

**Family:** *Areaceae*

**Taxon:** *Howea forsteriana*

**Synonym:** *Common Name* Kentia palm  
Sentry palm

**Questionnaire :** current 20090513      **Assessor:** Chuck Chimera      **Designation:** EVALUATE  
**Status:** Assessor Approved      **Data Entry Person:** Chuck Chimera      **WRA Score** 3

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)	
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)	
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	y
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	y
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	y
604	Self-compatible or apomictic	y=1, n=-1	n
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	>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/m <sup>2</sup> )	y=1, n=-1	n
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: EVALUATE

WRA Score 3

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**Supporting Data:**

101	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No evidence
201	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	endemic to low, coastal elevations on Lord Howe Island...The palm grows in zones 10 and 11.
202	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	endemic to low, coastal elevations on Lord Howe Island...The palm grows in zones 10 and 11.
203	2003. Floridata. <i>Howea forsteriana</i> . Floridata.com, Tallahassee, Florida <a href="http://www.floridata.com/ref/H/howe_for.cfm">http://www.floridata.com/ref/H/howe_for.cfm</a>	Kentia palm grows naturally only on the Lord Howe Island group, in the Tasman sea about 500 mi (804 km) off the eastern coast of New South Wales, Australia. The climate on Lord Howe Island is subtropical, warm to cool. Kentia palms grow in extensive colonies at low to moderate altitudes, less than 2870 ft (875 m) above sea level.
204	2003. Floridata. <i>Howea forsteriana</i> . Floridata.com, Tallahassee, Florida <a href="http://www.floridata.com/ref/H/howe_for.cfm">http://www.floridata.com/ref/H/howe_for.cfm</a>	Kentia palm grows naturally only on the Lord Howe Island group, in the Tasman sea about 500 mi (804 km) off the eastern coast of New South Wales, Australia. The climate on Lord Howe Island is subtropical, warm to cool. Kentia palms grow in extensive colonies at low to moderate altitudes, less than 2870 ft (875 m) above sea level.
205	2006. Savolainen, V./Anstett, M-C./Lexer, C./Hutton, I./Clarkson, J. J./Norup, M. V./Powell, M. P./Springate, D./Salamin, N./Baker, W. J.. Sympatric speciation in palms on an oceanic island. <i>Nature</i> . 441: 210-213.	<i>Howea forsteriana</i> , the kentia palm, is one of the most widely traded houseplants in the world & is worth over e7 million per year in the Dutch horticultural industry alone.
301	2001. Ragone, D./Lorence, D. H./Flynn, T.. History of Plant Introductions to Pohnpei, Micronesia and the Role of the Pohnpei Agriculture Station. <i>Economic Botany</i> . 55: 290-324.	Listed as cultivated, but not naturalized.
301	2005. de Lange, P. J./Gardner, R. O./Sykes, W. R./Crowcroft, G. M./Cameron, E. K./Stalker, F./Christian, M. L./Braggins, J. E.. Vascular flora of Norfolk Island: some additions and taxonomic notes. <i>New Zealand Journal of Botany</i> . 43: .	This Lord Howe I. endemic palm has long been cultivated on Norfolk I. for the seed export trade. However, seed predation by rats on unprotected palms and any fallen seeds is very severe. Possibly the current effort to control these animals in the National Park is responsible for this new & perhaps not especially welcome naturalisation.
301	2007. Randall, R.P.. Global Compendium of Weeds - <i>Howea forsteriana</i> [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), <a href="http://www.hear.org/gcw/species/howea_forsteriana/">http://www.hear.org/gcw/species/howea_forsteriana/</a>	Flora List for Pohnpei from Christopher Dahl (File creation date 15 Nov 1997) College of Micronesia-FSM Botany 250 (naturalised)
302	2007. Randall, R.P.. Global Compendium of Weeds - <i>Howea forsteriana</i> [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), <a href="http://www.hear.org/gcw/species/howea_forsteriana/">http://www.hear.org/gcw/species/howea_forsteriana/</a>	Mulvaney, M.J. (1991). Far from the Garden Path: An Identikit Picture of Woody Ornamental Plants Invading South Eastern Australian Bushland. PhD Thesis. Dept. Biogeography and Geomorphology, Research School of Pacific Studies. Australian National University (weed)
303	2007. Randall, R.P.. Global Compendium of Weeds - <i>Howea forsteriana</i> [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), <a href="http://www.hear.org/gcw/species/howea_forsteriana/">http://www.hear.org/gcw/species/howea_forsteriana/</a>	No evidence
304	2007. Randall, R.P.. Global Compendium of Weeds - <i>Howea forsteriana</i> [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), <a href="http://www.hear.org/gcw/species/howea_forsteriana/">http://www.hear.org/gcw/species/howea_forsteriana/</a>	No evidence
305	2007. Randall, R.P.. Global Compendium of Weeds - <i>Howea belmoreana</i> [Online Database]. Hawaii Ecosystems at Risk Project (HEAR), <a href="http://www.hear.org/gcw/species/howea_belmoreana/">http://www.hear.org/gcw/species/howea_belmoreana/</a>	<i>Howea belmoreana</i> listed as a weed [but no information on negative impacts found]
401	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No spines, thorns or burrs
402	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No evidence of allelopathy
403	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No evidence of parasitism

