

Taxon: <i>Annona hypoglauca</i> Mart.	Family: Annonaceae
Common Name(s): ahuaracatoco anonilla chirimoya guanábana sacha majagua de aparo sacha-anona wild cherimoya wild soursop	Synonym(s): <i>Annona tessmannii</i> Diels

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 7 Apr 2016
WRA Score: 2.0	Designation: L	Rating: Low Risk

Keywords: Tropical Tree, Unarmed, Edible Fruit, Fleshy-Fruit, Fish-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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)	y
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		

Qsn #	Question	Answer Option	Answer
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
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		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
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		
604	Self-compatible or apomictic		
605	Requires specialist pollinators		
606	Reproduction by vegetative fragmentation		
607	Minimum generative time (years)		
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	y
801	Prolific seed production (>1000/m2)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II, Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	No evidence
	Phillips, O. (1993). The potential for harvesting fruits in tropical rainforests: new data from Amazonian Peru. <i>Biodiversity & Conservation</i> , 2(1), 18-38	No evidence
	Missouri Botanical Garden. 2016. Flora of the Venezuelan Guayana. Annonaceae. http://www.mobot.org/MOBOT/research/ven-guayana/annonaceae/welcome.shtml . [Accessed 7 Apr 2016]	No evidence

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	NA

201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 7 Apr 2016]	"Native: Southern America Brazil: Brazil - Acre, - Amazonas, - Para, - Amapa, - Rondonia, - Roraima Northern South America: French Guiana; Guyana; Suriname; Venezuela - Amazonas Western South America: Bolivia - Beni, - La Paz, - Pando; Colombia; Ecuador - Napo, - Sucumbios; Peru - Amazonas, - Loreto, - Madre de Dios, - Ucayali"

Qsn #	Question	Answer
202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 7 Apr 2016]	

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Missouri Botanical Garden. 2016. Flora of the Venezuelan Guayana. Annonaceae. http://www.mobot.org/MOBOT/research/ven-guayana/annonaceae/welcome.shtml . [Accessed 7 Apr 2016]	[Low elevation tropics] "Seasonally flooded riparian forests, ca. 100 m; Amazonas (San Carlos de Río Negro). Colombia, Guyana, Suriname, French Guiana, Peru, Amazonian Brazil, Bolivia."

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 7 Apr 2016]	"Native: Southern America Brazil: Brazil - Acre, - Amazonas, - Para, - Amapa, - Rondonia, - Roraima Northern South America: French Guiana; Guyana; Suriname; Venezuela - Amazonas Western South America: Bolivia - Beni, - La Paz, - Pando; Colombia; Ecuador - Napo, - Sucumbios; Peru - Amazonas, - Loreto, - Madre de Dios, - Ucayali"

205	Does the species have a history of repeated introductions outside its natural range?	n
	Source(s)	Notes
	Trade Winds Fruit. 2016. Tropical Fruit. http://www.tradewindsfruit.com/tropical-fruit/ . [Accessed 7 Apr 2016]	"An exceedingly rare <i>Annona</i> (or sometimes <i>Raimondia</i>) from the highland rainforests of South America."
	WRA Specialist. 2016. Personal Communication	No evidence of widespread cultivation outside native range

Qsn #	Question	Answer
301	Naturalized beyond native range	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence
	Wagner, W.L., Herbst, D.R. & Lorence, D.H. 2016. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/pacificislandbiodiversity/hawaiianflora/index.htm . [Accessed 7 Apr 2016]	No evidence
302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence
303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence
304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence
305	Congeneric weed	y
	Source(s)	Notes
	Weber, E. 2003. Invasive Plant Species of the World. A Reference Guide to Environmental Weeds. CABI Publishing, Wallingford, UK	" <i>Annona glabra</i> is an invasive tree/shrub that forms dense thickets and shades out native shrubs and trees by preventing their establishment and growth. Species richness is reduced in stands of this tree/shrub."

