palm <i>Cocos nucifera</i> in the Pacific, and Southeast and East Asia. This beetle also attacks <i>Satakentia liukuensis</i> , an endemic palm on Ishigaki and Iriomote Islands, Japan. To assess the potential impact of <i>B. longissima</i> on <i>S. liukuensis</i> , we examined the development period, survival rate, egg production and body size of <i>B. longissima</i> on <i>S. liukuensis</i> at 22-31°C and consumption of <i>S. liukuensis</i> leaf at 28°C. We also examined these life history traits on <i>C. nucifera</i> at 28°C to compare with those on <i>S. liukuensis</i> . <i>Brontispa longissima</i> completed their development and reproduced on <i>S. liukuensis</i> at 22-30°C. Linear regression analysis was used to estimate the effective cumulative temperature (k) as 891.2 degree days, and the lower developmental threshold as 13.3°C. On the basis of these values and monthly average temperatures on Ishigaki Island, it was estimated that <i>B. longissima</i> has four generations per year on the island. <i>Satakentia liukuensis</i> was less suitable for <i>B. longissima</i> than <i>C. nucifera</i> in terms of immature survival, development time, resultant adult size and reproduction. The low quality of <i>S. liukuensis</i> as a host-plant may prevent the outbreak of <i>B. longissima</i> , which has not occurred yet on Ishigaki and Iriomote Islands."
407	2000. Lewis, C.E./Zona, S.. A survey of cyanogenesis in palms (Arecaceae). Biochemical Systematics and Ecology. 28: 219-228.	[Causes allergies or is otherwise toxic to humans? No evidence of cyanogenesis in <i>S. liukuensis</i> ] "We surveyed leaf material of 545 individual palms representing 108 genera and 155 species for cyanogenesis using the Feigl Anger test. We detected HCN production in only two species of one genus, <i>Drymophloeus</i> . Additional smaller surveys of shoot meristems and roots revealed cyanogenesis only in the shoot meristem of one species of <i>Dypsis</i> . Our results indicate that cyanogenesis is rather rare in the family."
407	2006. Wong, M.. Edible Plants for Hawai'i Landscapes. Landscape. L-14: .College of Tropical Agriculture and Human Resources, UH Manoa, Honolulu, HI	[Causes allergies or is otherwise toxic to humans? No evidence] "The following palms with edible hearts can be found in Hawai'i landscapes:" [List includes <i>Satakentia liukuensis</i> ]
407	2008. Dransfield, J./Uhl, N.W. et al.. Genera Palmarum: The evolution and classification of palms. Kew Publishing, Richmond, UK	[Causes allergies or is otherwise toxic to humans? No evidence] "The 'cabbage' is said to have been eaten during World War II."
407	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Causes allergies or is otherwise toxic to humans? No evidence]
407	2009. Henderson, A.. Palms of Southern Asia. Princeton University Press, Princeton, NJ	[Causes allergies or is otherwise toxic to humans? No evidence] "The fruits are eaten."

