Family: ***Rutaceae***

Taxon: ***Clausena lansium***

Synonym: *Clausena punctata (Sonn.) Rehder & E. H. W*
Clausena wampi (Blanco) Oliv.
Cookia punctata Sonn.
Cookia wampi Blanco
Quinaria lansium Lour. (basionym)

Common Name: Chinese clausena
wampi

Questionaire : current 20090513 **Assessor:** Patti Clifford **Designation:** L(Hawai'i)
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score 0**

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**	**y**
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**	**y=1, n=0**	
403	**Parasitic**	**y=1, n=0**	**n**
404	**Unpalatable to grazing animals**	**y=1, n=-1**	
405	**Toxic to animals**	**y=1, n=0**	**n**
406	**Host for recognized pests and pathogens**	**y=1, n=0**	
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**	**y=1, n=0**	**n**

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**	**n**
607	**Minimum generative time (years)**	**1 year = 1, 2 or 3 years = 0, 4+ years = -1**	**>3**
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y=1, n=-1**	**n**
702	**Propagules dispersed intentionally by people**	**y=1, n=-1**	**y**
703	**Propagules likely to disperse as a produce contaminant**	**y=1, n=-1**	**n**
704	**Propagules adapted to wind dispersal**	**y=1, n=-1**	**n**
705	**Propagules water dispersed**	**y=1, n=-1**	
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**	
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(Hawai'i) **WRA Score** **0**

Supporting Data:

101	2011. WRA Specialist. Personal Communication.	No evidence of domestication that reduces invasive characteristics.
102	2011. WRA Specialist. Personal Communication.	N/A
103	2011. WRA Specialist. Personal Communication.	N/A
201	2011. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database Index]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	Native range: Vietnam; China - Fujian, Guangdong, Guangxi, Guizhou [s.], Hainan, Sichuan, Yunnan [s.e.]
202	2011. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database Index]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	Native range: Vietnam; China - Fujian, Guangdong, Guangxi, Guizhou [s.], Hainan, Sichuan, Yunnan [s.e.]
203	1987. Morton, J.F.. Fruits of warm climates. J.F. Morton, Miami http://www.hort.purdue.edu/newcrop/morton/index.html	"The wampee is subtropical to tropical, and young and mature trees have been scarcely hurt by brief exposure to 28º to 30º F (-2.22º to -1.11º C) in Florida, but they have been killed at temperatures of 20º F (-6.667º C) and lower."
203	2007. Ecocrop. Clausena lansium. FAO, http://ecocrop.fao.org/ecocrop/srv/en/dataSheet?id=4659	Altitude in native range: sea level - 2450 meters.
204	2011. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database Index]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	Native range: Vietnam; China - Fujian, Guangdong, Guangxi, Guizhou [s.], Hainan, Sichuan, Yunnan [s.e.]
205	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	Clausena lansium was introduced to the Philippines before 1837, occasionally grown in India and Ceylon, cultivated to a limited extent in Queensland, Australia and Hawaii and introduced to to Florida in 1908. It has also been introduced to Jamaica in 1913, Puerto Rico, St. Croix, Panama and Honduras. It is grown in greenhouses in England. Clausena lansium has not traveled enough to acquire many vernacular names outside its native range.
301	2011. WRA Specialist. Personal Communication.	No evidence of naturalization.
302	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	No evidence of weediness.
303	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	No evidence of weediness.
304	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	No evidence of weediness.
305	2011. Pacific Islands Ecosystems at Risk (PIER). Clausena excavata. PIER, http://www.hear.org/pier/species/clausena_excavata.htm	Clausena excavata is invasive on Christmas Island, Australia, where it forms dense stands along roadsides and in disturbed areas.
401	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	A round crowned unarmed tree up to 35' tall.
402	2011. WRA Specialist. Personal Communication.	Unknown.
403	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	Not parasitic.

