

Family: *Malpigiaceae***Taxon:** *Malpighia emarginata***Synonym:** *Malpighia glabra hort., pro parte*
Malpighia puniceifolia auct.
*Malpighia retusa Benth.***Common Name:** acerola
Barbados cherry
West Indian cherry

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	y
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	n
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	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	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	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	y
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	2
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/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	y

Designation: L

WRA Score -1

Supporting Data:

101	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Is the species highly domesticated? No. Assessment is for wild type] "The primary source of acerola plants found outside the Caribbean and Latin America has been Puerto Rico, Florida and Hawaii where cultivar development was a primary objective."
101	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Is the species highly domesticated?? No] "Erstwhile, <i>M. emarginata</i> and <i>M. glabra</i> were considered as different species, the former has leaves with emarginate tips and the latter with glabrous foliage, but now <i>M. glabra</i> is considered by most authors to be a synonym of <i>M. emarginata</i> . Both species have emarginate leaves and rounded or apiculate leaves on the same tree."
102	2013. WRA Specialist. Personal Communication.	NA
103	2013. WRA Specialist. Personal Communication.	NA
201	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Species suited to tropical or subtropical climate(s) 2-High] "Acerola is presumed to be a native of the Caribbean islands, Central America or northern South America."
202	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Quality of climate match data 2-High]
203	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Broad climate suitability (environmental versatility)? No] "The acerola is a tropical plant thriving in warm, lowland climates. Acerola is best adapted to sea level, though it does fairly well at all elevations in Puerto Rico (Acostegui and Pennock, 1955) and in Hawaii to 150 m."
203	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Broad climate suitability (environmental versatility)? No] "Acerola is adaptable to climatic conditions in the tropics and subtropics. Mature tree can withstand short periods of frost down to -2°C but young plants are killed by frost at -1°C . Acerola is naturally adapted to both medium- and low-rainfall regions. It cannot tolerate water-logging and is drought tolerant but adequate water supply is essential for good yield."
204	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Acerola is presumed to be a native of the Caribbean islands, Central America or northern South America."
205	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Does the species have a history of repeated introductions outside its natural range? Yes] " <i>Malpighia emarginata</i> is widely cultivated throughout the tropics for its fruit, which has a high content of vitamin C. It was long incorrectly called <i>Malpighia puniceifolia</i> . It is recognized by its large, lobed fruits and its obovate leaves crowded in short shoots."
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] "It is now cultivated globally in the tropics and subtropics in Australia, Brazil, Canary Islands, Cuba, Ethiopia, French Guiana, Ghana, Hawaii, India, Indonesia, Jamaica, Madagascar, Pakistan, Peru, Philippines, Puerto Rico, Sri Lanka, Surinam, Taiwan, Thailand, Myanmar, Venezuela, Vietnam and Zanzibar."
301	2000. Liogier, A.H./Martorell, L.F.. Flora of Puerto Rico and adjacent islands: a systematic synopsis. Second Edition Revised. La Editorial, UPR, San Juan, Puerto Rico	[Naturalized beyond native range?] "Occasionally spontaneous after cultivation for its fruits, Puerto Rico,"
301	2003. Kairo, M./Ali, B./Cheesman, O./Haysom, K./Murphy, S.. Invasive Species Threats in the Caribbean Region – Report to the Nature Conservancy. CAB International, Curepe, Trinidad & Tobago	[Naturalized beyond native range? Yes] "10.8 Appendix 8: A list of species reported exotic, naturalized or naturalized and invasive in the Caribbean. (Exotic = known to be present in the Caribbean in cultivation, captivity or in the wild. Naturalised = known to be established in the wild in at least one Caribbean country. Invasive = established in the wild and reported to be spreading, and / or regarded as a threat to a native species, ecosystem or causing a socio economic impact.)" [<i>Malpighia emarginata</i> = Exotic and Naturalized in Puerto Rico, but not considered invasive]
301	2003. Wunderlin, R.P./Hansen, B.F.. Guide to the Vascular Plants of Florida. University Press of Florida, Gainesville, FL	[Naturalized beyond native range?] "Disturbed sites. Rare; Lee and Miami-Dade Cos. Native to tropical America. Escaped from cultivation"
301	2011. Guézou, A. et al.. CDF Checklist of Galapagos Introduced Plants. In: Bungartz, F. et al. (eds.). CDF Galapagos Species Checklist. Charles Darwin Foundation, Puerto Ayora, Galapagos http://www.darwinfoundation.org/datazone/checklists/ecological-group	[Naturalized beyond native range? Not in Galapagos] "Origin: Introduced, Cultivated"

