

Taxon: Anthurium warocqueanum T.Moore

Family: Araceae

Common Name(s): queen anthurium

Synonym(s):

Assessor: Chuck Chimera

Status: Assessor Approved

End Date: 21 Aug 2020

WRA Score: 7.0

Designation: H(HPWRA)

Rating: High Risk

Keywords: Epiphytic, Herb, Toxic, Spreads Vegetatively, Bird-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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	?
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		
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	y
405	Toxic to animals	y=1, n=0	y
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	y
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		
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		

Qsn #	Question	Answer Option	Answer
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
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		
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators		
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)		
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)		
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant		
704	Propagules adapted to wind dispersal	y=1, n=-1	n
705	Propagules water dispersed	y=1, n=-1	n
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m ²)		
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	[Cultivated, but not domesticated] "The magnificent foliage is the main reason why <i>A. warocqueanum</i> is so sought after by horticulturists since the . inflorescences, although large, are not conspicuously coloured as in some of the better-known <i>Anthurium</i> species, such as <i>A. andreanum</i> Linden and <i>A. scherzerianum</i> Schott."
102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	NA
103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	NA
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	High
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	"DISTRIBUTION. North-western Colombia, in the Depts. of Antioquia, Choco and Valle."
202	Quality of climate match data	High
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	
203	Broad climate suitability (environmental versatility)	y
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	"Lithophytic, epiphytic or terrestrial herb in lower montane to montane primary or disturbed pluvial rainforest; 200-1420 m." [Elevation range exceeds 1000 m, demonstrating environmental versatility]
	Tropicos.org. (2020). Missouri Botanical Garden. http://www.tropicos.org/ . [Accessed 20 Aug 2020]	Collected from 20 m - 2200 m elevation, and 03°39'N to 06°33'N latitude
204	Native or naturalized in regions with tropical or subtropical climates	y

Qsn #	Question	Answer
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . Curtis's Botanical Magazine, 12(3), 127-130	"DISTRIBUTION. North-western Colombia, in the Depts. of Antioquia, Choco and Valle."
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence

205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	Notes
	Kamemoto, H. & Kuehnle, A. R. (1996). Breeding Anthuriums in Hawaii. University of Hawaii Press, Honolulu, HI	"A native of Colombia, this species is probably the most handsome member of the section." [Cultivated in Hawaii]
	Imada, C.T., Staples, G.W. & Herbst, D.R. 2005. Annotated Checklist of Cultivated Plants of Hawai'i. http://www2.bishopmuseum.org/HBS/botany/cultivatedplants/ . [Accessed 19 Aug 2020]	"Locations: Harold L. Lyon Arboretum Wahiawa Botanical Garden Waimea Arboretum & Botanical Garden"
	Dave's Garden. (2020). Queen Anthurium - <i>Anthurium warocqueanum</i> . https://davesgarden.com/guides/pf/go/98218/ . [Accessed 20 Aug 2020]	"This plant is said to grow outdoors in the following regions: Big Pine Key, Florida Fort Lauderdale, Florida Volcano, Hawaii"
	WRA Specialist. (2020). Personal Communication	Cultivated as in Hawaii and Florida, and commercially available elsewhere, but unclear how widespread cultivation occurs in outdoor environments where naturalization could theoretically occur

301	Naturalized beyond native range	n
	Source(s)	Notes
	Imada, C. (2019). Hawaiian Naturalized Vascular Plants Checklist (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	WRA Specialist. (2020). Personal Communication	Reported to be producing seeds in the Hawaiian Islands, but no documented records of naturalization have been published to date

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

Qsn #	Question	Answer
304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	A number of Anthurium species are listed as naturalized and/or weeds, but evidence of negative impacts have not been verified for any of the species listed

