

Family: *Lecythidaceae*

Taxon: *Couroupita guianensis*

Synonym: *Couratari pedicellaris* Rizzini
Couroupita acreensis R.Knuth
Couroupita antillana Miers
Couroupita froesii R.Knuth

Common Name: cannonball tree
 bala de cañon

Questionnaire :	current 20090513	Assessor:	Assessor	Designation: L
Status:	Assessor Approved	Data Entry Person:	Assessor	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	
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	y
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	y
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	
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	y
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	
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	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	n
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: L

WRA Score **1**

Supporting Data:

101	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Is the species highly domesticated? No] No evidence
102	2013. WRA Specialist. Personal Communication.	NA
103	2013. WRA Specialist. Personal Communication.	NA
201	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Species suited to tropical or subtropical climate(s) 2-High] "Cannonball tree is indigenous to the tropical rainforest of north-eastern South America, especially in the Amazon Basin."
202	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Quality of climate match data 2-High]
203	2006. Brown, S.H.. <i>Couroupita guianensis</i> . University of Florida, IFAS Extension, Gainesville, FL http://lee.ifas.ufl.edu/Hort/GardenPubsAZ/CouroupitaGuianensisCannonballTree.pdf .	[Broad climate suitability (environmental versatility)? No] "Zone: 10a - 12b, 28°F minimum"
203	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Broad climate suitability (environmental versatility)? No] "C. guianensis is a hygrophyte and heliophyte. It is most frequently found in wet areas of lowland forests and river banks subjected to periodic flooding. Although a plant of moist soils, it thrives under dry conditions."
204	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Cannonball tree is indigenous to the tropical rainforest of north-eastern South America, especially in the Amazon Basin."
205	1990. Mori, S.A. et al.. <i>Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae.</i> <i>Flora Neotropica</i> . 21(2): 1-373.	[Does the species have a history of repeated introductions outside its natural range? Yes] " <i>Couroupita guianensis</i> is widely cultivated outside its native range"
205	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Does the species have a history of repeated introductions outside its natural range? Yes] "The tree is planted in gardens elsewhere in the tropics such as in India and Thailand Bolivia, Colombia, Costa Rica, Ecuador, Honduras, Panama, Peru, United States, Venezuela. The species is frequently planted as a botanical curiosity in other tropical and subtropical botanical gardens in many parts of the world."
301	2000. Liogier, A.H./ Martorell, L.F.. <i>Flora of Puerto Rico and adjacent islands: a systematic synopsis. Second Edition Revised.</i> La Editorial, UPR, San Juan, Puerto Rico	[Naturalized beyond native range? No] "A rare ornamental tree planted and persistent in parks and gardens, Puerto Rico; a native to tropical south America, planted in the tropics."
301	2007. McCormack, G.. <i>Cook Islands Biodiversity Database, Version 2007.2.. Cook Islands Natural Heritage Trust, Rarotonga</i> http://cookislands.bishopmuseum.org	[Naturalized beyond native range Not in Cook Islands] "COOK ISLANDS STATUS: Introduced - Recent, Not naturalised; Land, lowlands"
301	2012. Randall, R.P.. <i>A Global Compendium of Weeds. 2nd Edition.</i> Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? Unconfirmed reports of naturalization]
301	2012. Wagner, W.L./Herbst, D.R./Khan, N./Flynn, T.. <i>Hawaiian Vascular Plant Updates: A Supplement to the Manual of the Flowering Plants of Hawai'i & Hawai'i's Ferns & Fern Allies.</i> http://botany.si.edu/pacificislandbiodiversity/hawaii/anflora/supplement.htm	[Naturalized beyond native range? No evidence in Hawaiian Islands]
302	2006. Brown, S.H.. <i>Couroupita guianensis</i> . University of Florida, IFAS Extension, Gainesville, FL http://lee.ifas.ufl.edu/Hort/GardenPubsAZ/CouroupitaGuianensisCannonballTree.pdf .	[Garden/amenity/disturbance weed? No, but could create yard maintenance problems] "This tree is not recommended for small yards. If properly placed, you will not need to prune it but you should expect many fallen leaves and potential damage from the heavy fallen fruits."
