

Family: *Malvaceae*

Taxon: *Hibiscus mutabilis*

Synonym: *Hibiscus sinensis* Mill.

Common Name: confederate-rose
cotton rose

Questionnaire :	current 20090513	Assessor:	Patti Clifford	Designation: L
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)	Intermediate
202	Quality of climate match data		(0-low; 1-intermediate; 2-high) (See Appendix 2)	Intermediate
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)	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	
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	n
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	
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	
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

WRA Score 0

Supporting Data:

101	2011. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive traits.
102	2011. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2011. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
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	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? Intermediate] Native range: China; Japan - Kyushu, Ryukyu Islands; Taiwan
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	[Quality of climate match data ?Intermediate] Native range: China; Japan - Kyushu, Ryukyu Islands; Taiwan
203	2011. Dave's Garden. PlantFiles: Confederate rose, cotton rose - <i>Hibiscus mutabilis</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/714/	[Broad climate suitability (environmental versatility)? No] Hardiness: USDA Zone 7a: to -17.7 °C (0 °F) USDA Zone 7b: to -14.9 °C (5 °F) USDA Zone 8a: to -12.2 °C (10 °F) USDA Zone 8b: to -9.4 °C (15 °F) USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)
203	2011. Floridata.com. <i>Hibiscus mutabilis</i> . Floridata, http://www.floridata.com/ref/h/hibis_mu.cfm	[Broad climate suitability (environmental versatility)? No] USDA Zones: 7-9.
204	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	[Native or naturalized in regions with tropical or subtropical climates? Yes] Naturalized in Hawaii.
204	2008. Imada, C.. Hawaiian flowering plants checklist: main Hawaiian islands. Bishop Museum, Available at: http://www.bishopmuseum.org/research/natsci/botany/dbandkeys/ Main%20Islands%20Report.pdf. Available at: http://www.bishopmuseum.org/research/	[Native or naturalized in regions with tropical or subtropical climates? Yes] Naturalized on Oahu.
205	2004. Lawton, B.P.. <i>Hibiscus</i> : hardy and tropical plants for the garden. Timber Press, http://books.google.com/books?hl=en&lr=&id=VS_EbamKS5uQC&oi=fnd&pg=PA9&dq=hibiscus+mutabilis+%2B+%22prune%22&ots=ifNoDGp-B3&sig=7cF8H5QxfZT9n25IYDBSrvRqKew#v=onepage&q=m	[Does the species have a history of repeated introductions outside its natural range? Yes] <i>Hibiscus mutabilis</i> was introduced to England in the late 1600's and the Americas in the 19th century. It was widely planted in cemeteries after the United States' civil war.
205	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	[Does the species have a history of repeated introductions outside its natural range? Yes] Widely cultivated in tropical to warm-temperate regions of the world.
301	1981. Rodd, A.N./Pickard, J.. Census of vascular flora of Lord Howe Island. <i>Cunninghamia</i> . 1: 267-280. http://rbgsyd.nsw.gov.au/__data/assets/pdf_file/0008/97613/Rodd.pdf	[Naturalized beyond native range? Yes] Naturalized on Lord Howe Island, Australia.

301	2004. Bosch, C.H.. Hibiscus trionum L. In: PROTA 2: Vegetables/Legumes. [CD-Rom]. PROTA, Wageningen http://database.prota.org/PROTAhtml/Hibiscus%20trionum_En.htm	[Naturalized beyond native range? Yes] Naturalized in parts of Africa.
301	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	[Naturalized beyond native range? Yes] Naturalized in Hawaii.
301	2008. Imada, C.. Hawaiian flowering plants checklist: main Hawaiian islands. Bishop Museum, Available at: http://www.bishopmuseum.org/research/natsci/botany/dbandkeys/ Main%20Islands%20Report.pdf. Available at: http://www.bishopmuseum.org/research/	[Naturalized beyond native range? Yes] Naturalized on Oahu
302	2007. Randall, R.. Global Compendium of Weeds Hibiscus mutabilis. http://www.hear.org/gcw/species/hibiscus_mutabilis/	[Garden/amenity/disturbance weed? No] No evidence.
303	2007. Randall, R.. Global Compendium of Weeds Hibiscus mutabilis. http://www.hear.org/gcw/species/hibiscus_mutabilis/	[Agricultural/forestry/horticultural weed? No] No evidence.
304	2007. Randall, R.. Global Compendium of Weeds Hibiscus mutabilis. http://www.hear.org/gcw/species/hibiscus_mutabilis/	[Environmental weed? No] No evidence.
305	2011. Florida Exotic Pest Plant Council. Florida EPPC's 2011 Invasive Plant Species List. http://www.fleppc.org/list/11list.html	[Congeneric weed? Yes] Hibiscus tiliaceus is considered a category II invasive in Florida by the Florida Exotic Pest Plant Council.
401	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Produces spines, thorns or burrs? No] Shrubs or small trees, erect, 2-5 m tall, deciduous. Branchlets, petioles, pedicel, epicalyx, and calyx densely stellate and woolly pubescent.
402	2011. WRA Specialist. Personal Communication.	[Allelopathic? Unknown.]
403	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Parasitic? No] Malvaceae.
404	2011. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2011. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland http://www.ncbi.nlm.nih.gov/	[Toxic to animals? No] No evidence.
405	2011. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Toxic to animals? No] No evidence.
406	2011. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2004. Lawton, B.P.. Hibiscus: hardy and tropical plants for the garden. Timber Press, http://books.google.com/books?hl=en&lr=&id=VS_EbamKS5uQC&oi=fnd&pg=PA9&dq=hibiscus+mutabilis+%2B+%22prune%22&ots=ifNoDGp-B3&sig=7cF8H5QxfZT9n25lYDBSrvRqKew#v=onepage&q=m	[Causes allergies or is otherwise toxic to humans? No] Chinese people eat the boiled leaves of Hibiscus mutabilis.

