Family: ***Anacardiaceae***

Taxon: ***Rhus taitensis***

Synonym: *Rhus rufa Teijsm. & Binn.*
Rhus retusa Zoll. ex Engl.

Common Name: sumac

Questionaire : current 20090513 **Assessor:** Patti Clifford **Designation:** H(HPWRA)
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score** 7

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**	
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**	**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**	**n**
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**	
702	**Propagules dispersed intentionally by people**	**y=1, n=-1**	**n**
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**	**y**
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**	**y**
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: H(HPWRA) **WRA Score** 7

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"? High] Native range: ASIA-TROPICAL Malesia: Indonesia - Celebes, Irian Jaya, Java [e.], Lesser Sunda Islands, Moluccas; Malaysia; Papua New Guinea; Philippines AUSTRALASIA Australia: Australia - Queensland [n.e.] PACIFIC Northwestern Pacific: Micronesia; Palau South-Central Pacific: French Polynesia - Society Islands [Tahiti] Southwestern Pacific: Niue; Solomon Islands
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? High] Native range: ASIA-TROPICAL Malesia: Indonesia - Celebes, Irian Jaya, Java [e.], Lesser Sunda Islands, Moluccas; Malaysia; Papua New Guinea; Philippines AUSTRALASIA Australia: Australia - Queensland [n.e.] PACIFIC Northwestern Pacific: Micronesia; Palau South-Central Pacific: French Polynesia - Society Islands [Tahiti] Southwestern Pacific: Niue; Solomon Islands
203	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Broad climate suitability (environmental versatility)?] Occurs from Cooktown to Ingham, Qld, extending also from the Philippines and Java to Tahiti. Grows in coastal lowland complex mesophyll vine forest.
204	2006. Daehler, C. C./Baker, R. F.. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mänoa Valley, O'ahu. Bishop Museum Occasional Papers. 87: 3-18.	[Native or naturalized in regions with tropical or subtropical climates? Yes] Saplings and seedlings are common in Haukulu, and naturalized, mature trees occur on steep, rocky outcrops outside the managed Arboretum grounds.
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 or naturalized in regions with tropical or subtropical climates? Yes] Native range: ASIA-TROPICAL Malesia: Indonesia - Celebes, Irian Jaya, Java [e.], Lesser Sunda Islands, Moluccas; Malaysia; Papua New Guinea; Philippines AUSTRALASIA Australia: Australia - Queensland [n.e.] PACIFIC Northwestern Pacific: Micronesia; Palau South-Central Pacific: French Polynesia - Society Islands [Tahiti] Southwestern Pacific: Niue; Solomon Islands
205	2011. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? No] No evidence.
301	2006. Daehler, C. C./Baker, R. F.. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mänoa Valley, O'ahu. Bishop Museum Occasional Papers. 87: 3-18.	[Naturalized beyond native range? Yes] Saplings and seedlings are common in Haukulu, and naturalized, mature trees occur on steep, rocky outcrops outside the managed Arboretum grounds.
302	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Garden/amenity/disturbance weed? No] No evidence.
303	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Agricultural/forestry/horticultural weed? No] No evidence.
304	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Environmental weed? No] No evidence.

305	2011. The Belgium Forum on Invasive Species. Invasive species in Belgium - Rhus typhina. http://ias.biodiversity.be/	[Congeneric weed? Yes] "This pioneer plant occurs mainly in ruderal habitats and waster areas, but also along forest edges, in clearings, and shrublands. It thrives on relatively dry and poor soils, in well-lit conditions. It is resistant to abiotic stresses, incl. pollution. Clonal spreading rate is rather high but reproduction by seeds is rarely reported from the field in Belgium (seeds exhibit dormancy, probably as a result of hard, impermeable seedcoats). Plant may be easily propagated via root fragments in soil movement. Staghorn sumac forms large, dense clones via root sprouts. They strongly reduce light intensity and outcompete ground-layer perennial species. In its area of origin, it has the potential to inhibit vegetation succession and tree regeneration. Contact with sap causes dermatitis in humans."
401	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Produces spines, thorns or burrs? No] "Dioecious tree to 30 m. Branchlets pubescent, with prominent lenticels. Leaflets mostly 11–19, elliptic, oblong-elliptic or lanceolate, obtuse to acuminate, ±pubescent on undersurface, mostly 4–15 cm long and 1.5–5 cm wide; base often asymmetric, obtuse or acute; secondary veins mostly 9–16 pairs; lateral petiolules 2–5 mm long; terminal petiolule 15–30 mm long. Calyx lobes broadly ovate, ciliate, 0.8–1 mm long. Petals narrowly ovate, elliptic or obovate, glabrous outside, pilose inside in lower half, 2–2.5 mm long. "
402	2011. WRA Specialist. Personal Communication.	[Allelopathic? Unknown.]
403	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Parasitic? No] Anacardiaceae.
403	2010. Nickrent, D.. The parasitic plant connection. Department of Plant Biology, Southern Illinois University, Carbondale http://www.parasiticplants.siu.edu/index.html	[Parasitic? No] Anacardiaceae.
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	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.
408	2004. Smith, J.R.. Fire responses of Rhus taitensis. www.landmanager.org, http://www.landmanager.org.au/fire-responses-rhus-taitensis	[Creates a fire hazard in natural ecosystems? No] Adult fire response: Resprouter (<30% mortality when subject to 100% leaf scorch) Resprouting type: Basal (lignotuber +/- root suckers)
408	2011. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? No] No evidence of fire hazard.
409	2003. Franklin, J.. Regeneration and growth of pioneer and shade-tolerant rain forest trees in Tonga. New Zealand Journal of Botany. 41: 669-684.http://www.tandfonline.com/doi/pdf/10.1080/0028825X.2003.9512877	[Is a shade tolerant plant at some stage of its life cycle?] Considered a pioneer species that grows best in gaps at all juvenile stages. [possibly not]