Qsn #	Question	Answer
401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II, Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	[No evidence] "A shrub up to 10 metres high; young branchlets ferruginous-tomentose. Leaves on 7-11 mm long petioles. rather membranaceous. smooth and finally glabrous on upper side. white-glaucous and covered with small . lustrous. appressed hairs on the under side. elliptic. ovate or oblong. rotundate or shortly acute at the base. rather long and mostly gradually attenuate at the apex. 10-18 cm long and 3.5-8.5 cm broad."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

403	Parasitic	n
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II, Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	"A shrub up to 10 metres high" [Annonaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. Biotropica, 10 (3), 170–183	[Fruit palatable to fish & humans. Palatability of foliage unknown] "The yellow fruits fall into the water immediately upon ripening and float at the surface where they are eaten by the fish, which swallow the entire seed" ... "Because of its fine flavor, fruits of <i>Annona hypoglauca</i> are also appreciated by man"
	Janick, J.& Paull, R.E. 2008. The Encyclopedia of Fruit & Nuts. CABI Publishing, Wallingford, UK	[Unknown. Related <i>Annona</i> is palatable to animals] " <i>Annona senegalensis</i> wild soursop" ... "Young plants do not compete well with weeds and need to be protected from fire and browsing animals."

405	Toxic to animals	n
	Source(s)	Notes
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	
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Qsn #	Question	Answer
	Source(s)	Notes
	Peña, J. E., Nadel, H., Barbosa-Pereira, M., & Smith, D. (2002). Pollinators and Pests of Annona Species. Tropical Fruit Pests and Pollinators: Biology, Economic Importance, Natural Enemies, and Control, 197. CAB International, Wallingford, UK	[Generic description of pests. Specifics for <i>A. hypoglauca</i> unknown] "In the Neotropics 296 species of arthropods are recorded as associated with Annona species. The families most frequently observed on Annona species are Coccidae (Homoptera), Noctuidae, Oecophoridae (Lepidoptera), and Eurytomidae (Hymenoptera)."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. Biotropica, 10 (3), 170–183	[No evidence] "Because of its fine flavor, fruits of <i>Annona hypoglauca</i> are also appreciated by man. The soft flesh of the fruit contains starch."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Missouri Botanical Garden. 2016. Flora of the Venezuelan Guayana. Annonaceae. http://www.mobot.org/MOBOT/research/ven-guayana/annonaceae/welcome.shtml . [Accessed 7 Apr 2016]	[No evidence. Does not occur in fire prone habitats] "Seasonally flooded riparian forests, ca. 100 m; Amazonas (San Carlos de Río Negro). Colombia, Guyana, Suriname, French Guiana, Peru, Amazonian Brazil, Bolivia."

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. Biotropica, 10 (3), 170–183	[Shade tolerance unknown] " <i>Annona hypoglauca</i> occurs in the inundated forests (varzeas) of Surinam, and Brazilian and Bolivian Amazon..."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. Biotropica, 10 (3), 170–183	[Soil types unknown] " <i>Annona hypoglauca</i> occurs in the inundated forests (varzeas) of Surinam, and Brazilian and Bolivian Amazonia..."

411	Climbing or smothering growth habit	n
	Source(s)	Notes

Qsn #	Question	Answer
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II, Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	"A shrub up to 10 metres high; young branchlets ferruginous-tomentose."
412	Forms dense thickets	n
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II, Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	[No evidence] "Distribution: Suriname and Amazon basin to Bolivia"
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. Biotropica, 10 (3), 170–183	No evidence
501	Aquatic	n
	Source(s)	Notes
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. Biotropica, 10 (3), 170–183	[Not aquatic, but occurs in inundated forests] "Annona hypoglauca occurs in the inundated forests (varzeas) of Surinam, and Brazilian and Bolivian Amazonia (Fries 1931:250)..."
502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 7 Apr 2016]	"Family: Annonaceae"
503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 7 Apr 2016]	"Family: Annonaceae"
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II, Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	"A shrub up to 10 metres high..."
601	Evidence of substantial reproductive failure in native habitat	n

Qsn #	Question	Answer
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 7 Apr 2016]	[No evidence. wide distribution] "Native: Southern America Brazil: Brazil - Acre, - Amazonas, - Para, - Amapa, - Rondonia, - Roraima Northern South America: French Guiana; Guyana; Suriname; Venezuela - Amazonas Western South America: Bolivia - Beni, - La Paz, - Pando; Colombia; Ecuador - Napo, - Sucumbios; Peru - Amazonas, - Loreto, - Madre de Dios, - Ucayali"

602	Produces viable seed	y
	Source(s)	Notes
	Parolin, P., Ferreira, L. V., & Junk, W. J. (2003). Germination characteristics and establishment of trees from central Amazonian flood plains. <i>Tropical Ecology</i> , 44(2), 155-168	"In 31 analysed species, percent germination after 7 weeks varied between 5 and 100% in the seeds in well watered soil, with an average of 50%." ... "The fastest germination with the given conditions occurred in <i>Salix humboldtiana</i> (3 days), the slowest in <i>Annona hypoglauca</i> and <i>Hevea spruceana</i> (49 days)."

