Family: ***Acanthaceae***

Taxon: ***Aphelandra sinclairiana***

Synonym: ***Common Name:*** coral aphelandra
Sinclair's aphelandra

Questionaire : current 20090513 **Assessor:** Patti Clifford **Designation:** L
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score -3**

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**	**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**	**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**	
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**	**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**	**y**
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**	**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**	**n**
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**	**n**
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: L **WRA Score** -3

Supporting Data:

101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive traits.
102	2012. USDA ARS National Germplasm Resources Laboratory. Aphelandra sinclairiana Nees Germplasm Resources Information Network - (GRIN) [Online Database]. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?3689	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Germplasm Resources Laboratory. Aphelandra sinclairiana Nees Germplasm Resources Information Network - (GRIN) [Online Database]. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?3689	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2- High] Native range: Costa Rica; Panama
202	2012. USDA ARS National Germplasm Resources Laboratory. Aphelandra sinclairiana Nees Germplasm Resources Information Network - (GRIN) [Online Database]. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?3689	[Quality of climate match data? 2- High] Native range: Costa Rica; Panama.
203	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	[Broad climate suitability (environmental versatility)? No] In Hawaii, grows best in cool gardens in upper, wet valleys.
203	2012. Dave's Garden. PlantFiles: Coral Aphelandra, Panama queen, Aphelandra sinclairiana. Dave's Garden, http://davesgarden.com/guides/pf/go/55421/	[Broad climate suitability (environmental versatility)? No] Hardiness: USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)
204	2012. USDA ARS National Germplasm Resources Laboratory. Aphelandra sinclairiana Nees Germplasm Resources Information Network - (GRIN) [Online Database]. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?3689	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native range: Costa Rica; Panama.
205	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Does the species have a history of repeated introductions outside its natural range?? Yes] Widely cultivated for its inflorescence.
205	2009. Chong, K.Y./Tan, H.T.W./Corlett, R.T.. A Checklist of the Total Vascular Plant Flora of Singapore: Native, Naturalized and Cultivated Species. Raffles Museum of Biodiversity Research, National University of Singapore, Singapore	[Does the species have a history of repeated introductions outside its natural range?? Yes] Cultivated in Singapore.
301	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Naturalized beyond native range? No] No evidence of naturalization.
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	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	[Congeneric weed? No] No evidence.
401	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Produces spines, thorns or burrs? No] "Shrub to 4 m high (13 ft) with downy young stems. Leaves simple, opposite, blade elliptic, 8-35 cm long (3 1/2-14 in), base attenuate, surfaces pubescent. Fruit an ovoid four-seeded capsule."

402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
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] Acanthaceae.
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Toxic to animals? No] No evidence of toxicity.
405	2012. 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 of toxicity.
406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Causes allergies or is otherwise toxic to humans? No] No evidence.
407	2012. 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	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? Unknown]
409	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Is a shade tolerant plant at some stage of its life cycle? Yes] Moist soils in partially shaded places are preferred.
409	2012. Dave's Garden. PlantFiles: Coral Aphelandra, Panama queen, Aphelandra sinclairiana. Dave's Garden, http://davesgarden.com/guides/pf/go/55421/	[Is a shade tolerant plant at some stage of its life cycle? Yes] Partial to full shade.
410	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? No] Moist soil.
410	2012. Dave's Garden. PlantFiles: Coral Aphelandra, Panama queen, Aphelandra sinclairiana. Dave's Garden, http://davesgarden.com/guides/pf/go/55421/	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? No] Soil pH requirements: 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral) 7.6 to 7.8 (mildly alkaline)
411	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Climbing or smothering growth habit? No] Shrub to 4 m high (13 ft).
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? Unknown]
501	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Aquatic? No] Shrub; terrestrial.
502	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Grass? No] Acanthaceae.
503	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Nitrogen fixing woody plant? No] Acanthaceae.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	[Produces viable seed? Yes] May be grown from seed, but cuttings are faster.
602	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Produces viable seed?] Propagate by cuttings.
603	1984. McDade, L.A.. Systematics and reproductive biology of the Central American species of the Aphelandra pulcherrima complex (Acanthaceae). Annals of the Missouri Botanical Garden. 71: 104-165.	[Hybridizes naturally? Yes] Although natural hybrids of the Aphelandra pulcherrima complex are rare in nature, putative hybrids of Aphelandra sinclairiana and Aphelandra gracilis, and between Aphelandra sinclairiana and Aphelandra golfodulcensis have been found in the field.