303	2012. Randall, R.P.. <i>A Global Compendium of Weeds. 2nd Edition.</i> 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] No evidence
401	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Produces spines, thorns or burrs? No] "Cannonball tree is a large deciduous, unbuttressed tropical tree, growing to 35 m high. Leaves occur in clusters at the ends of the branches on 0.5–3 cm long petioles; lamina simple, narrowly obovate to elliptic, 8–30(–57) cm by 3–10 cm, glabrous on upper surface, pubescent on veins on lower surface, base cuneate and apex acute to acuminate, margin entire with 15–25 pairs of secondary veins."
402	2003. Fujii, Y./Parvez, S. S./Parvez, M.M./Ohmae, Y./Iida, O.. Screening of 239 medicinal plant species for allelopathic activity using the sandwich method. Weed Biology and Management. 3: 233–241.	[Allelopathic? No] "Table 1. Screening of leaf litter of 239 medicinal plant species under different families using the sandwich method" [Couroupita guianensis does not exhibit stronger inhibitory activity greater than the mean]
403	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Parasitic? No] "Cannonball tree is a large deciduous, unbuttressed tropical tree, growing to 35 m high."
404	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Unpalatable to grazing animals? Unknown if foliage is palatable] "The pulp of the fruit of <i>C. guianensis</i> is used to feed animals such as chickens, muscovy ducks, turkeys, and pigs."
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No evidence]
405	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Toxic to animals? No evidence] "The pulp of the fruit of <i>C. guianensis</i> is used to feed animals such as chickens, muscovy ducks, turkeys, and pigs."
406	2013. Dave's Garden. PlantFiles: Cannon Ball Tree, Castanha-de-Macaco - Couroupita guianensis. http://davesgarden.com/guides/pf/go/57539/ [Accessed 27 Oct 2013]	[Host for recognized pests and pathogens? Unknown] No mention of pests or pathogens
407	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Causes allergies or is otherwise toxic to humans? No evidence] "Fruits are edible and are occasionally eaten, but the smell of the white flesh discourages most people from trying them (Anon 2005) . The pulp of the fruit is vinous, white, acid and not disagreeable. Fresh pulp is used by natives to prepare a cooling medicinal drink (Nelson and Wheeler 1937) ." ... "Extract from the plant have been used to treat colds and stomach aches. Juice made from the leaves is used to cure skin diseases. The Shamans of South America have even used tree parts for treating malaria. The inside of the fruit can disinfect wounds and young leaves used to relieve toothache."
407	2013. Dave's Garden. PlantFiles: Cannon Ball Tree, Castanha-de-Macaco - Couroupita guianensis. http://davesgarden.com/guides/pf/go/57539/ [Accessed 27 Oct 2013]	[Causes allergies or is otherwise toxic to humans? Yes] "Danger: Parts of plant are poisonous if ingested; Handling plant may cause skin irritation or allergic reaction; Pollen may cause allergic reaction" ... "There are some restrictions about cultivating this tree. Some people are allergic to the pollen and/or the fruits, so handling them, or even coming too close to them may cause skin irritation."
407	2013. Forest Generation. Cannon ball tree. http://www.forestgeneration.com/cannon-ball-tree.html [Accessed 27 Oct 2013]	[Causes allergies or is otherwise toxic to humans? Possibly Yes] "The flesh is edible for animals and for the Shamans of the Amazon, this powerful nourishment is a part of their diet. For other people the fruit can even be poisonous and might cause a serious allergic reaction."
408	1990. Mori, S.A. et al.. Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae. Flora Neotropica. 21(2): 1-373.	[Creates a fire hazard in natural ecosystems? No evidence, and unlikely given habitat] "Two of the species are found west of the Andes, one of which, <i>C. nicaraguensis</i> , is endemic to Central America and the other, <i>C. guianensis</i> , is widespread. All are canopy species of lowland moist forests. Couroupita nicaraguensis and <i>C. guianensis</i> inhabit non-flooded forests whereas <i>C. subsessilis</i> is restricted to periodically flooded forests of the Amazon River Basin."
409	2013. Hortiocopia Inc.. Couroupita guianensis - Cannonball Tree. http://www.hortiocopia.com/hortpix/html/coagus000.htm [Accessed 27 Oct 2013]	[Is a shade tolerant plant at some stage of its life cycle?] "Exposure: Partial shade or partial sun to full sun"