603	Hybridizes naturally	
	Source(s)	Notes
	Pinto, A.C. de Q., Cordeiro, M.C.R., Andrade, S.R.M. de, Ferreira, F.R., Filgueiras, H.A.C., Alves, R.E. & Kinpara, D.I. 2005. <i>Annona</i> species. International Centre for Underutilised Crops, University of Southampton, Southampton, UK	[Unknown. Hybridization possible in genus] "This slight variation in chromosome number may explain the ease or difficulty of interspecific hybridisation and grafting, and warrants further work to determine if intra specific variation also exists. Some related species, e.g., <i>A. glabra</i> , are known to be tetraploid (Kessler, 1993, cited by Scheldeman, 2002). Generally, crosspollination between annonas is conducted primarily to determine compatibility for increasing fruit set (Nakasone and Paull, 1998) and occasionally for new hybrid development."

Qsn #	Question	Answer
604	Self-compatible or apomictic	
	Source(s)	Notes
	Peña, J. E., Nadel, H., Barbosa-Pereira, M., & Smith, D. (2002). Pollinators and Pests of Annona Species. Tropical Fruit Pests and Pollinators: Biology, Economic Importance, Natural Enemies, and Control, 197. CAB International, Wallingford, UK	[Possibly No. Generic description] "Annonaceous flowers are protogynously dichogamous, opening as females with receptive stigmas and closed anthers, and later losing stigmal receptivity as the flowers turn into pollen shedding males (Gottsberger, 1970). This evolutionary adaptation prevents deposition of pollen on to the stigmas in the same flower, and is one of many techniques that plants employ to avoid self-fertilization. Prevention of the transfer of pollen between different flowers on the same plant is another technique used by many Annonaceae, and is achieved through synchronization of flowering, where, at any time, open flowers on one plant are functionally of only one sex. These temporal floral traits, commonly enhanced with inherent incompatibility between pollen and ovule from the same plant, render most annonaceous species unable to self-pollinate."

605	Requires specialist pollinators	
	Source(s)	Notes
	van Dulmen, A. (2001). Pollination and Phenology of Flowers in the Canopy of Two Contrasting Rain Forest Types in Amazonia, Colombia. <i>Plant Ecology</i> , 153(1/2), 73–85	"Appendix I Life form, pollinators and sexual system of the plants found in the canopy of an upland rain forest and a seasonally inundated rain forest in Amazonia, Colombia" [Annona hypoglauca - Pollinator = beetles]
	Peña, J. E., Nadel, H., Barbosa-Pereira, M., & Smith, D. (2002). Pollinators and Pests of Annona Species. Tropical Fruit Pests and Pollinators: Biology, Economic Importance, Natural Enemies, and Control, 197. CAB International, Wallingford, UK	[Possibly pollinator limited] "Inadequate pollination is implicated as a major factor limiting production of commercial Annona fruits in many locations (Gazit et al., 1982). This is attributed, in part, to the temporal separation of female and male function within the flower, which limits its potential to self-pollinate without external factors. The commonest problem is lack of pollinators. This is a direct result of the expansion of plantations into regions outside the native range of the plants and their pollinators, and may be due even to the unnatural conditions imposed by cultivation, regardless of locality." ... "The majority of Annonaceae are pollinated by beetles, although some are pollinated by thrips (e.g. Momose et al., 1998), true bugs (Farre et al., 1997), and even cockroaches (Nagamitsu and Inoue, 1997)."

606	Reproduction by vegetative fragmentation	
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II, Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	"A shrub up to 10 metres high" [Unknown. A tree reported to reproduce by seed, but unknown whether also able to reproduce vegetatively]

Qsn #	Question	Answer
607	Minimum generative time (years)	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	[Fish-dispersed. Fruit & seeds lack means of external attachment] "Fruit elongate-ellipsoid. fulvous-tomentellous. 5 cm long and 2.5 cm across; areoles elongate, 2-3 mm broad. tapering into short. more or less up curved And often eventually disappearing cusps."