404	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Palatability of foliage to grazing animals unknown
405	2010. ASPCA. Forster Sentry Palm. ASPCA, <a href="http://www.aspc.org/pet-care/poison-control/plants/forster-sentry-palm.html">http://www.aspc.org/pet-care/poison-control/plants/forster-sentry-palm.html</a>	Toxic Principles: Non-toxic
406	2003. Floridata. <i>Howea forsteriana</i> . Floridata.com, Tallahassee, Florida <a href="http://www.floridata.com/ref/H/howe_for.cfm">http://www.floridata.com/ref/H/howe_for.cfm</a>	<i>Kentia</i> palm can be attacked by spider mites, scale insects, <i>Cylindrocladium</i> leaf spot, stigmata & other fungal leaf spots. They are also susceptible to lethal yellowing disease.
406	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	Pests recorded Insects: <i>Chrysomphalus dictyospermi</i> (Spanish red scale)  Fungus diseases: <i>Calonectria theae</i> (leaf spot: tea) Pests recorded at the family level (Arecaceae): Insects: <i>Aleurodicus cocois</i> (coconut whitefly) <i>Pinnaspis strachani</i> (lesser snow scale)
406	2009. Hardy, C. et al.. Import risk analysis: Fresh Coconut ( <i>Cocos nucifera</i> ) from Tuvalu. MAF Biosecurity New Zealand, Wellington <a href="http://www.biosecurity.govt.nz/files/regs/imports/ri sk/coconut-tuvalu-ra.pdf">http://www.biosecurity.govt.nz/files/regs/imports/ri sk/coconut-tuvalu-ra.pdf</a>	<i>C. dictyospermi</i> is found on many citrus species, feeding primarily on leaves, also fruit & occasionally branches (CPC 2007). A pest on Citrus & other species throughout the Pacific (Williams & Watson 1988), it is recorded on plants from 73 families.
407	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	No evidence of toxicity to humans [widely grown ornamental]
408	2006. Savolainen, V./Anstett, M-C./Lexer, C./Hutton, I./Clarkson, J. J./Norup, M. V./Powell, M. P./Springate, D./Salamin, N./Baker, W. J.. Sympatric speciation in palms on an oceanic island. <i>Nature</i> . 441: 210-213.	No evidence of increased fire risk from native habitat.
409	2003. Floridata. <i>Howea forsteriana</i> . Floridata.com, Tallahassee, Florida <a href="http://www.floridata.com/ref/H/howe_for.cfm">http://www.floridata.com/ref/H/howe_for.cfm</a>	Outside <i>kentia</i> palms grow best in 35%-80% of full sunlight, tolerating direct sun only after about five years old. Young <i>kentia</i> need protection from direct sunlight and grow best in shady to partly shady locations.
410	2003. Floridata. <i>Howea forsteriana</i> . Floridata.com, Tallahassee, Florida <a href="http://www.floridata.com/ref/H/howe_for.cfm">http://www.floridata.com/ref/H/howe_for.cfm</a>	<i>Kentia</i> palms tolerate & adapt to a wide variety of soils including those that are neutral, acidic, clayey & slightly alkaline, but they perform best in rich loamy soil with excellent drainage.
410	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The species needs average but regular moisture. It is adaptable to a range of free-draining soils.
410	2006. Savolainen, V./Anstett, M-C./Lexer, C./Hutton, I./Clarkson, J. J./Norup, M. V./Powell, M. P./Springate, D./Salamin, N./Baker, W. J.. Sympatric speciation in palms on an oceanic island. <i>Nature</i> . 441: 210-213.	The distributions of <i>H. forsteriana</i> & <i>H. belmoreana</i> are also dependent on soil pH (Fig. 3). <i>Howea belmoreana</i> is restricted to neutral & acidic soils, whereas <i>H. forsteriana</i> prefers calcarenite, a recent basic sedimentary formation that dominates low lying parts of the island.
410	2008. Riffle, R. L.. Timber Press Pocket Guide to Palms. Timber Press, Portland, OR.	Soil: any, but best with humus or a mulch.
411	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Mature trunks reach heights of 50 to 60 feet but are usually half that under cultivation. The stem is 6 inches in diameter, swollen at the base, & gray to tan, with closely spaced, grooved rings of leaf base scars.
412	2009. Babik, W./Butlin, R. K./Baker, W. J./Papadopoulos, A. S. T./Boulesteix, M./Anstett, M-C./Lexer, C./Hutton, I./Savolainen, V.. How sympatric is speciation in the <i>Howea</i> pams of Lord Howe Island?. <i>Molecular Ecology</i> . 18: 3629–3638.	<i>Howea forsteriana</i> is particularly abundant at lower elevations, especially on calcareous soils on calcarenite where it typically forms dense, pure stands, but it also occurs up to 350 m.
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
504	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	Not a geophyte