407	2011. National Center for Biotechnology Information. PubMed. U.S. National Library of Medicine, Bethesda, Maryland http://www.ncbi.nlm.nih.gov/	[Causes allergies or is otherwise toxic to humans? No] No evidence.
407	2011. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Causes allergies or is otherwise toxic to humans? No] No evidence.
409	2011. Dave's Garden. PlantFiles: Confederate rose, cotton rose - <i>Hibiscus mutabilis</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/714/	[Is a shade tolerant plant at some stage of its life cycle? No] Full sun.
409	2011. Floridata.com. <i>Hibiscus mutabilis</i> . Floridata, http://www.floridata.com/ref/h/hibis_mu.cfm	[Is a shade tolerant plant at some stage of its life cycle? No] Sun to shifting shade.
410	2011. Dave's Garden. PlantFiles: Confederate rose, cotton rose - <i>Hibiscus mutabilis</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/714/	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? No] Soil pH requirements: 5.6 to 6.0 (acidic) 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral)
411	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Climbing or smothering growth habit? No] Shrubs or small trees.
412	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Forms dense thickets?] Occurs in thickets along streams.
501	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Aquatic? No] Malvaceae; terrestrial.
502	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Grass? No] Malvaceae.
503	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Nitrogen fixing woody plant? No] Malvaceae.
503	2010. www.nationmaster.com. Encyclopedia Nitrogen fixation. Nationmaster.com, http://www.nationmaster.com/encyclopedia/Nitrogen-fixation	[Nitrogen fixing woody plant? No] Malvaceae.
504	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Shrub or small tree.
601	2011. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	2009. Harrison, M.. Flowering Shrubs and Small Trees for the South. Pineapple Press Inc, Sarasota, FL	[Produces viable seed? Yes] Propagate from seed.
602	2011. Dave's Garden. PlantFiles: Confederate rose, cotton rose - <i>Hibiscus mutabilis</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/714/	[Produces viable seed? Yes] Propagate from seed.
603	2011. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown].
604	2011. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]

605	. Kudoh, H./Whigham, D.F.. The effect of petal size manipulation on pollinator/seed-predator mediated female reproductive success of <i>Hibiscus moscheutos</i> . <i>Oecologia</i> . 117: 70-79. http://www.springerlink.com/content/u5grwtcg33cud0gt/fulltext.pdf	[Requires specialist pollinators? No] <i>Hibiscus moscheutos</i> is pollinated by insects. [species in same genus]
606	2011. Dave's Garden. PlantFiles: Confederate rose, cotton rose - <i>Hibiscus mutabilis</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/714/	[Reproduction by vegetative fragmentation? No] Reproduce by seed.
606	2011. Floridata.com. <i>Hibiscus mutabilis</i> . Floridata, http://www.floridata.com/ref/h/hibis_mu.cfm	[Reproduction by vegetative fragmentation? No] Reproduce by seed.
607	2011. WRA Specialist. Personal Communication.	[Minimum generative time (years)? Unknown.]
701	2011. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] No evidence.
702	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 dispersed intentionally by people? Yes] Widely cultivated.
702	2011. Dave's Garden. PlantFiles: Confederate rose, cotton rose - <i>Hibiscus mutabilis</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/714/	[Propagules dispersed intentionally by people? Yes] Many members have species for sale/trade.
703	2011. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
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	[Propagules adapted to wind dispersal? No] Fruit a five-celled capsule. [no adaptation]
705	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Propagules water dispersed? Yes] Occurs in thickets along streams.
706	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Propagules bird dispersed? No] Capsule.
707	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Propagules dispersed by other animals (externally)? No] Capsule [no means of external attachment]
708	2011. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown].
801	2007. Wu, Z.Y./Raven, P.H./Hong, D.Y. (eds.). Flora of China. Vol. 12 (Hippocastanaceae through Theaceae).. Science Press Beijing, and Missouri Botanical Garden Press, St. Louis.,	[Prolific seed production (>1000/m ²)? No] "Flowers solitary, axillary on upper branches. Pedicel 5-8 cm, articulate near end. Epicalyx lobes 8, filiform, connate at base, 10-16 x ca. 2 mm. Calyx campanulate, 2.5-3 cm, lobes 5, ovate, acuminate. Corolla white or reddish, becoming dark red, ca. 8 cm in diam.; petals nearly orbicular, 4-5 cm in diam., hairy abaxially, barbate at base. Staminal column 2.5-3 cm, glabrous. Styles 5, pilose. Capsule flattened globose, ca. 2.5 cm in diam., yellowish hispid and woolly; mericarps 5. Seeds reniform, villous abaxially. Fl. Aug-Oct."
802	2011. Dave's Garden. PlantFiles: Confederate rose, cotton rose - <i>Hibiscus mutabilis</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/714/	[Evidence that a persistent propagule bank is formed (>1 yr)?] Seed can be successfully stored.
803	2011. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2011. WRA Specialist. Personal Communication.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown.]
805	2011. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents? Unknown]