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Trade Winds Fruit. 2016. Tropical Fruit. http://www.tradewindsfruit.com/tropical-fruit/ . [Accessed 7 Apr 2016]	[Seeds sold online] "1 seed per pack. An exceedingly rare <i>Annona</i> (or sometimes <i>Raimondia</i>) from the highland rainforests of South America. Bears smallish, yellow ripening fruits that are likely edible, much like its many relatives."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. <i>Biotropica</i> , 10 (3), 170–183	[No evidence. Unlikely given large fruit & seed size] "The black seed has a whitish, slimy arillus-like out- growth (arilloid) of cartilaginous consistency. Seed and arilloid together are 1.3 cm long; the arilloid alone is 0.3 x 0.5 cm." ... "The yellow fruits fall into the water immediately upon ripening and float at the surface where they are eaten by the fish, which swallow the entire seed."

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	[No evidence. Fleshy-fruited] "Fruit elongate-ellipsoid. fulvous-tomentellous. 5 cm long and 2.5 cm across; areoles elongate, 2-3 mm broad. tapering into short. more or less up-curved And often eventually disappearing cusps."

705	Propagules water dispersed	y
	Source(s)	Notes
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. <i>Biotropica</i> , 10 (3), 170–183	[Water & fish dispersed] " <i>Annona hypoglauca</i> fruits ripen as the fish become more common. The yellow fruits fall into the water immediately upon ripening and float at the surface where they are eaten by the fish, which swallow the entire seed."

706	Propagules bird dispersed	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. <i>Biotropica</i> , 10 (3), 170–183	[Fish-dispersed] "The yellow fruits fall into the water immediately upon ripening and float at the surface where they are eaten by the fish, which swallow the entire seed."

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Lanjouw, J. & Stoffers, A. L. 1976. Flora of Suriname. Vol. II Part 2. Papilionaceae, Mimosaceae, Connaraceae, Annonaceae, Additions and Corrections. Foundation Van Eedenfonds, Leiden, The Netherlands	[Fish-dispersed. No means of external attachment] "Fruit elongate-ellipsoid. fulvous-tomentellous. 5 cm long and 2.5 cm across; areoles elongate, 2-3 mm broad. tapering into short. more or less up-curved and often eventually disappearing cusps."

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Maia, L. A., Maia, S., & Parolin, P. (2005). Seedling morphology of non-pioneer trees in Central Amazonian várzea floodplain forests. <i>Ecotropica</i> , 11(1-2), 1-8	"In Ziburski's study, <i>A. hypoglauca</i> germinated only after submergence or passage through a fish digestive system, whereas in our study this species germinated in 60% of cases."
	Gottsberger, G.. (1978). Seed Dispersal by Fish in the Inundated Regions of Humaita, Amazonia. <i>Biotropica</i> , 10 (3), 170–183	[Dispersed by fish & water] " <i>Annona hypoglauca</i> fruits ripen as the fish become more common. The yellow fruits fall into the water immediately upon ripening and float at the surface where they are eaten by the fish, which swallow the entire seed. Fishes which are alleged to eat the fruits and seeds of <i>A. hypoglauca</i> , and in the stomach of which fishermen frequently find entire unbroken seeds, are: tambaqui, jatuarana, pacu branco, pacu, and sardinha. Because of its fine flavor, fruits of <i>Annona hypoglauca</i> are also appreciated by man. The soft flesh of the fruit contains starch. We sometimes found beetle larvae inside the ripening fruits, which are presumably also eaten by the fish."

801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Trade Winds Fruit. 2016. Tropical Fruit. http://www.tradewindsfruit.com/tropical-fruit/ . [Accessed 7 Apr 2016]	"Seeds are fresh, cannot be stored and should be planted on receipt."
	Royal Botanic Gardens Kew. (2016) Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/ . [Accessed 7 Apr 2016]	"Storage Behaviour: No data available for species. Of 8 known taxa of genus <i>Annona</i> , 100.00% Orthodox(p/?)"

803	Well controlled by herbicides	
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Qsn #	Question	Answer
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives in tropical climates
- Other *Annona* species are invasive
- Reproduces by seeds
- Seeds dispersed by fish, water & intentionally by people
- Limited ecological information may reduce accuracy of risk prediction

Low Risk Traits

- No reports of invasiveness or naturalization, but no evidence of widespread introduction outside native range
- Unarmed (no spines, thorns or burrs)
- Non-toxic
- Edible fruit
- Relatively large fruit & seeds may minimize risk of accidental dispersal

Second Screening Results for Tree/tree-like shrubs

(A) Shade tolerant or known to form dense stands?> No. Not known to form dense stands. Shade tolerance unknown

(B) Bird or clearly wind-dispersed?> No

Outcome = Accept (Low Risk)