Keywords: Low Risk, Tree, Edible Nut, Water Dispersal, Non-toxic, Limited Seed Production

Family: ***Lecythidaceae***

Taxon: ***Lecythis zabucajo Aubl.***

Synonym: *Lecythis davisii Sandwith*

Common Name: monkeynut
paradise-nut
sapucaia-nut

Questionaire : current 20090513 **Assessor:** Patti Clifford **Designation:** L
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score -4**

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**	**n**
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**	**n**
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**	
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**	
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**	**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**	**y**
706	**Propagules bird dispersed**	**y=1, n=-1**	**n**
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	**n**
708	**Propagules survive passage through the gut**	**y=1, n=-1**	
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** -4

Supporting Data:

101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive traits.
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2 - high] Native distribution: French Guiana; Suriname; Venezuela; Brazil; Ecuador.
202	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Quality of climate match data? 2 - high] Native distribution: French Guiana; Suriname; Venezuela; Brazil; Ecuador.
203	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Broad climate suitability (environmental versatility)? No] Trees may be found up to 500 m.
203	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Broad climate suitability (environmental versatility)? No] "Thrives in equatorial climate with mean annual maximum of 25 degrees Celsius and a minimum of 23.5 degrees Celsius and mean annual rainfall of 1,900-4,000 mm up to an altitude of 500 m."
204	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution: French Guiana; Suriname; Venezuela; Brazil; Ecuador.
205	2012. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? No] No evidence of repeated introductions.
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No] No evidence of naturalization.
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No] 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] No evidence.
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No] No evidence.
305	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Congeneric weed? No]
401	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Produces spines, thorns or burrs? No] Lecythis is a tall, deciduous tree. Twigs are glabrous or puberulous when young. The margins, glabrous and deciduous.
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Parasitic? No] Lecythidaceae.
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Toxic to animals? No] No evidence.
405	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Toxic to animals? No] No evidence.
406	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Host for recognized pests and pathogens? No] No major insect or pests are reported.

407	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Causes allergies or is otherwise toxic to humans?] The nuts are edible. The seed oil is used in soap in Brazil. The tree also provides useful timber in Guiana and Suriname.
407	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Causes allergies or is otherwise toxic to humans? No] No evidence.
407	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Causes allergies or is otherwise toxic to humans? No] No evidence.
408	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? Unknown]
409	2012. WRA Specialist. Personal Communication.	[Is a shade tolerant plant at some stage of its life cycle? Unknown]
410	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)?] Lecythis zabucajo prefers deep, fertile, well-drained soils, high in organic matter.
410	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)?] "Grows on a fairly wide range of soil types, but grows best in deep, moist, organic rich alluvial soils.
410	2012. WRA Specialist. Personal Communication.	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Unknown]
411	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Climbing or smothering growth habit? No] Tall tree growing 35-55 m.
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? Unknown]
501	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Aquatic? No] Tree; terrestrial.
502	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Grass? No] Tree.
503	2010. www.nationmaster.com. Encyclopedia Nitrogen fixation. Nationmaster.com, http://www.nationmaster.com/encyclopedia/Nitrogen-fixation	[Nitrogen fixing woody plant? No] Lecythidaceae.
504	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Tree; woody.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Produces viable seed? Yes] Lecythis is propagated by seed. Plants may also be propagated by budding and grafting.
602	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Produces viable seed? Yes] Propagated by seed.
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2012. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]
605	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Requires specialist pollinators? No] Bees pollinate the flowers.
606	1960. Kennard, W.C./Winters, H.F.. Some fruits and nuts for the tropics. Miscellaneous Publication 801. U.S. Dept. of Agriculture, Washington, D.C.	[Reproduction by vegetative fragmentation? No] The tree is usually propagated by seed. Some grafting technique probably could be employed after individuals of superior bearing habit had been selected.
606	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Reproduction by vegetative fragmentation? No] Propagate by seed.