301	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Naturalized beyond native range? Yes] "Acerola is indigenous to the Lesser Antilles from St. Croix to Trinidad, also Curacao and Margarita and neighbouring Central America including Mexico and southern Texas and northern South America as far south as Bahia in Brazil. It has become naturalized in Cuba, Jamaica and Puerto Rico after cultivation, and is commonly grown in house yards in the Bahamas and Bermuda, and to a lesser extent in Central and South America."
301	2012. Wagner, W.L./Herbst, D.R./Khan, N./Flynn, T.. Hawaiian Vascular Plant Updates: A Supplement to the Manual of the Flowering Plants of Hawai'i & Hawai'i's Ferns & Fern Allies. http://botany.si.edu/pacificislandbiodiversity/hawaii/anflora/supplement.htm	[Naturalized beyond native range? No evidence in Hawaiian Islands]
302	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Garden/amenity/disturbance weed? No] "The fallen fruit can create a mess if the tree overhangs a sidewalk or patio." [Not regarded as a weed, but could become a maintenance problem]
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] <i>Malpighia coccigera</i> . <i>Malpighia cubensis</i> are listed as naturalized and/or weeds of unspecified impacts
401	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Produces spines, thorns or burrs? No] "Erect shrub to small tree to 6(-8) m tall, young branches, petioles and leaves green, strigillose, older branches smooth or more commonly with prominent, whitish or yellowish, round lenticels. Leaves subchartaceous to chartaceous, rarely subcoriaceous, borne laxly along the branches, internodes (2-)3-4(-5) cm long, or more commonly crowded in short shoots, internodes ca. 1.0 mm long; petioles slender, usually glabrous (1-)1.5 3.0(4) mm long; blades variously elliptic- obovate, lanceolate-obovate, oblong obovate or obovate, rarely ovate or widely orbicular obovate, obtuse, usually emarginate or rarely acute at apex, acute to cuneate or rarely somewhat obtuse at base, (1-)2-5.5(-8.5) cm long, 0.7- 2.5(-5) cm wide, smooth, midvein prominent below; stipules free; reddish or green, deciduous or not, strigillose when young, becoming glabrous, subulate, ca. 1 mm long."
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] No evidence for <i>M. glabra</i> [Synonym or closely related to <i>M. emarginata</i>]
403	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Parasitic? No] "Erect shrub to small tree to 6(-8) m tall..."
404	2002. Everitt, J.H./Drawe, D.L./Lonard, R.I.. Trees, shrubs, and cacti of south Texas. Texas Tech University Press, Lubbock, Texas	[Unpalatable to grazing animals? No] "White-tailed deer occasionally browse the leaves, and the fruits are eaten by the coyote and raccoon."
404	2004. Nugent, J./Boniface, J.. Permaculture Plants: A Selection. Chelsea Green Publishing, White River Jct., VT	[Unpalatable to grazing animals? No] "It is a good animal forage." [<i>Malpighia glabra</i> is a synonym for or closely related to <i>M. emarginata</i>]
405	2004. Nugent, J./Boniface, J.. Permaculture Plants: A Selection. Chelsea Green Publishing, White River Jct., VT	[Toxic to animals? No] "It is a good animal forage." [<i>Malpighia glabra</i> is a synonym for or closely related to <i>M. emarginata</i>]
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[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] "Acerola is relatively free from serious fungal diseases." ... "Approximately 23 different pests on acerola have been listed by Pollard and Alleyne (1986) in the Caribbean region but none has been found to be serious."

