Key Words: Low Risk, Tropical Palm, Ornamental, Unarmed, Fleshy-fruit, Water-dispersed

Family: ***Arecaceae***

Taxon: ***Normanbya normanbyi***

Synonym: *Areca normanbyi (W. Hill) F. Muell.*
Cocos normanbyi W. Hill (basionym)
Normanbya muelleri Becc.
Ptychosperma normanbyi (W. Hill) F. Muell.
Saguerus australasicus H. Wendl. & Drude

Common Name: black palm

Questionaire : current 20090513 **Assessor:** Chuck Chimera **Designation:** L
Status: Assessor Approved **Data Entry Person:** Chuck Chimera **WRA Score -1**

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**	**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**	

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**	**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**	**y=1, n=-1**	**n**
604	**Self-compatible or apomictic**	**y=1, n=-1**	**y**
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**	**y**
706	**Propagules bird dispersed**	**y=1, n=-1**	**y**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	
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**	
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** **-1**

Supporting Data:

101	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Is the species highly domesticated? No evidence]
102	2012. WRA Specialist. Personal Communication.	NA
103	2012. WRA Specialist. Personal Communication.	NA
201	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Species suited to tropical or subtropical climate(s) 2- High] "Endemic to north-east Queensland from just south of Cooktown to near Mossman, in rainforest, swamp forest and mangrove margins, occurring in large to small populations and as scattered individuals as a canopy emergent on various soils, 0-700 m asl"
202	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Quality of climate match data 2-High]
203	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Broad climate suitability (environmental versatility)? No. Tropical species with elevation range <1000 m] "Endemic to north-east Queensland from just south of Cooktown to near Mossman, in rainforest, swamp forest and mangrove margins, occurring in large to small populations and as scattered individuals as a canopy emergent on various soils, 0-700 m asl"
204	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Endemic to north-east Queensland from just south of Cooktown to near Mossman, in rainforest, swamp forest and mangrove margins, occurring in large to small populations and as scattered individuals as a canopy emergent on various soils, 0-700 m asl"
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] "It is widely cultivated and makes a good landscaping plant."
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? No evidence in Singapore] "Normanbya normanbyi (W. Hill) L.H. Bailey; 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]
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	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Congeneric weed? No] "Normanbya is a monotypic genus of pinnate-leaved, monoecious palm indigenous to northeastern Queensland, Australia, and adjacent New Guinea."
401	2012. PACSOA. Palms: Normanbya normanbyi. PACSOA (Palm and Cycad Society of Australia), http://www.pacsoa.org.au/palms/Normanbya/normanbyi.html [Accessed 09 Nov 2012]	[Produces spines, thorns or burrs? No] "This is a tall, handsome palm, growing about 20 metres (60 feet) tall, with a 4 metre (12 foot) leaf spread. The trunk is smooth, slender, and closely ringed, and becomes almost black as the palm gets older. There is a pale green crownshaft, topped with a small head of leaves. These consist of many narrow leaflets, arranged circularly around the leaf stalk, which gives it a very bushy appearance, very similar to the Foxtail palm, Wodyetia bifurcata . In fact, the two palms are very difficult to tell apart, the main difference being that N. normanbyi has a silverish tinge to the underside of the leaves."
402	2000. Rauch, F.D./Weissich, P.R.. Plants for tropical landscapes: a gardener's guide. University of Hawaii Press, Honolulu, HI	[Allelopathic? No evidence] "It is useful as a specimen, in groups for forming a canopy of understory plants, or as a tubbed specimen."
403	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Parasitic? No] Arecaceae