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . Curtis's Botanical Magazine, 12(3), 127-130	[No evidence] "Large, erect evergreen herb to 3 metres. Stem erect, 2-5 cm diam., apex with large triangular, sub-fleshy prophylls and cataphylls, lower part naked, rooting prolifically from the nodes. Roots 3--9 mm diam.; epidermis spongy, greyish white when dry, mid-green when wet, tips bright green, sticky. Leaves few to several, 160-250 cm long, 8-23 cm wide, elongate cordate-lanceolate, apex acute, base cordate, sinus deep, rounded, posterior lobes 6-8 cm long, sub-oblong, rounded, parallel; lamina leathery, deep velvety green with somewhat strongly impressed silvery-grey primary, secondary and tertiary venation adaxially, pale green abaxially. Petioles to 60 cm long, terete, somewhat angled, geniculate apically, geniculum 2.5-4 cm long, 7-8 mm diam., mid-green."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . Curtis's Botanical Magazine, 12(3), 127-130	"Large, erect evergreen herb to 3 metres." ... "Lithophytic, epiphytic or terrestrial herb in lower montane to montane primary or disturbed pluvial rainforest"

404	Unpalatable to grazing animals	y
	Source(s)	Notes
	Scott, S. & Thomas, C. 2000. Poisonous Plants of Paradise: First Aid and Medical Treatment of Injuries from Hawaii's Plants. University of Hawaii Press, Honolulu, HI	"All parts of the anthurium plant may contain bundles of needlelike calcium oxalate crystals, but most are in the leaves and stems." ... "The amount of calcium oxalate in a plant varies greatly from species to species and often even within the same species. The toxicity of anthurium plants is questionable among researchers; some do not list anthuriums as toxic; others do."

Qsn #	Question	Answer
	Dave's Garden. (2020). Queen Anthurium - Anthurium warocqueanum. https://davesgarden.com/guides/pf/go/98218/ . [Accessed 21 Aug 2020]	"Danger: Parts of plant are poisonous if ingested"
	The National Gardening Association. (2020). Queen Anthurium (<i>Anthurium warocqueanum</i>). https://garden.org/plants/ . [Accessed 21 Aug 2020]	"Resistances: Deer Resistant Rabbit Resistant" [Presumably unpalatable] "Toxicity: Other: All parts of plant contain calcium oxalate crystals, an irritant to the mouth and esophagus. Toxic to cats and dogs."

405	Toxic to animals	y
	Source(s)	Notes
	Scott, S. & Thomas, C. 2000. Poisonous Plants of Paradise: First Aid and Medical Treatment of Injuries from Hawaii's Plants. University of Hawaii Press, Honolulu, HI	"All parts of the anthurium plant may contain bundles of needlelike calcium oxalate crystals, but most are in the leaves and stems." ... "The amount of calcium oxalate in a plant varies greatly from species to species and often even within the same species. The toxicity of anthurium plants is questionable among researchers; some do not list anthuriums as toxic; others do."
	Knight, A. 2007. A Guide to Poisonous House and Garden Plants. CRC Press, Boca Raton, FL	"As they are common house and garden plants, anthuriums have the potential for causing poisoning in household pets that might chew upon the plant. Clinical Signs Dogs and cats that chew repeatedly on the leaves and stems of anthuriums may salivate excessively and vomit as a result of the irritant effects of the calcium oxalate crystals embedded in their oral mucous membranes. The painful swelling in the mouth may prevent the animal from eating for several days. Severe conjunctivitis may result, if plant juices are rubbed in the eye."
	Dave's Garden. (2020). Queen Anthurium - Anthurium warocqueanum. https://davesgarden.com/guides/pf/go/98218/ . [Accessed 21 Aug 2020]	"Danger: Parts of plant are poisonous if ingested"
	The National Gardening Association. (2020). Queen Anthurium (<i>Anthurium warocqueanum</i>). https://garden.org/plants/ . [Accessed 21 Aug 2020]	"Toxicity: Other: All parts of plant contain calcium oxalate crystals, an irritant to the mouth and esophagus. Toxic to cats and dogs."

406	Host for recognized pests and pathogens	y
	Source(s)	Notes
	Plantophiles.com, (2020). Anthurium Warocqueanum Care – Best Tips. https://plantophiles.com/plant-care/anthurium-warocqueanum/ . [Accessed 21 Aug 2020]	"Pests - Like most other houseplants, Anthuriums such as the Anthurium warocqueanum are prone to be attacked by plant pests. Common pest infestations are mealybugs, aphids, thrips, scale and also spider mites."

407	Causes allergies or is otherwise toxic to humans	y
	Source(s)	Notes
	Knight, A. 2007. A Guide to Poisonous House and Garden Plants. CRC Press, Boca Raton, FL	"As they are common house and garden plants, anthuriums have the potential for causing poisoning in household pets that might chew upon the plant."

