

Family: *Acanthaceae*

Taxon: *Schaueria azaleiflora*

Synonym: NA

Common Name: schaueria

Questionnaire :	current 20090513	Assessor:	Assessor	Designation:	EVALUATE
Status:	Assessor Approved	Data Entry Person:	Assessor	WRA Score	2
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		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)		n
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		n
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		y
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		y=1, n=0		
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	y
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	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	
704	Propagules adapted to wind dispersal	y=1, n=-1	y
705	Propagules water dispersed	y=1, n=-1	
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	
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: EVALUATE

WRA Score 2

Supporting Data:

101	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Is the species highly domesticated? No] "An apparently rare but possibly overlooked undershrub of seasonally dry forest growing between 450 and 1700 m from northern Argentina north to the Yungas of La Paz..."
102	2013. WRA Specialist. Personal Communication.	NA
103	2013. WRA Specialist. Personal Communication.	NA
201	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Species suited to tropical or subtropical climate(s) 2-High] "Occasional along edge of lowland rain forest on terra firme in western Amazonia in Colombia, Ecuador, Peru and Bolivia."
202	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Quality of climate match data 2-High]
203	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Broad climate suitability (environmental versatility)? Yes] "An apparently rare but possibly overlooked undershrub of seasonally dry forest growing between 450 and 1700 m from northern Argentina north to the Yungas of La Paz" [Environmental versatility - Elevation range exceeds 1000 m]
204	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Occasional along edge of lowland rain forest on terra firme in western Amazonia in Colombia, Ecuador, Peru and Bolivia."
205	2013. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? No] Genus fairly new to cultivation outside of native range
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No evidence]
301	2013. WRA Specialist. Personal Communication.	[Naturalized beyond native range? No evidence] May be due to relative novelty as an ornamental plant and limited distribution thus far outside native range
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No evidence]
302	2013. WRA Specialist. Personal Communication.	[Garden/amenity/disturbance weed? No evidence] May be due to relative novelty as an ornamental plant and limited distribution thus far outside native range
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No evidence]
303	2013. WRA Specialist. Personal Communication.	[Agricultural/forestry/horticultural weed? No evidence] May be due to relative novelty as an ornamental plant and limited distribution thus far outside native range
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No evidence]
304	2013. WRA Specialist. Personal Communication.	[Environmental weed? No evidence] May be due to relative novelty as an ornamental plant and limited distribution thus far outside native range
305	2004. Meyer, J-Y./Lavergne, C.. Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands. Diversity and Distributions. 10: 333-347.	[Congeneric weed? No evidence, although several other Acanthaceae have become invasive]
305	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Congeneric weed? No evidence]
305	2013. WRA Specialist. Personal Communication.	[Congeneric weed? No evidence] May be due to relative novelty of genus an ornamental plants and limited distribution thus far outside native range
401	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Produces spines, thorns or burrs? No] "Shrub or subshrub 0.8-1.5 m; stems cylindrical, slender, woody, striate, glabrous; leaves petiolate, blades elliptic, 6-12 x 2-3 cm, glabrous, very thin, grayish-green; inflorescence a short, terminal spike"
402	2013. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]

403	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Parasitic? No] Acanthaceae
404	2010. Marquardt, S./Beck, S.G./Encinas, F.D./Alzérreca A.H./Kreuzer, M./Mayer, A.C.. Plant species selection by freeranging cattle in southern Bolivian tropical montane forests. Journal of Tropical Ecology. 26(06): 583-593.	[Unpalatable to grazing animals? No] "Table 4. Nutrient (g kg ⁻¹ dry matter) and energy concentrations (metabolizable energy, MJ kg ⁻¹ dry matter) of plant species selected by cattle (either from the group of the 10 seasonally most-selected plant species..." [Schaueria azaleiflora included among species consumed by cattle]
405	2010. Marquardt, S./Beck, S.G./Encinas, F.D./Alzérreca A.H./Kreuzer, M./Mayer, A.C.. Plant species selection by freeranging cattle in southern Bolivian tropical montane forests. Journal of Tropical Ecology. 26(06): 583-593.	[Toxic to animals? No] No evidence. Consumed by cattle
406	2013. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Causes allergies or is otherwise toxic to humans? No evidence for Acanthaceae family]
408	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Creates a fire hazard in natural ecosystems? Unknown] "An apparently rare but possibly overlooked undershrub of seasonally dry forest growing between 450 and 1700 m from northern Argentina north to the Yungas of La Paz..."
409	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Is a shade tolerant plant at some stage of its life cycle? Presumably Yes] "An apparently rare but possibly overlooked undershrub of seasonally dry forest..." [Occurrence as an understory plant suggests species will be tolerant of shaded conditions]
409	2013. Top Tropicals. Schaueria flavicoma. http://toptropicals.com/cgi-bin/garden_catalog/cat.cgi?uid=schaueria_flavicomma [Accessed 28 June 2013]	[Is a shade tolerant plant at some stage of its life cycle? Related species requires shade] "Schaueria flavicoma" ... "Leaves are susceptible to chlorosis. Keep soil moist. Avoid direct sun which may burn the leaves."
410	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Tolerates a wide range of soil conditions? Unknown] "An apparently rare but possibly overlooked undershrub of seasonally dry forest growing between 450 and 1700 m from northern Argentina north to the Yungas of La Paz..." [Broad elevation range suggests plant may tolerate many soil types]
411	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Climbing or smothering growth habit? No] "Shrub or subshrub 0.8-1.5 m..."
412	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Forms dense thickets? Unknown] "An apparently rare but possibly overlooked undershrub of seasonally dry forest..." [Apparently no in native range]
501	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Aquatic? No] "An apparently rare but possibly overlooked undershrub of seasonally dry forest growing between 450 and 1700 m from northern Argentina north to the Yungas of La Paz"
502	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Grass? No] Acanthaceae
503	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Nitrogen fixing woody plant? No] Acanthaceae
504	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Subshrub or treelet to 3 m; stems subquadrangular..."
601	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Evidence of substantial reproductive failure in native habitat? No] No evidence