604	1985. McDade, L.A.. Breeding systems of Central American Aphelandra (Acanthaceae). American Journal of Botany. 72: 1515-1521.	[Self-compatible or apomictic?] This study examined the breeding systems in Aphelandra species. Controlled pollinations, followed by seed germination studies of seeds resulting from self- and cross pollination were initiated on nine species of Aphelandra. A. sinclairiana showed significantly reduced germination of selfed vs. crossed seeds. The breeding system is modified by post pollination factors that favor the formation and maturation of outcrossed seeds.
605	1978. Croat, T.B.. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	[Requires specialist pollinators? Yes] Hummingbird pollinated.
605	2004. McDade, L.A./Weeks, J.A.. Nectarin hummingbird-pollinated neotropical plants II: interactions with flower visitors. Biotropica. 36: 216-230.	[Requires specialist pollinators? Yes] Hummingbird pollinated.
606	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	[Reproduction by vegetative fragmentation?]. Propagate by cuttings and seed.
606	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Reproduction by vegetative fragmentation?]. Propagate by cuttings.
606	2009. Griscom, H.P./Griscom, B.W./Ashton, M.S.. Forest reneration from pasture in the dry tropics of Panama: effects of cattle, exotic grass, and forested riparia. Restoration Ecology. 17: 117-126.	[Reproduction by vegetative fragmentation?] Coppices. [not clear if spreads from coppice]
607	2012. WRA Specialist. Personal Communication.	[Minimum generative time (years)? Unknown]
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] No evidence of species grown in heavily trafficked areas.
702	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Propagules dispersed intentionally by people? Yes] Widely cultivated.
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Propagules adapted to wind dispersal? No] Capsule. [no adaptation]
705	2009. Griscom, H.P./Griscom, B.W./Ashton, M.S.. Forest reneration from pasture in the dry tropics of Panama: effects of cattle, exotic grass, and forested riparia. Restoration Ecology. 17: 117-126.	[Propagules water dispersed? Yes] Water dispersed.
706	2009. Griscom, H.P./Griscom, B.W./Ashton, M.S.. Forest reneration from pasture in the dry tropics of Panama: effects of cattle, exotic grass, and forested riparia. Restoration Ecology. 17: 117-126.	[Propagules bird dispersed? No] Water dispersed.
707	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Propagules dispersed by other animals (externally)? No] Fruit a capsule. [no means of attachment]
708	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Propagules survive passage through the gut? No] Fruit a capsule. [unlikely to be eaten]
801	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Prolific seed production (>1000/m2)?] Shrub to 4 m high; flowers continuously throughout the year; flowers in several dense spikes clustered at the top of the plant; fruit an ovoid four-seeded capsule. [possibly]
802	1985. McDade, L.A.. Breeding systems of Central American Aphelandra (Acanthaceae). American Journal of Botany. 72: 1515-1521.	[Evidence that a persistent propagule bank is formed (>1 yr)? No] Aphelandra seeds have no dormancy period.
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] Prune drastically to encourage new growth, flowering, vigorous foliage and dense crown.
804	2009. Griscom, H.P./Griscom, B.W./Ashton, M.S.. Forest reneration from pasture in the dry tropics of Panama: effects of cattle, exotic grass, and forested riparia. Restoration Ecology. 17: 117-126.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] Coppices.

805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]