Qsn #	Question	Answer
	Scott, S. & Thomas, C. 2000. Poisonous Plants of Paradise: First Aid and Medical Treatment of Injuries from Hawaii's Plants. University of Hawaii Press, Honolulu, HI	"The amount of calcium oxalate in a plant varies greatly from species to species and often even within the same species. The toxicity of anthurium plants is questionable among researchers; some do not list anthuriums as toxic; others do. Juices from these plants may cause a skin rash."
	The National Gardening Association. (2020). Queen Anthurium (<i>Anthurium warocqueanum</i>). https://garden.org/plants/ . [Accessed 21 Aug 2020]	"Toxicity: Other: All parts of plant contain calcium oxalate crystals, an irritant to the mouth and esophagus. Toxic to cats and dogs."

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	[No evidence. Unlikely given habit and habitat] "Large, erect evergreen herb to 3 metres." ... "Lithophytic, epiphytic or terrestrial herb in lower montane to montane primary or disturbed pluvial rainforest"

409	Is a shade tolerant plant at some stage of its life cycle	n
	Source(s)	Notes
	Plant Lust. (2020). <i>Anthurium warocqueanum</i> . https://plantlust.com/plants/33140/anthurium-warocqueanum/ . [Accessed 21 Aug 2020]	"Sun Exposure - bright shade"
	Plantophiles.com, (2020). <i>Anthurium Warocqueanum</i> Care – Best Tips. https://plantophiles.com/plant-care/anthurium-warocqueanum/ . [Accessed 21 Aug 2020]	[Partial shade] "They generally need more light than usually advised as most people base their judgment on how these plants grow in situ in their natural habitat. There they might be in semi-shade but one has to remember that sunlight is usually so much stronger than anything that we can provide an <i>Anthurium Warocqueanum</i> indoors. Avoid direct sunlight as this will burn the leaves of your indoor plant."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	Exotic Rainforest. (2020). <i>Anthurium warocqueanum</i> . https://www.exoticrainforest.com/Anthurium%20warocqueanum%20pc.html . [Accessed 21 Aug 2020]	" <i>Anthurium warocqueanum</i> is rarely if ever found growing in soil in nature."
	Plant Lust. (2020). <i>Anthurium warocqueanum</i> . https://plantlust.com/plants/33140/anthurium-warocqueanum/ . [Accessed 21 Aug 2020]	"Soil Needs - average, well-drained"
	Plantophiles.com, (2020). <i>Anthurium Warocqueanum</i> Care – Best Tips. https://plantophiles.com/plant-care/anthurium-warocqueanum/ . [Accessed 21 Aug 2020]	"These plants do not tend to grow in soil. The Queen is an epiphyte. Epiphytes are plants that are growing on other plants instead of in the soil."

411	Climbing or smothering growth habit	n
	Source(s)	Notes

Qsn #	Question	Answer
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . Curtis's Botanical Magazine, 12(3), 127-130	"Large, erect evergreen herb to 3 metres. Stem erect, 2-5 cm diam., apex with large triangular, sub-fleshy prophylls and cataphylls, lower part naked, rooting prolifically from the nodes." ... "Lithophytic, epiphytic or terrestrial herb in lower montane to montane primary or disturbed pluvial rainforest"

412	Forms dense thickets	n
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . Curtis's Botanical Magazine, 12(3), 127-130	"Lithophytic, epiphytic or terrestrial herb in lower montane to montane primary or disturbed pluvial rainforest; 200-1420 m." [No evidence]

501	Aquatic	n
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . Curtis's Botanical Magazine, 12(3), 127-130	"Lithophytic, epiphytic or terrestrial herb in lower montane to montane primary or disturbed pluvial rainforest"

502	Grass	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 19 Aug 2020]	Family: Araceae Subfamily: Pothoideae Tribe: Anthurieae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2020). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 19 Aug 2020]	Family: Araceae Subfamily: Pothoideae Tribe: Anthurieae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . Curtis's Botanical Magazine, 12(3), 127-130	"Large, erect evergreen herb to 3 metres. Stem erect, 2-5 cm diam., apex with large triangular, sub-fleshy prophylls and cataphylls, lower part naked, rooting prolifically from the nodes. Roots 3--9 mm diam.; epidermis spongy, greyish white when dry, mid-green when wet, tips bright green, sticky."