607	1960. Kennard, W.C./Winters, H.F.. Some fruits and nuts for the tropics. Miscellaneous Publication 801. U.S. Dept. of Agriculture, Washington, D.C.	[Minimum generative time (years)?] The trees are a little slow to come into bearing.
607	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Minimum generative time (years)? 4+] Seedling plants begin flowering and fruiting after 10-12 years whereas grafted trees begin bearing after 4-5 years.
702	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Propagules dispersed intentionally by people? Yes] Lecythis trees are indigenous to Brazil and have been planted in Columbia and Peru, but are generally not known outside South America.
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	1996. Hammond, D.S./ Gourle-Fleury, S./van der Hout, P./ter Steege, H./ Brown, V.K.. A compilation of known Guianan timber trees and the significance of their dispersal mode, seed size and taxonomic affinity to tropical rain gorest management. Forest Ecol	[Propagules adapted to wind dispersal? No] Mammal dispersed.
705	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Propagules water dispersed? Yes] "It is found near water courses, but abhors areas with extensive inundated flooding and is intolerant of water-logged soils.
706	1996. Hammond, D.S./ Gourle-Fleury, S./van der Hout, P./ter Steege, H./ Brown, V.K.. A compilation of known Guianan timber trees and the significance of their dispersal mode, seed size and taxonomic affinity to tropical rain gorest management. Forest Ecol	[Propagules bird dispersed? No] Dispersed by mammals.
707	1960. Kennard, W.C./Winters, H.F.. Some fruits and nuts for the tropics. Miscellaneous Publication 801. U.S. Dept. of Agriculture, Washington, D.C.	[Propagules dispersed by other animals (externally)? No] "The irregular-oblong ridged nuts, about 2 inches long, are enclosed in a heavy grayish-brown, woody fruit 8 inches long and 10 inches wide. Unlike the Brazil nut the fruit of the paradise nut has a large lid, which becomes detached when the fruit matures leaving the nuts dangling inside by a slender, fleshy funiculus. When this structure rots or dries, it breaks and the nuts fall to the ground. Some nuts are collected from wild trees for sale, but most are eaten by wild animals." [No means of external attachment.]
707	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 2, Fruits. Springer, New York	[Propagules dispersed by other animals (externally)? No] No means of external attachment.
708	1996. Hammond, D.S./ Gourle-Fleury, S./van der Hout, P./ter Steege, H./ Brown, V.K.. A compilation of known Guianan timber trees and the significance of their dispersal mode, seed size and taxonomic affinity to tropical rain gorest management. Forest Ecol	[Propagules survive passage through the gut?] Mammal dispersed.
708	2012. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	1960. Kennard, W.C./Winters, H.F.. Some fruits and nuts for the tropics. Miscellaneous Publication 801. U.S. Dept. of Agriculture, Washington, D.C.	[Prolific seed production (>1000/m2)? No] "The irregular-oblong ridged nuts, about 2 inches long, are enclosed in a heavy grayish-brown, woody fruit 8 inches long and 10 inches wide. Unlike the Brazil nut the fruit of the paradise nut has a large lid, which becomes detached when the fruit matures leaving the nuts dangling inside by a slender, fleshy funiculus. When this structure rots or dries, it breaks and the nuts fall to the ground. Some nuts are collected from wild trees for sale, but most are eaten by wild animals." [large seed size]
801	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Prolific seed production (>1000/m2)? No] Yields from seedling trees are highly variable with only 12-20 fruit harvested in the first year of fruit production and mature tree yields are very low with about 50 fruit/year being considered normal.
802	2012. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
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

Low Risk:

- Does not adapt to a broad environmental range.
- No evidence of naturalization.
- No evidence of invasiveness.
- No other species in the genus are invasive.
- Does not have spines, thorns, burrs (easier to control if escapes garden).
- Not toxic to animals or humans.
- Non-allergenic.
- No reproduction from vegetative fragmentation.
- Trees don't produce flowers or fruit for 10-12 years after germination.
- Limited dispersal mechanisms (water and mammals).
- Low fruit production – few seeds.

High Risk:

- Native to tropical region.
- Viable seed.