408	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Creates a fire hazard in natural ecosystems? No] "...endemic to the islands of Ishigaki and Iriomote in the Ryukyu archipelago, where it grows on hills and near sea level in moist forests." [Probably Not. Occurs in moist forests]
409	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	[Is a shade tolerant plant at some stage of its life cycle? Possibly no as adult] "Preferring an open, sunny situation with rich soil in a warm-temperate to tropical climate, it tolerates some wind and is now a popular landscaping palm."
409	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Is a shade tolerant plant at some stage of its life cycle? Yes as juvenile] "It also wants regular and adequate moisture, a humus-laden soil, and full sun when past the juvenile stage."
409	2012. Beck, C.. Growing Satakentia liukuensis in Palm Beach County. Palm Beach Palm & Cycad Society, <a href="http://www.palmbeachpalmcycadsociety.com/palms/documents/SatakentiaLiukuensis.pdf">http://www.palmbeachpalmcycadsociety.com/palms/documents/SatakentiaLiukuensis.pdf</a> [Accessed 27 Dec 2012]	[Is a shade tolerant plant at some stage of its life cycle? Possibly Yes] "Most experts recommend planting in a shady location so as the palm ages it grows into the sun. I have had good luck planting three gallon size plants in the full sun."
410	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)?] "It also wants regular and adequate moisture, a humus-laden soil, and full sun when past the juvenile stage."
410	2012. Beck, C.. Growing Satakentia liukuensis in Palm Beach County. Palm Beach Palm & Cycad Society, <a href="http://www.palmbeachpalmcycadsociety.com/palms/documents/SatakentiaLiukuensis.pdf">http://www.palmbeachpalmcycadsociety.com/palms/documents/SatakentiaLiukuensis.pdf</a> [Accessed 27 Dec 2012]	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)?] "S. liukuensis grows equally well in sandy soil or on limestone rock."
411	1969. Moore, H.E., Jr.. Satakentia. A new genus of Palmae-Arecoideae. Principes. 13(1): 3-12.	[Climbing or smothering growth habit? No] "Trunk to 15 or 20 m. high, ca. 20-30 cm. in diam. at base, light brown to gray-brown, irregularly and closely ringed."
411	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Climbing or smothering growth habit? No] "Solitary. Erect"
412	1999. Pintaud, J.C./Setoguchi, H.. Satakentia Revisited. Palms. 43(4): 194-199.	[Forms dense thickets? Yes] "Moreover, Satakentia presents a gregarious syndrome similar to that described by Pintaud and Hodel (1998) for Kentiopsis species growing in natural conditions in New Caledonia: a dense population of mature trees of similar size (and probably age) with little juvenile establishment beneath due to continuous fall of dead leaves and synchronous phenology of all individuals with production of massive amounts of small fruits with readily germinating seeds."
412	2008. Dransfield, J./Uhl, N.W. et al.. Genera Palmarum: The evolution and classification of palms. Kew Publishing, Richmond, UK	[Forms dense thickets? Yes] "A single species on Ishigaki Island (Yonehara) and Iriomote Island (Hoshitate, Nakam River, Sonai, and Yoeyama Group of the Ryukyus), growing on hill slopes or more rarely near the sea; often growing in dense more-or-less even-aged stands."
412	2009. Henderson, A.. Palms of Southern Asia. Princeton University Press, Princeton, NJ	[Forms dense thickets? Yes] "Often occurring in large, even-sized populations."
501	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Aquatic? No] Terrestrial
502	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Grass? No] Arecaceae
503	1998. Kubitzki, K. (ed.). The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Nitrogen fixing woody plant? No] Arecaceae
504	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "...this tall, elegant, solitary-trunk palm has a large crown or arching leaves and a purplish crownshaft."