601	2006. Savolainen, V./Anstett, M-C./Lexer, C./Hutton, I./Clarkson, J. J./Norup, M. V./Powell, M. P./Springate, D./Salamin, N./Baker, W. J.. Sympatric speciation in palms on an oceanic island. <i>Nature</i> . 441: 210-213.	No evidence of substantial reproductive failure from native range.
602	2003. Floridata. <i>Howea forsteriana</i> . Floridata.com, Tallahassee, Florida <a href="http://www.floridata.com/ref/H/howe_for.cfm">http://www.floridata.com/ref/H/howe_for.cfm</a>	Propagation: Propagated by seeds.
603	2009. Babik, W./Butlin, R. K./Baker, W. J./Papadopulos, A. S. T./Boulesteix, M./Anstett, M-C./Lexer, C./Hutton, I./Savolainen, V.. How sympatric is speciation in the <i>Howea</i> pams of Lord Howe Island?. <i>Molecular Ecology</i> . 18: 3629–3638.	Lack of such a signal indicates that, despite occasional hybridization, introgression is indeed limited to early generations of hybrids and thus probably opposed by strong selection. [can hybridize, but very rarely]
603	2010. Gardenology.org. Gardenology.org - Palms. Gardenology.org, <a href="http://www.gardenology.org/wiki/Palms">http://www.gardenology.org/wiki/Palms</a>	Cross-pollination of palms by artificial means has probably been seldom practised, there being few cultivated collections in which the opportunity for such an operation has presented itself; but it seems highly probable that such cross fertilization has been accidentally effected among wild plants, for in large lots of seedlings intermediate forms are frequently seen, this peculiarity having been noted among <i>howea</i> seedlings, where forms intermediate between <i>H. Belmoreana</i> & <i>H. Forsteriana</i> are found
604	2006. Savolainen, V./Anstett, M-C./Lexer, C./Hutton, I./Clarkson, J. J./Norup, M. V./Powell, M. P./Springate, D./Salamin, N./Baker, W. J.. Sympatric speciation in palms on an oceanic island. <i>Nature</i> . 441: 210-213.	complete exclusion experiments demonstrated the absence of apomixis in both species.
605	2006. Savolainen, V./Anstett, M-C./Lexer, C./Hutton, I./Clarkson, J. J./Norup, M. V./Powell, M. P./Springate, D./Salamin, N./Baker, W. J.. Sympatric speciation in palms on an oceanic island. <i>Nature</i> . 441: 210-213.	We also found that <i>Howea</i> is wind-pollinated, a rare syndrome in palms (contrary to popular belief), & complete exclusion experiments demonstrated the absence of apomixis in both species.
606	2003. Floridata. <i>Howea forsteriana</i> . Floridata.com, Tallahassee, Florida <a href="http://www.floridata.com/ref/H/howe_for.cfm">http://www.floridata.com/ref/H/howe_for.cfm</a>	Propagation: Propagated by seeds. <i>Kentia</i> palm fruits mature very slowly, sometimes taking 3-4 years. [no evidence of reproduction by vegetative fragmentation]
607	2006. Savolainen, V./Anstett, M-C./Lexer, C./Hutton, I./Clarkson, J. J./Norup, M. V./Powell, M. P./Springate, D./Salamin, N./Baker, W. J.. Sympatric speciation in palms on an oceanic island. <i>Nature</i> . 441: 210-213.	The inflorescences of <i>Howea</i> are monoecious & long-lived, with a delay of one year between male & female anthesis, & more than a year until fruit maturation. Thus, each inflorescence persists for four seasons, reaching male anthesis in season 1, female anthesis in season 2, & with fruits ripening through seasons 3 & 4, & any one individual palm bears functionally male, female & fruiting inflorescences simultaneously.