404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	1995. Lott, R.H./Harrington, G.N./Irvine, A.K./McIntyre, S.. Density-Dependent Seed Predation and Plant Dispersion of the Tropical Palm Normanbya normanbyi. Biotropica. 27(1): 87-95.	[Toxic to animals? No evidence] Fruits and seeds eaten by birds and mammals
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No evidence]
406	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Host for recognized pests and pathogens? No evidence]
406	2006. Kolesik, P. et al.. First known gall midge (Diptera: Cecidomyiidae) from Arecaceae: Normanbyomyia fructivora gen. & sp. n. damaging fruit of the black palm, Normanbya normanbyi, in tropical Australia. Australian Journal of Entomology. 45(1): 38-43.	[Host for recognized pests and pathogens? Specialized Pest] "A new species of gall midge, Normanbyomyia fructivora gen. & sp. n., was found infesting flowers and fruit of the black palm, Normanbya normanbyi (Arecaceae), in the tropical forest of north-eastern Australia. Larvae of the gall midge live between the perianth and the young fruit causing abnormal fruit growth. Infested fruit are substantially smaller than healthy ones, fall off prematurely and decay on the ground without producing seedlings. Normanbyomyia, a new genus erected for the new species is placed within the supertribe Lasiopteridi and is characterised by a conspicuous female abdominal segment 8 that is inflated and strongly sclerotised, and wide male parameres that loosely sheath the aedeagus and bear no papillae. A key to Australian Lasiopteridi is provided. The new species becomes the first described gall midge that feeds on a plant from the palm family, Arecaceae."
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 for Normanbya normanbyi] "Results of cyanogenesis survey in leaf tissue of 167 palm accessions. Accession numbers refer to plants in cultivation at Fairchild Tropical Garden or the Montgomery Botanical Center"
407	2006. Wong, M.. Palms for Hawaii Landscapes. Landscape. L-19: .College of Tropical Agriculture and Human Resources, Honolulu, HI	[Causes allergies or is otherwise toxic to humans? No evidence] "Cabbage or hearts: Palm hearts are obtained from meristem and undeveloped leaf bases and leaves of … Normanbya normanbyi (black palm)…" [Long list of palms includes Normanbya]
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]
408	2007. Inkrot D./Sattler, D./Geyer, C./Morawetz, W.. Flowering and fruiting phenology of Normanbya normanbyi (W. Hill) L. H. Bailey (Arecaceae), a palm endemic to the lowland tropical rainforest of north-eastern Australia. Austral Ecology. 32: 21-28.	[Creates a fire hazard in natural ecosystems? No evidence. Unlikely given wet habitat] "Normanbya normanbyi, the so-called black palm, is endemic to the rainforest between Daintree and Cooktown, Queensland, Australia. It mainly grows along streams and creeks, often in swampy areas and reaches a height of up to 20 m."
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?] "It must have partial shade when young, especially in hot climates…"
409	2012. Dave's Gardern. PlantFiles: Black Palm, Queensland Black Palm - Normanbya normanbyi. http://davesgarden.com/guides/pf/go/60813/ [Accessed 09 Nov 2012]	[Is a shade tolerant plant at some stage of its life cycle?] "Sun Exposure: Sun to Partial Shade"
410	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Tolerates a wide range of soil conditions? Possibly No] "It is slower growing than Wodyetia and more finicky in its cultural requirements, needing constant moisture and a deep, slightly acidic soil that is rich in organic matter."
410	2012. Plant this. Normanbya normanbyi. http://www.plantthis.co.uk/plant-search.asp?searchStr=Normanbya [Accessed 09 Nov 2012]	[Tolerates a wide range of soil conditions?] "Soil: ordinary soil, enriched soil, mildly acidic to mildly alkaline "
411	1995. Lott, R.H./Harrington, G.N./Irvine, A.K./McIntyre, S.. Density-Dependent Seed Predation and Plant Dispersion of the Tropical Palm Normanbya normanbyi. Biotropica. 27(1): 87-95.	[Climbing or smothering growth habit? No] "Black Palm Normanbya normanbyi (W. Hill) L. H. Bailey is a single-stemmed, large seeded palm endemic to the Cape Tribulation region, north Queensland, Australia"