601	1998. Johnson, D.. <i>Satakentia liukuensis</i> . In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <a href="http://www.iucnredlist.org">www.iucnredlist.org</a> [27 December 2012]	[Evidence of substantial reproductive failure in native habitat? No] "A reserve has been set up to protect the subpopulations on Ishigaki Island."
601	1999. Pintaud, J.C./Setoguchi, H.. <i>Satakentia Revisited</i> . <i>Palms</i> . 43(4): 194-199.	[Evidence of substantial reproductive failure in native habitat? No] "In conclusion, we can assess the conservation status of this palm as Low Risk but Conservation Dependant (LRcd) according to the new IUCN Red List categories (1994)."
601	2010. Witono J.R./Kondo, K.. A comparative genetic diversity in natural population and cultivated individuals in <i>Satakentia liukuensis</i> (Hatus.) H. E. Moore inferred by RAPD markers. <i>Chromosome Botany</i> . 5(2): 27-31.	[Evidence of substantial reproductive failure in native habitat? No] "In our opinion, the existence of <i>S. liukuensis</i> will be sustainable, since the natural populations of the species in Ishigaki Island was established as protected areas and managed by Satake Corporation..."
602	2001. Ellison, D./Ellison, A.. <i>Cultivated palms of the world</i> . UNSW Press, Sydney.	[Produces viable seed? Yes] "Ripe fruit is black and seed germinates in 3 to 4 months."
603	1998. Kubitzki, K. (ed.). <i>The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae)</i> . Springer-Verlag, Berlin, Heidelberg, New York	[Hybridizes naturally? No evidence] "Only one sp., <i>S. liukuensis</i> ..."
604	2009. Henderson, A.. <i>Palms of Southern Asia</i> . Princeton University Press, Princeton, NJ	[Self-compatible or apomictic? Unknown] "Flowers are unisexual and are arranged in threes of a central female and two lateral male flowers."
605	1994. Zomlefer, W.B.. <i>Guide to Flowering Plant Families</i> . The University of North Carolina Press, Chapel Hill & London	[Requires specialist pollinators? No] "Although early monographers assumed that many palms were anemophilous, the flowers actually are predominantly entomophilous. Common insect vectors include beetles, Hymenoptera, and flies; bats and hummingbirds also have been noted (Henderson 1986)."
605	2006. Abe, T.. <i>Threatened Pollination Systems in Native Flora of the Ogasawara (Bonin) Islands</i> . <i>Annals of Botany</i> . 98: 317-334.	[Requires specialist pollinators? No evidence] "Bird visitation was observed in <i>Calophyllum inophyllum</i> , <i>Freycinetia boninensis</i> , <i>Metrosideros boninensis</i> , <i>Morinda citrifolia</i> , <i>Rhaphiolepis umbellata</i> , <i>Satakentia liukuensis</i> , and <i>Scaevola frutescens</i> ."
605	2008. Dransfield, J./Uhl, N.W. et al.. <i>Genera Palmarum: The evolution and classification of palms</i> . Kew Publishing, Richmond, UK	[Requires specialist pollinators?] "Staminate flowers nearly symmetrical; sepals 3, distinct, imbricate, ± rounded; petals 3, distinct, valvate, more than twice as long as the sepals; stamens 6, filaments distinct, awl-shaped, inflexed at the apex in bud, anthers oblong in outline, latrorse; pistillode as long as the stamens, cylindrical, with obliquely subcapitate apex. Pollen grains ellipsoidal asymmetric; aperture a distal sulcus; ectexine tectate, perforate, aperture margin similar; infratectum columellate; longest axis 43-45 µm [1/1]. Pistillate flowers ovoid; sepals 3, distinct, broadly imbricate; petals 3, distinct, imbricate, with shortly valvate apices; staminodes 3, tooth-like, on one side of the gynoecium; gynoecium ovoid, unilocular, uniovulate, stigmas 3, recurved at anthesis, ovule pendulous, anatropous."
606	1998. Kubitzki, K. (ed.). <i>The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae)</i> . Springer-Verlag, Berlin, Heidelberg, New York	[Reproduction by vegetative fragmentation? No] "Solitary, erect." [No evidence of suckering or other means of vegetative spread]
607	2012. PACSOA. <i>Palms: Satakentia liukuensis</i> . Palm and Cycad Society of Australia, <a href="http://www.pacsoa.org.au/palms/Satakentia/liukuensis.html">http://www.pacsoa.org.au/palms/Satakentia/liukuensis.html</a> [Accessed 27 Dec 2012]	[Minimum generative time (years)?] "Slow growing."
701	2009. Henderson, A.. <i>Palms of Southern Asia</i> . Princeton University Press, Princeton, NJ	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "fruits ovoid-ellipsoid, to 1.3 cm long and 0.7 cm diameter, black." [Unlikely. No evidence, and fruit and seeds lack means of external attachment]
702	2001. Ellison, D./Ellison, A.. <i>Cultivated palms of the world</i> . UNSW Press, Sydney.	[Propagules dispersed intentionally by people? Yes] "...now a popular landscaping palm."
702	2006. Wong, M.. <i>Palms for Hawai'i Landscapes</i> . <i>Landscape Nov.</i> 2006 L-19. College of Tropical Agriculture and Human Resources, UH Manoa, Honolulu, HI	[Propagules dispersed intentionally by people? Yes] Ornamental
703	2009. Henderson, A.. <i>Palms of Southern Asia</i> . Princeton University Press, Princeton, NJ	[Propagules likely to disperse as a produce contaminant? No] "fruits ovoid-ellipsoid, to 1.3 cm long and 0.7 cm diameter, black." [Fruits and seeds unlikely to become a contaminant of produce]
704	2003. Riffle, R.L./Craft, P.. <i>An Encyclopedia of Cultivated Palms</i> . Timber Press, Portland, OR.	[Propagules adapted to wind dispersal? No] "The 0.5-inch-long, oblong fruits are black when mature."