404	2011. WRA Specialist. Personal Communication.	Unknown.
405	2011. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland http://www.ncbi.nlm.nih.gov/	No evidence of toxicity in PubMed.
406	2011. Cabi. Invasive species compendium [online encyclopedia]. www.cabi.org, http://www.cabi.org.eres.library.manoa.hawaii.edu/isc/default.aspx?site=144&page=4066	Clausena lansium is a host for citrus canker (Xanthomonas axonopodis pv. Citri, papaya fruit fly (Bactrocera papayae).
407	1987. Morton, J.F.. Fruits of warm climates. J.F. Morton, Miami http://www.hort.purdue.edu/newcrop/morton/index.html	"The fruit is said to have stomachic and cooling effects and to act as a vermifuge. The Chinese say that if one has eaten too many lychees, eating the wampee "will counteract the bad effects. Lychees should be eaten when one is hungry, and wampees only on a full stomach". The halved, sun-dried, immature fruit is a Vietnamese and Chinese remedy for bronchitis. Thin slices of the dried roots are sold in Oriental pharmacies for the same purpose. The leaf decoction is used as a hair wash to remove dandruff and preserve the color of the hair."
408	1987. Morton, J.F.. Fruits of warm climates. J.F. Morton, Miami http://www.hort.purdue.edu/newcrop/morton/index.html	No evidence of creating a fire hazard.
409	2007. Ecocrop. Clausena lansium. FAO, http://ecocrop.fao.org/ecocrop/srv/en/dataSheet?id=4659	Light intensity: very bright, clear skies, cloudy skies.
409	2011. Desert Tropicals. Wampee, wampi Clausena lansium. www.desert-tropicals.com, http://www.desert-tropicals.com/Plants/Rutaceae/Clausena_lansium.html	Full sun.
410	1987. Morton, J.F.. Fruits of warm climates. J.F. Morton, Miami http://www.hort.purdue.edu/newcrop/morton/index.html	"The tree seems quite tolerant of a range of soils, including the deep sand and the oolitic limestone of southern Florida but thrives best in rich loam."
410	2007. Ecocrop. Clausena lansium. FAO, http://ecocrop.fao.org/ecocrop/srv/en/dataSheet?id=4659	Soil pH: 5-6.5.
411	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	Tree.
412	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	Clausena lansium has not traveled enough to acquire many vernacular names.
412	2011. WRA Specialist. Personal Communication.	Unknown.
501	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	Tree; terrestrial.
502	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	Rutaceae.
503	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	Rutaceae.
504	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	Tree.

601	2011. WRA Specialist. Personal Communication.	No evidence.
602	1987. Morton, J.F.. Fruits of warm climates. J.F. Morton, Miami http://www.hort.purdue.edu/newcrop/morton/index.html	Clausena lansium grows readily from seeds which germinate in a few days.
603	2011. WRA Specialist. Personal Communication.	Unknown.
604	2011. WRA Specialist. Personal Communication.	Unknown.
605	2002. Siqueira de Castro, M.. Bee fauna of some tropical and exotic fruits: potencial pollinators and their conservation IN: Pollinating bees - the conservation link between agriculture and nature. Ministry of Environment/Brasilia, http://www.webbee.org	In this study on tropical fruits and their potential pollinators, Apis mellifera scutellata (92%) and Trigona spinipes (6.4%) were the most abundandt visitors to Clausena lansium.
606	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	Propagate from seeds.
607	1987. Morton, J.F.. Fruits of warm climates. J.F. Morton, Miami http://www.hort.purdue.edu/newcrop/morton/index.html	Seedlings begin to bear when 5 to 8 years of age or sometimes older.
701	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	Globose berrylike fruit approximately 1 " in length.
701	2011. WRA Specialist. Personal Communication.	No evidence of unintentional dispersal.
702	1987. Morton, J.. Fruits of warm climates. J.F. Morton, Miami, FL http://www.hort.purdue.edu/newcrop/morton/grumichama.html	Clausena lansium was introduced to the Philippines before 1837, occasionally grown in India and Ceylon, cultivated to a limited extent in Queensland, Australia and Hawaii and introduced to to Florida in 1908. It has also been introduced to Jamaica in 1913, Puerto Rico, St. Croix, Panama and Honduras. It is grown in greenhouses in England.
703	2011. WRA Specialist. Personal Communication.	No evidence of produce contamination.
704	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	Fruit is globose, berrylike about 1 inch long [no adaptation for wind dispersal].
705	2011. WRA Specialist. Personal Communication.	Unknown.
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	Globose berrylike fruit approximately 1" in length.
707	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	Globose berrylike fruit about 1" long. [no 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	Fruit is globose berrylike about 1" long.
708	2005. Weir, J.E.S.. Patterns of seed dispersal by flying frugivores in Hong Kong. http://hub.hku.hk/bitstream/10722/31903/1/FullText.pdf	Cynopterus sphinx (bat) disperses Clausena lansium in Hong Kong.
801	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	Fruit is globose, berrylike about 1 inch long with several seeds.

802 2011. WRA Specialist. Personal Communication. Unknown.

803 2011. WRA Specialist. Personal Communication. Unknown.

804 2011. WRA Specialist. Personal Communication. Unknown.

805 2011. WRA Specialist. Personal Communication. Unknown.