

Family: *Apocynaceae*

Taxon: *Kopsia arborea*

Synonym: *Kopsia pruniformis* Rchb. f. & Zoll. ex Bakh. j **Common Name:** rui - mu
pin-mala

Questionnaire :	current 20090513	Assessor:	Patti Clifford	Designation: EVALUATE
Status:	Assessor Approved	Data Entry Person:	Patti Clifford	WRA Score 2
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	y	
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		
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		
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	
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	
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	
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
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: EVALUATE

WRA Score 2

Supporting Data:

101	2010. WRA Specialist. Personal Communication.	No evidence of domestication.
201	2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/cgi-bin/npgs/html/genus.pl?1738	Native range: China - Guangdong, Guangxi, Yunnan; Thailand; Vietnam; Indonesia; Malaysia; Philippines; Australia - Queensland.
202	2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/cgi-bin/npgs/html/genus.pl?1738	Native range: China - Guangdong, Guangxi, Yunnan; Thailand; Vietnam; Indonesia; Malaysia; Philippines; Australia - Queensland.
203	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	"Montane forests, often along moist ravines; 400-1000 m. S Guangdong, SE Guangxi, Hainan, S Yunnan [Indonesia, Malaysia, Philippines, Thailand, Vietnam; N Australia]."
203	2004. Middleton, D.J.. A revision of <i>Kopsia</i> (Apocynaceae: Rauvolfioideae). Harvard Papers in Botany. 9: 89-142. http://www.rbge.org.uk/assets/files/science/6.1_Tropical/Kopsia.pdf	Grows in a wide range of forest types as an understory tree and at forest margins on a wide range of soil types from sea level to 1500 m altitude.
203	2010. Black Olive East Nursery. <i>Kopsia arborea</i> . Black Olive East Nursery, http://blackoliveeastnursery.net/zenCart_boe2/index.php?main_page=product_info&cPath=11&products_id=2724&zenid=a7aae7bcb46549719b45cf313e5cd145	Heat hardiness zone 11. Cold hardiness zone 10.
204	2010. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: http://www.ars-grin.gov/cgi-bin/npgs/html/genus.pl?1738	Native range: China - Guangdong, Guangxi, Yunnan; Thailand; Vietnam; Indonesia; Malaysia; Philippines; Australia - Queensland.
205	2010. WRA Specialist. Personal Communication.	No evidence of repeated introductions.
301	2007. Randall, R.P.. Global Compendium of Weeds [Online Database]. http://www.hear.org/gcw/	No evidence.
302	2007. Randall, R.P.. Global Compendium of Weeds [Online Database]. http://www.hear.org/gcw/	No evidence.
303	2007. Randall, R.P.. Global Compendium of Weeds [Online Database]. http://www.hear.org/gcw/	No evidence.
304	2007. Randall, R.P.. Global Compendium of Weeds [Online Database]. http://www.hear.org/gcw/	No evidence.
305	2010. Randall, R.. <i>Kopsia fruticosa</i> (Apocynaceae). Global Compendium of Weeds, http://www.hear.org/gcw/species/kopsia_fruticosa/	The Global Compendium of Weeds lists <i>Kopsia fruticosa</i> as a weed of rubber plantations in Thailand. However, there is not data available that discusses impacts and control efforts.
401	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	No spines, thorns, burrs.
402	2010. WRA Specialist. Personal Communication.	Unknown.

403	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Not parasitic.
404	2010. WRA Specialist. Personal Communication.	Unknown.
405	2010. WRA Specialist. Personal Communication.	Unknown.
406	2010. Black Olive East Nursery. Kopsia arborea. Black Olive East Nursery, http://blackoliveeastnursery.net/zenCart_boe2/index.php?main_page=product_info&cPath=11&products_id=2724&zenid=a7aae7bcb46549719b45cf313e5cd145	No major pest problems.
406	2010. WRA Specialist. Personal Communication.	Unknown.
407	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	A decoction of bark is used as an enema. The leaves and fruit are used to treat sore throat and tonsillitis.
407	2010. McLaughlin, J.. A word or two about gardening: when enjoying a Miami-Dade landscape please, please don't eat the daisies. University of Florida IFAS Extension, http://miami-dade.ifas.ufl.edu/pdfs/urban_hort/When%20enjoying%20a%20Miami-Dade%20landsc	Kopsia arborea fruit is highly poisonous (contains several novel indole alkaloids).
408	2010. WRA Specialist. Personal Communication.	Unknown.
409	2010. Black Olive East Nursery. Kopsia arborea. Black Olive East Nursery, http://blackoliveeastnursery.net/zenCart_boe2/index.php?main_page=product_info&cPath=11&products_id=2724&zenid=a7aae7bcb46549719b45cf313e5cd145	Full sun to partial shade.
410	2004. Middleton, D.J.. A revision of Kopsia (Apocynaceae: Rauvolfioideae). Harvard Papers in Botany. 9: 89-142. http://www.rbge.org.uk/assets/files/science/6.1_Tropical/Kopsia.pdf	Grows in a wide range of forest types as an understory tree and at forest margins on a wide range of soil types from sea level to 1500 m altitude.
411	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Tree to 15 m tall.
412	2010. WRA Specialist. Personal Communication.	Unknown.
501	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Terrestrial.
502	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Apocynaceae