410	2010. Hope, G.S.. Altered ecologies: fire, climate and human influence on terrestrial landscapes. ANU E Press, http://books.google.com/books?id=kUbvDLKkdvYC&pg=PA230&dq=rhus+taitensis&hl=en&ei=86fBTujCFq30sQLC77jVBA&sa=X&oi=book_result&ct=result&resnum=1	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] "Drake et al. (1996) documented four types of forest on the raised limestone island of Eua, Kingdom of Tonga, two dominated by C. neo-ebudicum. The key feature of this study is the recognition that regeneration of disturbed areas in these forest types is not dominated by C. neo-ebudicum, but Dendrocnide harveyi, Bischofia javanica and Rhus taitensis in the mixed forest."
411	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Climbing or smothering growth habit? No] Tree.
412	2011. WRA Specialist. Personal Communication.	[Forms dense thickets? Unknown]
501	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Aquatic? No] Terrestrial; tree]
502	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Grass? No] Anacardiaceae.
503	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Nitrogen fixing woody plant? No] Anacardiaceae.
503	2010. www.nationmaster.com. Encyclopedia Nitrogen fixation. Nationmaster.com, http://www.nationmaster.com/encyclopedia/Nitrogen-fixation	[Nitrogen fixing woody plant? No] Anacardiaceae.
504	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Shrub.
601	2011. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No]
602	2006. Daehler, C. C./Baker, R. F.. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mānoa Valley, O'ahu. Bishop Museum Occasional Papers. 87: 3-18.	[Produces viable seed? Yes] Saplings and seedlings are common in Haukulu, and naturalized, mature trees occur on steep, rocky outcrops outside the managed Arboretum grounds.
603	2011. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2011. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]
605	1972. Young, D.A.. The reproductive biology of Rhus integrifolia and Rhus ovat (Anacardiaceae). Evolution. 26: 406-414.	[Requires specialist pollinators? No] "Apis mellifera (honey bee) and several species of Andrena (small solitary bees) were the most frequent pollinators of R. integrifolia and R. ovata, andA were observed carrying large pollen loads of both species.' [species in the same genus]
605	1998. Gallant, J.B./Kemp, J.R./Lacroix, C.R.. Floral development of dioecious staghorn sumac, Rhus hirta (Anacariaceae). International Journal of Plant Sciences. 159: 539-549.	[Requires specialist pollinators? No] "Many members of the Anacardiaceae, including the genus Rhus have flowers that are entomophilous.
606	2004. Smith, J.R.. Fire responses of Rhus taitensis. www.landmanager.org, http://www.landmanager.org.au/fire-responses-rhus-taitensis	[Reproduction by vegetative fragmentation?] Adult fire response: Resprouter (<30% mortality when subject to 100% leaf scorch) Resprouting type: Basal (lignotuber +/- root suckers)
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)? Unknown]

702	2011. WRA Specialist. Personal Communication.	[Propagules dispersed intentionally by people? No]Literature indicates that Rhus taitensis has been introduced to some botanical gardens but not commercially.
703	2011. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence of produce contamination.
704	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Propagules adapted to wind dispersal? No] Drupe subglobose, 4–8 mm diam., black.
705	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Propagules water dispersed?]Drupe subglobose, 4–8 mm diam., black.
706	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Propagules bird dispersed? Yes] Drupe subglobose, 4–8 mm diam., black.
707	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Propagules dispersed by other animals (externally)? No] Drupe subglobose, 4–8 mm diam., black. [no means of external attachment.]
708	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Propagules survive passage through the gut?] Black drupe. [bird dispersed]
801	1993. Herbarium of Bernice P. Bishop Museum. Rhus taitensis Guilleman. Accession # 22888.	[Prolific seed production (>1000/m2)? Yes] Based on herbarium specimens at the Herbarium Pacificum.
802	2011. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown.]
803	1985. Jessup, L.W.. Rhus - Flora of Australia [online]. Australian Biological Resources Study, Canberra http://www.environment.gov.au/biodiversity/abrs/online-resources/flora/main/index.html	[Well controlled by herbicides? Unknown]
804	2004. Smith, J.R.. Fire responses of Rhus taitensis. www.landmanager.org, http://www.landmanager.org.au/fire-responses-rhus-taitensis	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] Adult fire response: Resprouter (<30% mortality when subject to 100% leaf scorch) Resprouting type: Basal (lignotuber +/- root suckers)
805	2011. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown.]