Qsn #	Question	Answer
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	No evidence

602	Produces viable seed	y
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	"Propagation is possible from seed but, to date, fertile fruits have not been produced at Kew."
	Exotic Rainforest. (2020). <i>Anthurium warocqueanum</i> . https://www.exoticrainforest.com/Anthurium%20warocqueanum%20pc.html . [Accessed 21 Aug 2020]	"The spadix is where seeds may form if pollinated and can grow to approximately 41cm (16 inches) and produces light red berries which will contain the seeds. Birds eat the berries and deposit the seeds on a tree branch in their own droppings which again begins the cycle of a plant growing upon a plant."
	WRA Specialist. (2020). Personal Communication	An August, 8, 2020 Facebook post from Kailua-Kona, Hawaii offers seeds of <i>Anthurium warocqueanum</i> for sale, with images of seeds and the fruiting plant in cultivation

603	Hybridizes naturally	
	Source(s)	Notes
	Sheffer, R. D. (1974). Chromosome number and compatibility in the genus <i>Anthurium</i> (Araceae) with a taxonomic revision of the sect. <i>Tetraspermium</i> . PhD Dissertation. University of Hawaii, Honolulu	"Engler (1905) had also indicated that <i>A. subsignatum</i> Engler included crosses between <i>A. andreanum</i> and two velvety leaf types (<i>A. magnificum</i> and <i>A. warocqueanum</i>), but these hybrids could not be obtained by the author.(Group V) could be crossed to what the author calls Group VI."
	Eucagenera. (2020). <i>Anthurium warocqueanum</i> x <i>Anthurium waterburyanum</i> . https://www.eucagenera.com/Anthurium-warocqueanum-x-Anthurium-waterburyanum/en . [Accessed]	Cultivated hybrids sold. Unknown if natural hybrids occur in the wild

604	Self-compatible or apomictic	y
	Source(s)	Notes
	Sheffer, R. D. (1974). Chromosome number and compatibility in the genus <i>Anthurium</i> (Araceae) with a taxonomic revision of the sect. <i>Tetraspermium</i> . PhD Dissertation. University of Hawaii, Honolulu	[28% of seeds germinated after self-pollination] "TABLE XVI." [<i>A. warocqueanum</i> - Clonal and Selfings = 4,2(28)] ... "Each entry is formed such that the first number indicates the total number of attempted pollinations, the second number indicates the number of fruits harvested, the number in the parenthesis indicates the average percent of seed germination, and f indicates that the hybrids flowered."
	Chouteau, M., Barabé, D., & Gibernau, M. (2006). A comparative study of inflorescence characters and pollen-ovule ratios among the genera <i>Philodendron</i> and <i>Anthurium</i> (Araceae). <i>International Journal of Plant Sciences</i> , 167(4), 817-829	[Several other species capable of selfing] "Among all <i>Anthurium</i> inflorescences bagged, nine species produced seeds and therefore were considered able to self-pollinate"

Qsn #	Question	Answer
605	Requires specialist pollinators	
	Source(s)	Notes
	Chouteau, M., Barabé, D., & Gibernau, M. (2006). A comparative study of inflorescence characters and pollen-ovule ratios among the genera <i>Philodendron</i> and <i>Anthurium</i> (Araceae). <i>International Journal of Plant Sciences</i> , 167(4), 817-829	[Unknown. Possibly requires specialized pollinators, but reports of plants producing seeds in Hawaii suggest plants may be effectively pollinated outside native range] "The pollination mechanism is also poorly known, but studies have pointed out that some species may be pollinated by euglossine bees, others by curculionid beetles, and one by hummingbirds (for a review, see Gibernau 2003). Moreover, in <i>Anthurium</i> , the inflorescence has no floral chamber, and thus pollinators come and go several times during the pollination cycle. The efficiency of pollination may be reduced by the fact that at least two visits are required, the first to bring pollen to a receptive inflorescence and the second to carry away pollen from the same inflorescence during the male phase (e.g., pollen released)."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	"The plant occasionally produces offsets and the removal of these small side shoots provides a convenient means of increase."