503	2010. www.nationmaster.com. Encyclopedia Nitrogen fixation. Nationmaster.com, http://www.nationmaster.com/encyclopedia/Nitrogen-fixation	Not in a nitrogen-fixing family.
504	1995. Wu, Z.Y./Raven, P.H. (eds.). <i>Flora of China</i> vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Tree.
601	2010. WRA Specialist. Personal Communication.	No evidence.
602	2010. Biodiversity International. The species compendium <i>Kopsia arborea</i> . Biodiversity International, http://www2.biodiversityinternational.org/index.asp	"Evidence of dormancy: Germination begins after 1 w, 78% germination after 10 w (Ng, 1977)."
603	2010. WRA Specialist. Personal Communication.	Unknown.
604	2010. WRA Specialist. Personal Communication.	Unknown.
605	1996. Sennblad, B./Bremer, B.. The familial and subfamilial relationships of Apocynaceae and Asclepiadaceae evaluated with rbcL data. <i>Plant Systematics and Evolution</i> . 202: 153-175.	"The families Apocynaceae and Asclepiadaceae consist of mainly pantropical/subtropical plants with abundant latex and usually with opposite leaves. They have five-merous sympetalous flowers and are mainly insect-pollinated." [family level description]
606	2010. WRA Specialist. Personal Communication.	Unknown.
607	2010. WRA Specialist. Personal Communication.	Unknown.
701	1995. Wu, Z.Y./Raven, P.H. (eds.). <i>Flora of China</i> vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Drupes black or blue-black, ellipsoid, 2.5-3.5 X 1.5-2 cm
701	2010. WRA Specialist. Personal Communication.	No evidence of unintentional dispersal.
702	2010. Black Olive East Nursery. <i>Kopsia arborea</i> . Black Olive East Nursery, http://blackoliveeastnursery.net/zenCart_boe2/index.php?main_page=product_info&cPath=11&products_id=2724&zenid=a7aae7bcb46549719b45cf313e5cd145	The Black Olive East Nursery in Florida has <i>Kopsia arborea</i> for sale.
703	2010. WRA Specialist. Personal Communication.	Not grown with produce.
704	1995. Wu, Z.Y./Raven, P.H. (eds.). <i>Flora of China</i> vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Drupes black or blue-black, ellipsoid, 2.5-3.5 X 1.5-2 cm
705	1995. Wu, Z.Y./Raven, P.H. (eds.). <i>Flora of China</i> vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	"Montane forests, often along moist ravines; 400-1000 m. S Guangdong, SE Guangxi, Hainan, S Yunnan [Indonesia, Malaysia, Philippines, Thailand, Vietnam; N Australia]."
706	1995. Wu, Z.Y./Raven, P.H. (eds.). <i>Flora of China</i> vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Drupes black or blue-black, ellipsoid, 2.5-3.5 X 1.5-2 cm

707	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Drupes black or blue-black, ellipsoid, 2.5-3.5 X 1.5-2 cm [no means of external attachment]
708	1896. Ridley, H.N.. The dispersal of seeds by birds. 8: .Rait, Henderson and Co., Limited, London http://books.google.com/books?id=F0zPAAAAMA AJ&printsec=frontcover&source=gbs_v2_summary_r&cad=0#v=onepage&q&f=false	"Kopsia has an inconspicuous drupe with a single seed and is apparently dispersed by mammals."
801	1995. Wu, Z.Y./Raven, P.H. (eds.). Flora of China vol. 16 (Gentianaceae through Boraginaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis http://flora.huh.harvard.edu/china/mss/volume16/index.htm	Drupes black or blue-black, ellipsoid, 2.5-3.5 X 1.5-2 cm
801	2010. WRA Specialist. Personal Communication.	Seed production less than 1000/m2. [based on visual estimation of seed size and number of inflorescences/flowers per tree.
802	2010. Biodiversity International. The species compendium <i>Kopsia arborea</i> . Biodiversity International, http://www2.biodiversityinternational.org/index.asp	"Evidence of dormancy: Germination begins after 1 w, 78% germination after 10 w (Ng, 1977)."
803	2010. WRA Specialist. Personal Communication.	Unknown.
804	2010. WRA Specialist. Personal Communication.	Unknown.
805	2010. WRA Specialist. Personal Communication.	Unknown