407	1987. Morton, J.F.. Fruits of warm climates - Barbados Cherry <i>Malpighia punicifolia</i> ; L. <i>Malpighia glabra</i> Millsp.. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/barbados_cherry.html#Harmful%20Effects [Accessed 31 May 2013]	[Causes allergies or is otherwise toxic to humans? Yes] "Physicians in Curacao report that children often require treatment for intestinal inflammation and obstruction caused by eating quantities of the entire fruits, including seeds, from the wild Barbados cherries which abound on the island. People who pick Barbados cherries without gloves and long sleeves may suffer skin irritation from contact with the minute stinging hairs on the leaves and petioles." [<i>Malpighia glabra</i> is a synonym for or closely related to <i>M. emarginata</i>]
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, but see Morton] "The acid fruit can be eaten fresh out of hand but is usually processed into juice, puree, syrup, jelly, jams and other preserves. The puree may be dried or frozen for future use." ... "In both subacute and subchronic toxicological tests, no death was recorded and the body weights and food intakes of the rats did not differ significantly from the control groups. Besides, there were no abnormal clinical signs related to administration of C-AP in any of the experimental animals. These results provided an important reference for the safety of acerola polyphenols as a food supplement for human consumption." [Widely cultivated for food with no evidence of toxicity]
408	2004. Nugent, J./Boniface, J.. Permaculture Plants: A Selection. Chelsea Green Publishing, White River Jct., VT	[Creates a fire hazard in natural ecosystems? No] "The wood will not burn unless totally dried." [No evidence for <i>M. glabra</i> , a synonym of <i>M. emarginata</i>]
409	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Is a shade tolerant plant at some stage of its life cycle? Yes] "Shading does lead to increased leaf size and reduced ascorbic acid in the fruit."
410	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Tolerates a wide range of soil conditions ? Yes] "A wide variety of soil types, provided they have good drainage, are tolerated."
411	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Climbing or smothering growth habit? No] "Erect shrub to small tree to 6(-8) m tall..."
412	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Forms dense thickets? No] No evidence
412	2000. Liogier, A.H./ Martorell, L.F.. Flora of Puerto Rico and adjacent islands: a systematic synopsis. Second Edition Revised. La Editorial, UPR, San Juan, Puerto Rico	[Forms dense thickets? No] No evidence
412	2003. Wunderlin, R.P./Hansen, B.F.. Guide to the Vascular Plants of Florida. University Press of Florida, Gainesville, FL	[Forms dense thickets? No] No evidence
412	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Forms dense thickets? No] No evidence
501	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Aquatic? No] Terrestrial tree
502	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Grass? No] Malpighiaceae
503	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Nitrogen fixing woody plant? No] Malpighiaceae
504	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Erect shrub to small tree to 6(-8) m tall..."