410	2013. Horticipia Inc.. <i>Couroupita guianensis</i> - Cannonball Tree. http://www.horticipia.com/hortpix/html/coagus000.htm [Accessed 27 Oct 2013]	[Tolerates a wide range of soil conditions? Yes] "Soil pH requirements: Acidic, neutral, slightly alkaline; Soil type: Sandy, clay, loamy"
411	2012. Lim, T.K.. <i>Edible Medicinal and Non-Medicinal Plants</i> . Volume 3, Fruits. Springer, New York	[Climbing or smothering growth habit? No] "Cannonball tree is a large deciduous, unbuttressed tropical tree, growing to 35 m high."
412	1990. Mori, S.A. et al.. <i>Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae</i> . <i>Flora Neotropica</i> . 21(2): 1-373.	[Forms dense thickets? No] "It is a rather widespread but uncommon tree in the forests of Southern Central America and northern South America."
412	2010. Condit, R./Pérez, R./Daguerra, N.. <i>Trees of Panama and Costa Rica</i> . Princeton University Press, Princeton, NJ	[Forms dense thickets? No evidence] "Occurs naturally in Panama and Costa Rica, but rare and restricted."
501	2012. Lim, T.K.. <i>Edible Medicinal and Non-Medicinal Plants</i> . Volume 3, Fruits. Springer, New York	[Aquatic? No] " <i>C. guianensis</i> is a hygrophyte and heliophyte. It is most frequently found in wet areas of lowland forests and river banks subjected to periodic flooding. "
502	2012. Lim, T.K.. <i>Edible Medicinal and Non-Medicinal Plants</i> . Volume 3, Fruits. Springer, New York	[Grass? No] "Cannonball tree is a large deciduous, unbuttressed tropical tree, growing to 35 m high." [Lecythidaceae]
503	2012. Lim, T.K.. <i>Edible Medicinal and Non-Medicinal Plants</i> . Volume 3, Fruits. Springer, New York	[Nitrogen fixing woody plant? No] Lecythidaceae
504	2012. Lim, T.K.. <i>Edible Medicinal and Non-Medicinal Plants</i> . Volume 3, Fruits. Springer, New York	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Cannonball tree is a large deciduous, unbuttressed tropical tree, growing to 35 m high."
601	1998. Mitré, M.. <i>Couroupita guianensis</i> . In: IUCN 2013. <i>IUCN Red List of Threatened Species</i> . Version 2013.1. www.iucnredlist.org [Accessed 27 Oct 2013]	[Evidence of substantial reproductive failure in native habitat? No] "Red List Category & Criteria: Lower Risk/least concern" ... "The species is very widespread but not common anywhere."
602	1986. Randhawa, G.S./Mukhopadhyay, A.. <i>Floriculture in India</i> . Allied Publishers, New Delhi, India	[Produces viable seed? Yes] "Propagation is from seeds or suckers which are produced in abundance."