701	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are 2 inches long, ellipsoid, & orange or red when mature. [no evidence; large fruits with no means of external attachment]
702	2006. Savolainen, V./Anstett, M-C./Lexer, C./Hutton, I./Clarkson, J. J./Norup, M. V./Powell, M. P./Springate, D./Salamin, N./Baker, W. J.. Sympatric speciation in palms on an oceanic island. <i>Nature</i> . 441: 210-213.	<i>Howea forsteriana</i> , the <i>kentia</i> palm, is one of the most widely traded houseplants in the world and is worth over e7 million per year in the Dutch horticultural industry alone.
703	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are 2 inches long, ellipsoid, & orange or red when mature. [no evidence; large fruits with no means of external attachment]
704	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are 2 inches long, ellipsoid, & orange or red when mature.
705	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are 2 inches long, ellipsoid, & orange or red when mature. [no evidence of seed buoyancy]
706	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are 2 inches long, ellipsoid, & orange or red when mature.
707	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are 2 inches long, ellipsoid, & orange or red when mature. [no evidence or means of external attachment]
708	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are 2 inches long, ellipsoid, & orange or red when mature. [fleshy-fruited, so presemably adapted for consumption and dissemination]
801	2003. Riffle, R. L./Craft, P.. An encyclopedia of cultivated palms. Timber Press, Portland, OR.	The fruits are 2 inches long, ellipsoid, & orange or red when mature. [unlikely given fairly large fruit size]
802	2001. Ellison, D./Ellison, A.. Cultivated palms of the world. UNSW Press, Sydney.	Mature fruit is yellow to red & takes over 2 years to begin ripening. Germination is erratic, taking from 6 months to a year.

802	2003. Floridata. <i>Howea forsteriana</i> . Floridata.com, Tallahassee, Florida <a href="http://www.floridata.com/ref/H/howe_for.cfm">http://www.floridata.com/ref/H/howe_for.cfm</a>	Propagated by seeds. Kentia palm fruits mature very slowly, sometimes taking 3-4 years. It is difficult to determine when fruit & seeds are ripe, since the fruits change color slowly from dull orange to deep dull red as they mature. Even fresh seeds germinate erratically, with seedlings appearing as early as two months after planting & then sporadically over 1-3 years.
802	2008. Riffle, R. L.. Timber Press Pocket Guide to Palms. Timber Press, Portland, OR.	Seed germination: not easy, may take two years. [but viability in soil unknown]
803	2010. WRA Specialist. Personal Communication.	Unknown [no information on control of this species]
804	2010. WRA Specialist. Personal Communication.	Unknown if this species tolerates, or benefits from, mutilation, cultivation, or fire
805	2010. WRA Specialist. Personal Communication.	Unknown if effective natural enemies present locally.