601	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Evidence of substantial reproductive failure in native habitat? No] "Acerola is indigenous to the Lesser Antilles from St. Croix to Trinidad, also Curacao and Margarita and neighbouring Central America including Mexico and southern Texas and northern South America as far south as Bahia in Brazil. It has become naturalized in Cuba, Jamaica and Puerto Rico after cultivation, and is commonly grown in house yards in the Bahamas and Bermuda, and to a lesser extent in Central and South America."
602	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Produces viable seed? Yes] "Seed is used to produce seedlings for selection purposes or for rootstocks if grafting will be utilized."
603	2010. Mondin, M./Oliveira, C.A.D./Vieira, M.L.C.. Karyotype characterization of <i>Malpighia emarginata</i> (Malpighiaceae). <i>Revista Brasileira de Fruticultura</i> . 32(2): 369-374.	[Hybridizes naturally? No] "Originally, botanists classified the Barbados cherry as <i>Malpighia glabra</i> and the West Indian cherry as <i>M. puniceifolia</i> while others proposed that <i>M. emarginata</i> might result from hybridization between these species. In 1986, the International Board of Plant Genetic Resources (IBPGR) stated that <i>Malpighia emarginata</i> is the correct name for the West Indian cherry (acerola) and rejected the use of <i>M. glabra</i> as a synonym."
604	1999. Freitas, B.M./Alves, J.E./Brandão, G.F./Araújo, Z.B.. Pollination requirements of West Indian cherry (<i>Malpighia emarginata</i>) and its putative pollinators, <i>Centris</i> bees, in NE Brazil. <i>The Journal of Agricultural Science</i> . 133(3): 303-311.	[Self-compatible or apomictic? Yes] "Both hand cross and self-pollination can lead to fruit set of West Indian cherry flowers." ... "The IBPGR (1986) reports self-incompatibility in cultivars of West Indian cherry, but the trees studied by us and in Hawaii set fruits when self-pollinated, though in smaller numbers than when open or cross pollinated."
605	1999. Freitas, B.M./Alves, J.E./Brandão, G.F./Araújo, Z.B.. Pollination requirements of West Indian cherry (<i>Malpighia emarginata</i>) and its putative pollinators, <i>Centris</i> bees, in NE Brazil. <i>The Journal of Agricultural Science</i> . 133(3): 303-311.	[Requires specialist pollinators? Yes] "Renewed interest in West Indian cherry brought back an old problem: its low percentage of fruit set. Trees introduced to Hawaii in the 1950s showed extremely low fruit set (1.3-11.5%) despite profuse flowering, and studies demonstrated that absence of pollination was a contributing factor to its poor fruit set (Yamane & Nakasone 1961; Miyashita et al. 1964). However, placing honeybee colonies in orchards did not help to increase fruit set (Yamane & Nakasone 1961)." ... "Apparently, instead of nectar, owners of the West Indian cherry produce oils in glands of their calyx which are collected by females of <i>Centris</i> spp. Using specialized clumps of spatulate hairs situated in their forelegs (Raw 1979). The availability of <i>Centris</i> bees in orchards is now considered the main factor limiting production of West Indian cherry (IBPGR 1986) and Free (1993) suggested that the importation of <i>Centris</i> bees to Hawaii should be considered."
606	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Reproduction by vegetative fragmentation? No] "Seed is used to produce seedlings for selection purposes or for rootstocks if grafting will be utilized." [Well-studied species with no evidence of natural vegetative spread, suckering or fragmentation]
607	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Minimum generative time (years)? 2] "Commercial size yields can be expected from 2-year-old trees..."
701	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. <i>Annals of the Missouri Botanical Garden</i> . 67(4): 851-945.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "Fruit subglobose, depressed at the poles, 3 9 lobed, 1-3 cm diam., very fleshy; pyrenes ovoid, 0.7-1.5 cm long, 5-12 mm wide, the dorsal wing well developed, to 3.5 mm wide in cultivated plants, small and almost obsolete in wild populations; intermediate wings absent." [No evidence. Fruits and seeds relatively large and lack means of external attachment]
702	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. <i>Annals of the Missouri Botanical Garden</i> . 67(4): 851-945.	[Propagules dispersed intentionally by people? Yes] "Malpighia emarginata is widely cultivated throughout the tropics for its fruit..."
702	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Propagules dispersed intentionally by people? Yes] "Acerola makes a good hedge plant and has become a poplar bonsai plant especially in Taiwan. The bark contains 20–25% tannin and has been employed in the leather industry. It provides a hard and heavy timber."
703	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Propagules likely to disperse as a produce contaminant? No] "Large quantities of pyrenes are necessary because as many as 50% may be devoid of viable seeds." [Cultivated for its fruit, which are unlikely to contaminate other produce, especially when seed set and viability are low]
704	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. <i>Annals of the Missouri Botanical Garden</i> . 67(4): 851-945.	[Propagules adapted to wind dispersal? No] "Fruit subglobose, depressed at the poles, 3 9 lobed, 1-3 cm diam., very fleshy; pyrenes ovoid, 0.7-1.5 cm long, 5-12 mm wide, the dorsal wing well developed, to 3.5 mm wide in cultivated plants, small and almost obsolete in wild populations; intermediate wings absent."