603	1990. Mori, S.A. et al.. <i>Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae</i> . <i>Flora Neotropica</i> . 21(2): 1-373.	[Hybridizes naturally? Unknown. No reports of hybridization] "Couroupita includes three closely related but distinct species whose boundaries have been confused in the past because of the large range of morphological variation within and between trees of the same species."
604	1965. Cowen, D.V.. <i>Flowering Trees and Shrubs in India</i> . Thacker & Co., Bombay, India	[Self-compatible or apomictic? Yes] "The six thick petals are concave and within them lies a circle of barren stamens without pollen grouped around the ovary. To one side a ladle like appendage juts out and on it are ranged the fertile, or pollen-bearing stamens, curving protectively over the ovary and style. This odd arrangement ensures that if pollination by an insect from another flower is not achieved then self pollination will take place, because as the flower starts to wither the appendage of pollen-bearing stamens closes over the style which is thus pollinated."
604	1981. Ormond, W.T./Pinheiro, M.C.B./De Castells, A.R.C.. <i>A Contribution to the Floral Biology and Reproductive System of Couroupita Guianensis Aubl. (Lecythidaceae)</i> . <i>Annals of the Missouri Botanical Garden</i> . 68(4): 514-523.	[Self-compatible or apomictic? Yes] "The field observations and tests demonstrate that the species studied, although allogamous, is self-compatible."
605	1981. Ormond, W.T./Pinheiro, M.C.B./De Castells, A.R.C.. <i>A Contribution to the Floral Biology and Reproductive System of Couroupita Guianensis Aubl. (Lecythidaceae)</i> . <i>Annals of the Missouri Botanical Garden</i> . 68(4): 514-523.	[Requires specialist pollinators? No] "Many classes of insects may visit the flower (bees, wasps, flies and thrips). <i>Xylocopa brasilianorum</i> L. is the effective pollinator of <i>C. guianensis</i> in the area studied. <i>Apis mellifera</i> L. may occasionally act as pollinator, especially when numerous individuals visit the flower simultaneously"
605	1986. Yarsick, S./de Enrech, N.X./Ramirez, N./Agostini, G.. <i>Notes on the Floral Biology of Couroupita guianensis Aubl. (Lecythidaceae)</i> . <i>Annals of the Missouri Botanical Garden</i> . 73(1): 99-101.	[Requires specialist pollinators? No] "The flowers of <i>Couroupita guianensis</i> are very fragrant and attract many insect visitors." ... "Insects captured visiting flowers were bees belonging to <i>Apis mellifera</i> , <i>Bombus</i> sp., <i>Trygona</i> sp., and <i>Xylocopa frontalis</i> (Oliver), the wasp <i>Polybia</i> , and the flower fly <i>Ornidia obesa</i> F. (Diptera, Syrphidae). More frequent visits were made by the larger insects, such as individuals of the bee genera <i>Bombus</i> and <i>Xylocopa</i> ..."