412	2007. Laidlaw, M./Kitching, R./Goodall, K./Small, A./Stork, N.. Temporal and spatial variation in an Australian tropical rainforest. Austral Ecology. 32: 10-20.	[Forms dense thickets? No evidence] "Abstract This study describes the floristics and structure of a 0.95-ha lowland tropical rainforest plot at the Australian Canopy Crane Research Facility at Cape Tribulation, Queensland." … "The most abundant families were Meliaceae, Euphorbiaceae, Lauraceae, Myrtaceae and Apocynaceae and the most abundant species were Cleistanthus myrianthus, Alstonia scholaris, Myristica insipida, Normanbya normanbyi and Rockinghamia angustifolia."
412	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Forms dense thickets? No evidence in Australia] "...occurring in large to small populations and as scattered individuals as a canopy emergent on various soils…"
501	2007. Inkrot D./Sattler, D./Geyer, C./Morawetz, W.. Flowering and fruiting phenology of Normanbya normanbyi (W. Hill) L. H. Bailey (Arecaceae), a palm endemic to the lowland tropical rainforest of north-eastern Australia. Austral Ecology. 32: 21-28.	[Aquatic? No] "It mainly grows along streams and creeks, often in swampy areas and reaches a height of up to 20 m." [But often found in riparian habitats]
502	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Grass? No] Arecaceae
503	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Nitrogen fixing woody plant? No] Arecaceae
504	1995. Lott, R.H./Harrington, G.N./Irvine, A.K./McIntyre, S.. Density-Dependent Seed Predation and Plant Dispersion of the Tropical Palm Normanbya normanbyi. Biotropica. 27(1): 87-95.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Black Palm Normanbya normanbyi (W. Hill) L. H. Bailey is a single-stemmed, large seeded palm endemic to the Cape Tribulation region, north Queensland, Australia"
601	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Evidence of substantial reproductive failure in native habitat? No] "Conservation status - No present threats."
602	1995. Lott, R.H./Harrington, G.N./Irvine, A.K./McIntyre, S.. Density-Dependent Seed Predation and Plant Dispersion of the Tropical Palm Normanbya normanbyi. Biotropica. 27(1): 87-95.	[Produces viable seed? Yes] "Germination.-Seeds germinated in all treatments, but individual dusters and plots showed markedly different germination and survival rates"
603	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Hybridizes naturally? No evidence] "Normanbya is a monotypic genus of pinnate-leaved, monoecious palm indigenous to northeastern Queensland, Australia, and adjacent New Guinea."
604	2006. French, B.R. Food plants of Papua New Guinea. Privately published, Tasmania, Australia	[Self-compatible or apomictic? Yes] "Flowers are of one sex but both sexes occur on the one stalk. Single plants can produce fertile seed."
604	2007. Inkrot D./Sattler, D./Geyer, C./Morawetz, W.. Flowering and fruiting phenology of Normanbya normanbyi (W. Hill) L. H. Bailey (Arecaceae), a palm endemic to the lowland tropical rainforest of north-eastern Australia. Austral Ecology. 32: 21-28.	[Self-compatible or apomictic?] "In our study we could observe up to three inflorescences leading to three flowering events per year (male and female), whereas male flowering and female flowering at the same inflorescence is separated by 2 weeks." … "We observed some variations to this pattern: (i) in some rare cases male and female flowers were in anthesis at the same time on the same inflorescence, whereas only a few (approximately up to 10) male flowers were present when the first female flowers appeared." … "Each flowering period within the palm population is separated into single and distinct male flowering and female flowering peaks where flowering fluctuates between male-dominated and female dominated phases with a gap between the peaks of only a couple of weeks.This temporarily dioecious flowering pattern of N. normanbyi at the individual level in combination with the moderate synchrony of flowering (Table 1) might be a mechanism to assure the presence of male and female flowers at the same time to enable pollination." … "… the multiple flowering events of N. normanbyi counter this argument as it leads to a simultaneous presence of male and female flowers within a population. As the level of synchrony is neither extremely low nor high a definite conclusion cannot be drawn."
605	2007. Inkrot D./Sattler, D./Geyer, C./Morawetz, W.. Flowering and fruiting phenology of Normanbya normanbyi (W. Hill) L. H. Bailey (Arecaceae), a palm endemic to the lowland tropical rainforest of north-eastern Australia. Austral Ecology. 32: 21-28.	[Requires specialist pollinators? No evidence] "Normanbya normanbyi is a monoecious, solitary palm with infrafoliar inflorescences consisting of unisexual flowers growing in triads basally with two basal male flowers flanking each female flower. Staminate flowers growing distally occur in pairs." … "… wind pollination is considered to play a role in the reproduction of N. normanbyi."