704	2012. Lim, T.K.. Edible Medicinal and Non-Medicinal Plants. Volume 3, Fruits. Springer, New York	[Propagules adapted to wind dispersal? No] "Fruit is a drupe, obovate to round, shallowly 3-lobed with a thin epicarp which turns from green to pale greenish yellow to pink and glossy red when ripe (Plates 1, 2, 4, and 5). The seeds are embedded in the orange-coloured, juicy and acid pulp. The 3 small, rounded seeds each have 2 large and 1 small fluted wings forming triangular, corrugated inedible "stones". [No evidence that wings are adaptations for wind dispersal]
705	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Propagules water dispersed? No] "...it has been readily naturalized through dispersal by fruit-eating birds." [Fleshy-fruited, with no evidence of dispersal by water]
706	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Propagules bird dispersed? Yes] "Fruit subglobose, depressed at the poles, 3-9-lobed, 1-3 cm diam., very fleshy; pyrenes ovoid, 0.7-1.5 cm long, 5-12 mm wide, the dorsal wing well developed, to 3.5 mm wide in cultivated plants, small and almost obsolete in wild populations; intermediate wings absent."
706	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Propagules bird dispersed? Yes] "...it has been readily naturalized through dispersal by fruit-eating birds."
706	2011. Cestari, C.. Conhecimento de moradores sobre frugivoria por aves em uma região urbanizada e com fragmentos de restinga no sudeste do Brasil. Biotemas. 22(3): 221-227.	[Propagules bird dispersed? Yes] "This study evaluated the knowledge of dwellers about frugivory by birds in restinga fragments, an ecosystem threatened due to the rapid increase of human demographic expansion." [In Portuguese: Study lists frugivory of <i>M. emarginata</i>]
707	1980. Woodson, Jr., R.E./Schery, R.W./Cuatrecasas, J./Croat, T.B./Vivaldi, J.. Flora of Panama. Part VI. Family 93. Malpighiaceae. Annals of the Missouri Botanical Garden. 67(4): 851-945.	[Propagules dispersed by other animals (externally)? No] "Fruit subglobose, depressed at the poles, 3-9 lobed, 1-3 cm diam., very fleshy; pyrenes ovoid, 0.7-1.5 cm long, 5-12 mm wide, the dorsal wing well developed, to 3.5 mm wide in cultivated plants, small and almost obsolete in wild populations; intermediate wings absent." [Fruits/seeds lack means of external attachment]
708	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Propagules survive passage through the gut? Presumably Yes] "...it has been readily naturalized through dispersal by fruit-eating birds."
801	1999. Freitas, B.M./Alves, J.E./Brandão, G.F./Araújo, Z.B.. Pollination requirements of West Indian cherry (<i>Malpighia emarginata</i>) and its putative pollinators, Centris bees, in NE Brazil. The Journal of Agricultural Science. 133(3): 303-311.	[Prolific seed production (>1000/m ²)? No. Low fruit set in cultivation] "The IBPGR (1986) reports self-incompatibility in cultivars of West Indian cherry, but the trees studied by us and in Hawaii set fruits when self-pollinated, though in smaller numbers than when open or cross-pollinated. Since the low fruit set of 50% or less cannot be explained solely by self-incompatibility, other causes must be sought."
801	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Prolific seed production (>1000/m ²)? No] "Large quantities of pyrenes are necessary because as many as 50% may be devoid of viable seeds."
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)? No] "Storage Behaviour: Recalcitrant? Storage Conditions: Seeds cannot be dried (Harrington, 1972); viability can be maintained for 6 months at 5°C with partially dried seeds (Riley, 1981)" [Recalcitrant seeds not likely to form a soil seed bank]
803	2013. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2008. Janick, J./Paull, R.E.. The Encyclopedia of Fruit & Nuts. Cabi Publishing, Wallingford, UK	[Tolerates, or benefits from, mutilation, cultivation, or fire? Uncertain] "Acerola height can be readily controlled by pruning, but it still benefits from windbreaks." [Unknown if plant will recover after heavy pruning]
805	1987. Morton, J.F.. Fruits of warm climates - Barbados Cherry <i>Malpighia punicifolia</i> ; L. <i>Malpighia glabra</i> Millsp.. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/barbados_cherry.html#Harmful%20Effects [Accessed 31 May 2013]	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Yes] "Few diseases have been reported. However, in Florida, there are cases of anthracnose caused by <i>Colletotrichum gloeosporioides</i> , and leafspotting by the fungus, <i>Cercospora bunchosiae</i> , is a serious malady in Florida, Puerto Rico and Hawaii."

Summary of Risk Traits

High Risk / Undesirable Traits

- Naturalized in Cuba, Jamaica and Puerto Rico
- Thrives in tropical climates
- Fallen fruit can create a mess
- Irritating hairs on leaves and petioles
- Shade tolerant
- Tolerates many soil conditions (and potentially able to exploit many different habitat types)
- Self-compatible
- Reaches maturity in two years
- Seeds dispersed by birds

Low Risk / Desirable Traits

- Despite ability to spread, no negative impacts have been documented
- Edible fruit
- Landscaping and ornamental value
- Requires specialized pollinators
- Seed set typically low