606	1965. Cowen, D.V.. Flowering Trees and Shrubs in India. Thacker & Co., Bombay, India	[Reproduction by vegetative fragmentation? Yes] "Propagation can be from seeds or by suckers which are produced in quantity and the tree thrives best in moist, lowcountry districts."
606	2013. Puccio, P.. <i>Couroupita guianensis</i> . http://www.photomazza.com/?Couroupita-guianensis [Accessed 27 Oct 2013]	[Reproduction by vegetative fragmentation? Yes] "It reproduces by seed which is to be planted when still fresh as it has a short germination time, or by suckers."
607	2013. Dave's Garden. PlantFiles: Cannon Ball Tree, Castanha-de-Macaco - <i>Couroupita guianensis</i> . http://davesgarden.com/guides/pt/go/57539/ [Accessed 27 Oct 2013]	[Minimum generative time (years)? 12+] "The tree is about 15 meter tall and its age is about 8 years . I am really eager to see its flowers but it has not blossomed yet." ... "too bad that this tree needs up to 15 years for the first beautiful flower." ... "It takes nearly 12 to 15 yrs to bloom." [Grower comments]
701	1990. Mori, S.A. et al.. <i>Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae.</i> <i>Flora Neotropica</i> . 21(2): 1-373.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No. Internally dispersed] "Wild pigs have been observed to eat the pulp and seeds of <i>C. guianensis</i> (Prance & Mori, 1979, 1983). The pulp is probably digested and the seeds dispersed after they pass through the animals' digestive tracts. Consequently, the seeds of this genus are probably dispersed by terrestrial mammals."
702	1990. Mori, S.A. et al.. <i>Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae.</i> <i>Flora Neotropica</i> . 21(2): 1-373.	[Propagules dispersed intentionally by people? Yes] "This species is so widely cultivated outside its native range that it is hard to determine its native distribution. The specimens cited below appear to be from wild trees. However, it may not be native in Costa Rica."
702	1998. Riffle, R.L.. <i>The Tropical Look - An Encyclopedia of Dramatic Landscape Plants.</i> Timber Press, Portland, OR	[Propagules dispersed intentionally by people? Yes] "It is one of the most fascinating and beautiful botanical 'curiosities'." [Ornamental]
703	1990. Mori, S.A. et al.. <i>Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae.</i> <i>Flora Neotropica</i> . 21(2): 1-373.	[Propagules likely to disperse as a produce contaminant? No] "The fruits of <i>Couroupita</i> drop to the ground at maturity. The relatively thin pericarp cracks upon impact to expose a bluish-green pulp in which small, lenticular-shaped seeds are embedded (Schoenberg, 1983a, 1983b, 1983c). Wild pigs have been observed to eat the pulp and seeds of <i>C. guianensis</i> (Prance & Mori, 1979, 1983). The pulp is probably digested and the seeds dispersed after they pass through the animals' digestive tracts. Consequently, the seeds of this genus are probably dispersed by terrestrial mammals,"
704	2012. Lim, T.K.. <i>Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits.</i> Springer, New York	[Propagules adapted to wind dispersal? No] "Fruits indehiscent, globose, 12–25 cm diameter, woody, dark –brown, capsule falling from tree at maturity (Plates 1 and 4). Seeds up to 300, embedded in pulp, the pulp oxidizing bluish-green when exposed to air, the testa with trichomes."
705	2006. Brown, S.H.. <i>Couroupita guianensis</i> . University of Florida, IFAS Extension, Gainesville, FL http://lee.ifas.ufl.edu/Hort/GardenPubsAZ/CouroupitaGuianensisCannonballTree.pdf .	[Propagules water dispersed? Possibly Yes] "The fruits do not open but fall from the tree and rot with an unpleasant odor, unlike that of the flowers. Where native, <i>C. guianensis</i> is a tree of river banks and lowlands, subjected to periodic flooding." [Possible that seeds may be secondarily dispersed by water]
706	2002. Tsou, C.-H./Mori, S.A.. Seed coat anatomy and its relationship to seed dispersal in subfamily <i>Lecythidoideae</i> of the <i>Lecythidaceae</i> (The Brazil Nut Family). <i>Botanical Bulletin of Academia Sinica</i> . 43: 37-56.	[Propagules bird dispersed? No. Adapted for dispersal after falling to ground] "Among the genera of <i>Lecythidoideae</i> with seeds as diaspores, the indehiscent fruited <i>Couroupita guianensis</i> has developed a unique type of seed coat, probably in response to endozoochory by peccaries (Prance and Mori, 1978). The small, flattened seeds possess exotestal cells that are prolonged into long hairs (Figures 1D, 4). The fruit walls do not protect the seeds because they crack open when hitting the ground to expose a bluish green, malodorous pulp, in which the numerous, hairy seeds are embedded." ... "The hairy endozoochorous seeds of <i>C. guianensis</i> probably serve to protect the seeds as they pass through the animal's digestive tracts, or they may speed up seed passage by stimulating intestinal contraction."
707	2002. Tsou, C.-H./Mori, S.A.. Seed coat anatomy and its relationship to seed dispersal in subfamily <i>Lecythidoideae</i> of the <i>Lecythidaceae</i> (The Brazil Nut Family). <i>Botanical Bulletin of Academia Sinica</i> . 43: 37-56.	[Propagules dispersed by other animals (externally)? No. Adapted for internal dispersal] "The fruit walls do not protect the seeds because they crack open when hitting the ground to expose a bluish green, malodorous pulp, in which the numerous, hairy seeds are embedded." ... "The hairy endozoochorous seeds of <i>C. guianensis</i> probably serve to protect the seeds as they pass through the animal's digestive tracts, or they may speed up seed passage by stimulating intestinal contraction."