605	2007. Kitching, R.L./Boulter, S.L./Howlett, B.G./Goodall, K.. Visitor assemblages at flowers in a tropical rainforest canopy. Austral Ecology. 32: 29-42.	[Requires specialist pollinators? No evidence. Flowers visited by members of the Thysanoptera, Coleoptera, Lepidoptera, Hymenoptera and Araneida] "For N. normanbyi the visitor profiles are shown in Figure 3a. Two Orders showed significant changes associated with the time of sampling. Both the Thysanoptera and the Homoptera showed significantly higher levels of abundance in July 2002 compared with the other two times of sampling. Although these differences were clear cut we note that numbers of Homoptera involved were small."
606	2006. French, B.R. Food plants of Papua New Guinea. Privately published, Tasmania, Australia	[Reproduction by vegetative fragmentation? No evidence] "Plants are grown from seed. Seeds germinate sporadically. Seeds take 2-3 months to germinate with some taking 12 months. Seedlings transplant easily."
607	2001. Zona, S./Maidman, K.. Growth Rates of Palms in Fairchild Tropical Garden. Palms. 45(3): 151-154.	"Table 1. Average growth rates of palms growing in Fairchild Tropical Garden." [Normanbya normanbyi = 14-20 cm/year.
701	2007. Inkrot D./Sattler, D./Geyer, C./Morawetz, W.. Flowering and fruiting phenology of Normanbya normanbyi (W. Hill) L. H. Bailey (Arecaceae), a palm endemic to the lowland tropical rainforest of north-eastern Australia. Austral Ecology. 32: 21-28.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No evidence] "The drupaceous red fruit are up to 4 cm long with a fresh weight of up to 30 g and a single seed (for details see Uhl & Dransfield 1987)." [Fruits/seeds lack means of external attachment]
702	2003. Riffle, R.L./Craft, P.. An Encyclopedia of Cultivated Palms. Timber Press, Portland, OR.	[Propagules dispersed intentionally by people? Yes. Ornamental] "Its great beauty seems worth whatever heroic measures need to be taken if the gardener can provide such; it is the rich man's Wodyetia."
703	2010. Dowe, J.L.. Australian Palms: Biogeography, Ecology and Systematics. Csiro Publishing, Collingwood, Australia	[Propagules likely to disperse as a produce contaminant? No] "Fruit 35-50 mm long, 25-39 mm wide…" … "Seed to 35 mm long, to 25 mm wide…" [Unlikely as fruits and seeds are relatively large]
704	2007. Inkrot D./Sattler, D./Geyer, C./Morawetz, W.. Flowering and fruiting phenology of Normanbya normanbyi (W. Hill) L. H. Bailey (Arecaceae), a palm endemic to the lowland tropical rainforest of north-eastern Australia. Austral Ecology. 32: 21-28.	[Propagules adapted to wind dispersal? No] "The drupaceous red fruit are up to 4 cm long with a fresh weight of up to 30 g and a single seed"
705	1995. Lott, R.H./Harrington, G.N./Irvine, A.K./McIntyre, S.. Density-Dependent Seed Predation and Plant Dispersion of the Tropical Palm Normanbya normanbyi. Biotropica. 27(1): 87-95.	[Propagules water dispersed? Yes] "Nevertheless, seed dispersal is also evident. As mentioned above, the vector responsible for relocating most viable seeds was overland water flow. Seeds recorded as unaccounted for amounted to 39 percent of all seeds studied. Washed seeds were transported downhill, which corresponds with the concentration of adult and immature N. normanbyi in drainage lines in this study and their common occurrence in swamps throughout the district."
706	1995. Lott, R.H./Harrington, G.N./Irvine, A.K./McIntyre, S.. Density-Dependent Seed Predation and Plant Dispersion of the Tropical Palm Normanbya normanbyi. Biotropica. 27(1): 87-95.	[Propagules bird dispersed? Yes. Large- birds like turkeys or peafowl may be able to move fruit and disperse seeds in the Hawaiian Islands] "The fruit is large (3.5 cm x 2.5-3.5 cm) and has a bright pink, fleshy exocarp; a fruit syndrome characterizing it as likely to be dispersed by cassowaries, Casuarius casuarius (Willson et al. 1989). Indeed, seeds are dispersed in clusters of various sizes by cassowaries (Stocker & Irvine 1983, Lott & McIntyre 1991) and probably as single seeds by white-tailed rat Uromys caudimaculatus and musky rat-kangaroo Hypsiprymnodon moschatus, species which occur in the region (Winter 1984; J. W. Winter, pers. comm.) and have been observed elsewhere to disperse seeds (G. Harrington et al., pers. obs.; A. Dennis, pers. comm.)."
707	1995. Lott, R.H./Harrington, G.N./Irvine, A.K./McIntyre, S.. Density-Dependent Seed Predation and Plant Dispersion of the Tropical Palm Normanbya normanbyi. Biotropica. 27(1): 87-95.	[Propagules dispersed by other animals (externally)? Possibly Yes. Introduced rodents may carry away fruit & both depredate and disperse seeds] "The fruit is large (3.5 cm x 2.5-3.5 cm) and has a bright pink, fleshy exocarp; a fruit syndrome characterizing it as likely to be dispersed by cassowaries, Casuarius casuarius (Willson et al. 1989). Indeed, seeds are dispersed in clusters of various sizes by cassowaries (Stocker & Irvine 1983, Lott & McIntyre 1991) and probably as single seeds by white-tailed rat Uromys caudimaculatus and musky rat-kangaroo Hypsiprymnodon moschatus, species which occur in the region (Winter 1984; J. W. Winter, pers. comm.) and have been observed elsewhere to disperse seeds (G. Harrington et al., pers. obs.; A. Dennis, pers. comm.). Whether bats eat the fruit is not known. Seeds are eaten, but probably not dispersed, by feral pigs Sus scrofa and fawn-footed melomys Melomys cervinipes. Predation of seeds by insects also occurs."