602	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Produces viable seed? Yes] "capsule oblong, 6-8-seeded."
603	2013. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2007. Culley, T.M./Klooster, M.R.. The cleistogamous breeding system: A review of its frequency, evolution, and ecology in angiosperms. The Botanical Review. 73(1): 1-30.	[Self-compatible or apomictic? Unknown. Possibly Yes] "Table I List of cleistogamous families and genera in angiosperms. Shown are the number of species within each genera classified as exhibiting complete, induced, dimorphic, or unclear cleistogamy. Additional references for some species can be found in Lord (1981)" [Schaueria genus reported to have cleistogamous flowers]
605	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Requires specialist pollinators?] "inflorescence a short, terminal spike; flowers densely compacted; bracts minute, ovate, 2 mm long, margin entire; bracteoles small; calyx deeply 5-lobed, lobes subequal, lanceolate 3-5 mm long, glabrous; corolla cream-yellow to white to yellowish, 20-30 (50) mm long, tube infundibular, 10-15 mm long, bilabiate, lower lip strongly recurved, deeply 3-lobed, lobes subequal, narrowly oblong, 10-12 x 1.1.5 mm, apically obtuse, upper lip erect, narrow and concave, 10- 12 x 3 mm, apically slightly bilobed; stamens 2, exerted; anthers 2-theous, mucous;"
605	2008. Daniel, T.F./McDade, L.A./Manktelow, M./Kiel, C.A.. The "Tetramerium Lineage"(Acanthaceae: Acanthoideae: Justiceae): Delimitation and Intra-lineage Relationships Based on cp and nrITS Sequence Data. Systematic Botany. 33(2): 416-436.	[Requires specialist pollinators? Likely hummingbirds] "Like the other clades of the NW Tetramerium lineage discussed above, the Pachystachys clade includes species that are apparently adapted for different pollinators, although floral visitors have not, to our knowledge, been documented for Schaueria or Streblacanthus. Based on their form and size, we hypothesize that flowers of the former are pollinated by hummingbirds whereas those of the latter are likely adapted for lepidopterans."
606	2013. WRA Specialist. Personal Communication.	[Reproduction by vegetative fragmentation? Unknown]
607	2013. Plant This. Schaueria flavicoma. http://www.plantthis.com.au/plant-information.asp?gardener=17045&tabview=design&plantSpot=0 [Accessed 28 June 2013]	[Minimum generative time (years)? Unknown] "Schaueria flavicoma" ... "Growth rate: average" [Related species lacks information on time to reproductive maturity]
701	2013. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally? Unknown] Use and distribution outside native range poorly known
702	1997. Smith, A.W.. A Gardener's Handbook of Plant Names: Their Meanings and Origins. Dover Publications, Mineola, NY	[Propagules dispersed intentionally by people? Yes] "Shrubby herbs with ornamental foliage..." [Several members of the genus are becoming popular as ornamentals]
703	2013. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? Unknown] Unlikely, but history of cultivation outside native range not well known
704	2007. Zona, S.. Going Ballistic. Fairchild Topical Botanic Garden, http://www.virtualherbarium.org/gardenviews/GoingBallistic.html [Accessed 28 June 2013]	[Propagules adapted to wind dispersal? Yes, but probably only for short distances] "In the use of ballistichory for seed dispersal, one family, the Acanthaceae, stands out. Nearly all the members disperse their seeds explosively."
705	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Propagules water dispersed? Unknown] "undershrub of seasonally dry forest" [Unlikely given dry forest habitat]
706	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Propagules bird dispersed? No] "capsule obovate in outline, narrowly stipitate for about one-half its length, glabrous; seeds 4." [Not fleshy-fruited]
707	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Propagules dispersed by other animals (externally)? No evidence] "capsule obovate in outline, narrowly stipitate for about one-half its length, glabrous; seeds 4" [Unlikely, as seeds lack means of external attachment]
708	2004. Wasshausen, D.C./Wood, J.R.I.. Acanthaceae of Bolivia. Smithsonian Institution Contributions from the United States National Herbarium. 49: 1-152.	[Propagules survive passage through the gut? Unknown] "capsule obovate in outline, narrowly stipitate for about one-half its length, glabrous; seeds 4" [Although fruit morphology suggests seeds are unlikely to be consumed and internally dispersed]
801	2013. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m2)? Unknown]
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)? Unknown] No information on seed storage or longevity reported for genus

803	2013. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	2013. WRA Specialist. Personal Communication.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]
805	2013. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk / Undesirable Traits

- Thrives in tropical climates
- Elevation range exceeds 1000 m
- Acanthaceae family with many invasive species
- Reproduces by seeds they may be ejected ballistically and possibly short distances by wind
- Lack of basic biological and ecological information, and limited knowledge outside native range, makes accurate risk prediction difficult

Low Risk / Desirable Traits

- No reports of naturalization or invasiveness to date
- Unarmed (no spines, thorns or burrs)
- Palatable to cattle
- Landscaping and ornamental value