705	2008. Dransfield, J./Uhl, N.W. et al.. Genera Palmarum: The evolution and classification of palms. Kew Publishing, Richmond, UK	[Propagules water dispersed? No] "...growing on hill slopes or more rarely near the sea; often growing in dense more-or-less even-aged stands." [Distribution and fruit morphology suggest not]
706	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Propagules bird dispersed? Presumably Yes] "The 0.5-inch-long, oblong fruits are black when mature." [Fleshy-fruited and assumed to be adapted for dispersal by birds or other frugivorous animals]
707	2008. Dransfield, J./Uhl, N.W. et al.. Genera Palmarum: The evolution and classification of palms. Kew Publishing, Richmond, UK	[Propagules dispersed by other animals (externally)? No evidence] "Fruit ovoid ellipsoidal with eccentrically apical stigmatic remains; epicarp smooth but drying longitudinally lines, mesocarp with numerous flat longitudinal fibres in thin flesh and some red-brown stone cells near the apex, endocarp thin, fragile, operculate at the base of the elongate hilar seam, not adherent to the seed. Seed ellipsoidal, hilum elongate, raphe branches anastomosing, endosperm homogeneous; embryo basal." [Possible, but unlikely. Fruits and seeds lack means of external attachment. Presumably adapted for consumption and internal dispersal]
708	2008. Dransfield, J./Uhl, N.W. et al.. Genera Palmarum: The evolution and classification of palms. Kew Publishing, Richmond, UK	[Propagules survive passage through the gut? Presumably Yes. Fleshy-fruited] "Fruit ovoid ellipsoidal with eccentrically apical stigmatic remains; epicarp smooth but drying longitudinally lines, mesocarp with numerous flat longitudinal fibres in thin flesh and some red-brown stone cells near the apex, endocarp thin, fragile, operculate at the base of the elongate hilar seam, not adherent to the seed."
801	2009. Henderson, A.. Palms of Southern Asia. Princeton University Press, Princeton, NJ	[Prolific seed production (>1000/m <sup>2</sup> )? Probably No] "Fruits are small, ovoid or ellipsoid, black, and one-seeded."
802	2012. Dave's Gardern. PlantFiles: Satake Palm - Satakentia liukuensis. <a href="http://davesgarden.com/guides/pf/go/67269/">http://davesgarden.com/guides/pf/go/67269/</a> [Accessed 27 Dec 2012]	[Evidence that a persistent propagule bank is formed (>1 yr)? Probably No] "The seeds must be collected from the palm (do not wait until they drop off), cleaned immediately and placed in water until planting. The seeds must not dry out, otherwise viability is lost."
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2012. WRA Specialist. Personal Communication.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

## **Summary of Risk Traits**

### **High Risk / Undesirable Traits**

- Thrives in sub-tropical climates
- Alternate host of the coconut hispine beetle, a pest of coconut palms
- Shade-tolerant as a juvenile (potential to establish in forest understory)
- Forms dense stands
- Fleshy-fruits presumably adapted for dispersal by birds and other frugivorous animals

### **Low Risk / Desirable Traits**

- No records of naturalization or invasiveness elsewhere
- Unarmed (no spines, thorns or burrs)
- Non-toxic
- Landscaping and ornamental value
- Seeds may be recalcitrant and limit the ability of forming a soil seed bank