708	1995. Lott, R.H./Harrington, G.N./Irvine, A.K./McIntyre, S.. Density-Dependent Seed Predation and Plant Dispersion of the Tropical Palm Normanbya normanbyi. Biotropica. 27(1): 87-95.	[Propagules survive passage through the gut? Yes, although seeds also depredated by feral pigs] "The fruit is large (3.5 cm x 2.5-3.5 cm) and has a bright pink, fleshy exocarp; a fruit syndrome characterizing it as likely to be dispersed by cassowaries, Casuarius casuarius (Willson et al. 1989). Indeed, seeds are dispersed in clusters of various sizes by cassowaries (Stocker & Irvine 1983, Lott & McIntyre 1991) and probably as single seeds by white-tailed rat Uromys caudimaculatus and musky rat-kangaroo Hypsiprymnodon moschatus, species which occur in the region (Winter 1984; J. W. Winter, pers. comm.) and have been observed elsewhere to disperse seeds (G. Harrington et al., pers. obs.; A. Dennis, pers. comm.). Whether bats eat the fruit is not known. Seeds are eaten, but probably not dispersed, by feral pigs Sus scrofa and fawn-footed melomys Melomys cervinipes. Predation of seeds by insects also occurs." … "This movement pattern, and the rather cathartic effect of N. normanbyi fruit unless eaten in mixture with other fruit species, indicates that although cassowaries may eat only a small proportion of the fruit crop, they are likely to be an important and efficient disperser of seeds uphill and along ridgelines (L. A. Moore, pers. comm.)."
708	2010. Bradford, M.G./Westcott, D.A.. Consequences of southern cassowary (Casuarius casuarius, L.) gut passage and deposition pattern on the germination of rainforest seeds. Austral Ecology. 35: 325-333.	[Propagules survive passage through the gut? Yes] "The percentage of seeds that germinated for each species is presented in Table 2. Of the 17 species included in the experiment, one, A. doggrellii showed no germination in any treatment after 3 years despite all seeds in all treatments remaining outwardly viable. Four species showed increased probability of germination (after correction for multiple comparisons) after passing through a cassowary and deposition as a single seed with faecal material attached…" [Includes Normanybya normanbyi]
801	2006. French, B.R. Food plants of Papua New Guinea. Privately published, Tasmania, Australia	[Prolific seed production (>1000/m2)? Unlikely. Relatively large, single-seeded fruit] "A tall solitary palm. It grows about 20 m high. The trunk is light grey and 10-15 cm across. It has distinct rings." … "Single plants can produce fertile seed. The fruit are 4-5 cm long by 3 cm across. The fruit are deep pink to red. Each fruit contains one seed."
802	2008. Royal Botanic Gardens Kew. Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/	[Evidence that a persistent propagule bank is formed (>1 yr)? Possibly No] "Storage Behaviour: Recalcitrant? Storage Conditions: Seeds are sensitive to desiccation (Fox et al., 1987)"
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2012. CSIRO. Australian Tropical Rainforest Plants Edition 6 - Normanbya normanbyi. http://keys.trin.org.au/key-server/data/0e0f0504-0103-430d-8004-060d07080d04/media/Html/taxon/Normanbya_normanbyi.htm [Accessed 09 Nov 2012]	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown] "Single stemmed palm up to 30 m tall. The trunk is smooth, slender, and closely ringed, and becomes almost black with age." [With single trunk. Probably No]
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 tropical climates
- Self-fertile
- Seeds dispersed by large water, large birds, humans and frugivorous mammals

Low Risk / Desirable Traits

- No reports of naturalization or invasiveness elsewhere
- Unarmed (no spines, thorns or burrs)
- Non-toxic
- Landscaping and ornamental value
- Will not spread vegetatively
- Large fruit & seeds unlikely to be inadvertently dispersed