708	1990. Mori, S.A. et al.. Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae. Flora Neotropica. 21(2): 1-373.	[Propagules survive passage through the gut? Yes] "Wild pigs have been observed to eat the pulp and seeds of <i>C. guianensis</i> (Prance & Mori, 1979, 1983). The pulp is probably digested and the seeds dispersed after they pass through the animals' digestive tracts. Consequently, the seeds of this genus are probably dispersed by terrestrial mammals." ... "Koepeke (pers. comm.) informs me that he observed a tree of <i>C. guianensis</i> in Peru over an extended period, watching for dispersal of the abundant fruits on the ground. The fruits were not touched by rodents and other common animals in the forest over a three week period. However, a wild herd of pigs visited the area and broke open and ate all the fruit which were on the forest floor. The seeds were ingested by the pigs. It is therefore possible that the seeds of this species are dispersed by wild pigs."
708	1997. Brooks, D.M./Bodmer, R.E./Matola, S.. Tapirs - Status Survey and Conservation Action Plan. IUCN/SSC Tapir Specialist Group. IUCN, Gland, CH / Cambridge, UK	[Propagules survive passage through the gut? Presumably Yes] "In Colombia, eating fallen fruit of the cannon ball tree (<i>Couroupita guianensis</i>) has been observed (Hershkovitz 1954)."
708	2002. Tsou, C.-H./Mori, S.A.. Seed coat anatomy and its relationship to seed dispersal in subfamily Lecythidoideae of the Lecythidaceae (The Brazil Nut Family). Botanical Bulletin of Academia Sinica. 43: 37-56.	[Propagules survive passage through the gut? Yes] "Among the genera of Lecythidoideae with seeds as diaspores, the indehiscent fruited <i>Couroupita guianensis</i> has developed a unique type of seed coat, probably in response to endozoochory by peccaries (Prance and Mori, 1978). The small, flattened seeds possess exotestal cells that are prolonged into long hairs (Figures 1D, 4). The fruit walls do not protect the seeds because they crack open when hitting the ground to expose a bluish green, malodorous pulp, in which the numerous, hairy seeds are embedded." ... "The hairy endozoochorous seeds of <i>C. guianensis</i> probably serve to protect the seeds as they pass through the animal's digestive tracts, or they may speed up seed passage by stimulating intestinal contraction."
708	2004. Link, A./Stevenson, P.R.. Fruit dispersal syndromes in animal disseminated plants at Tinigua National Park, Colombia. Revista Chilena de Historia Natural. 77: 319-334.	[Propagules survive passage through the gut? Presumably Yes] "Animal dispersed plant species in Tinigua National Park, that were included in the analyses of dispersal syndromes." [Includes <i>Couroupita guianensis</i>]
801	1990. Mori, S.A. et al.. Lecythidaceae Pt 2. The Zygomorphic-Flowered New World Genera (Couroupita, Corythophora, Bertholletia, Couratari, Eschweilera, & Lecythis), With a Study of 2ndary Xylem of Neotropical Lecythidaceae. Flora Neotropica. 21(2): 1-373.	[Prolific seed production (>1000/m2)? Unknown] "Seeds 82-295 per fruit, slightly hairy to glabrescent on exterior"
801	2002. Tsou, C.-H./Mori, S.A.. Seed coat anatomy and its relationship to seed dispersal in subfamily Lecythidoideae of the Lecythidaceae (The Brazil Nut Family). Botanical Bulletin of Academia Sinica. 43: 37-56.	[Prolific seed production (>1000/m2)? Unknown] " <i>Couroupita guianensis</i> (Figures 1D, 4) possesses fruits with 82-295 seeds."
802	2013. Tropilab Inc.. <i>Couroupita guianensis</i> - Cannonball Tree. http://www.tropilab.com/couroupita.html [Accessed 27 Oct 2013]	[Evidence that a persistent propagule bank is formed (>1 yr)? No] "Due to recalcitrant nature of the seeds, they have a short viable life, can not be dried well and can not withstand low temperatures."
803	2013. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2013. WRA Specialist. Personal Communication.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]
805	2013. 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
- Possibly naturalized
- Poisonous if ingested & handling plant may cause skin irritation or allergic reaction
- Tolerates many soil types
- Self-compatible
- Spreads vegetatively by suckering
- Seeds dispersed by pigs and other mammals

Low Risk Traits

- No reports of invasiveness
- Ornamental and medicinal uses
- Long time to reproductive maturity (10+ years)
- Seeds will not form a persistent seed bank