607	Minimum generative time (years)	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	Unknown

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes
	Staples, G.W. & Herbst, D.R. 2005. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	"The berries are brightly colored but odorless and the seeds are sticky, making them ideal for dispersal by birds." [Sticky seeds may have the ability to be externally dispersed]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Kamemoto, H. & Kuehnle, A. R. (1996). <i>Breeding Anthuriums in Hawaii</i> . University of Hawaii Press, Honolulu, HI	"A native of Colombia, this species is probably the most handsome member of the section." [Cultivated in Hawaii]
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	"The magnificent foliage is the main reason why <i>A. warocqueanum</i> is so sought after by horticulturists since the . inflorescences, although large, are not conspicuously coloured as in some of the better-known <i>Anthurium</i> species, such as <i>A. andreanum</i> Linden and <i>A. scherzerianum</i> Schott.:"

Qsn #	Question	Answer
703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	No direct evidence found. Cultivated as an ornamental, but probably unlikely to be dispersed accidentally as a contaminant

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"The berries are brightly colored but odorless and the seeds are sticky, making them ideal for dispersal by birds."

705	Propagules water dispersed	n
	Source(s)	Notes
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"The berries are brightly colored but odorless and the seeds are sticky, making them ideal for dispersal by birds."

706	Propagules bird dispersed	y
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . Curtis's Botanical Magazine, 12(3), 127-130	"Berries 8-10 mm long, 5-6 mm wide, pale brownish, ovoid-conic, extruded from the spadix at maturity"
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"The berries are brightly colored but odorless and the seeds are sticky, making them ideal for dispersal by birds."
	Exotic Rainforest. (2020). <i>Anthurium warocqueanum</i> . https://www.exoticrainforest.com/Anthurium%20warocoqueanum%20pc.html . [Accessed 21 Aug 2020]	"The spadix is where seeds may form if pollinated and can grow to approximately 41cm (16 inches) and produces light red berries which will contain the seeds. Birds eat the berries and deposit the seeds on a tree branch in their own droppings which again begins the cycle of a plant growing upon a plant."

707	Propagules dispersed by other animals (externally)	
	Source(s)	Notes
	Staples, G.W. & Herbst, D.R. 2005. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	"The berries are brightly colored but odorless and the seeds are sticky, making them ideal for dispersal by birds." [Sticky seeds may have the ability to be externally dispersed]

708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Exotic Rainforest. (2020). <i>Anthurium warocqueanum</i> . https://www.exoticrainforest.com/Anthurium%20warocoqueanum%20pc.html . [Accessed 21 Aug 2020]	"The spadix is where seeds may form if pollinated and can grow to approximately 41cm (16 inches) and produces light red berries which will contain the seeds. Birds eat the berries and deposit the seeds on a tree branch in their own droppings which again begins the cycle of a plant growing upon a plant."

Qsn #	Question	Answer
801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	"Infructescence formed by almost the entire spadix, often consisting of several hundred berries." [If fruits can contain 1-3 seeds each, plants have the potential to produce a large number of seeds. Densities unknown]
	Sheffer, R. D. (1974). Chromosome number and compatibility in the genus <i>Anthurium</i> (Araceae) with a taxonomic revision of the sect. <i>Tetraspermium</i> . PhD Dissertation. University of Hawaii, Honolulu	"TABLE IV. Number of seeds per berry of <i>Anthurium</i> species" [<i>A. warocqueanum</i> - Seeds Per Berry = 1-2(-3)]

802	Evidence that a persistent propagule bank is formed (>1 yr)	n
	Source(s)	Notes
	Doijode, S.J. 2001. <i>Seed Storage of Horticultural Crops</i> . Food Product Press, Inc., Binghamton, NY	" <i>Anthurium</i> seeds exhibit recalcitrant storage behavior (Stanwood, 1987). They survive for an exceptionally short period under ambient conditions. Seeds lose viability rapidly on desiccation, and it is difficult to store them longer, even under moist conditions; furthermore, high seed moisture is favorable for the growth of pathogens. However, seed viability is preserved for a shorter period when seeds are stored in berries."

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. (2020). Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species.

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	Boyce, P. (1995). 271. <i>Anthurium warocqueanum</i> . <i>Curtis's Botanical Magazine</i> , 12(3), 127-130	"The plant occasionally produces offsets and the removal of these small side shoots provides a convenient means of increase." [Unknown. Could possibly resprout if damaged, given ability to produce offsets]

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	Kamemoto, H. & Kuehnle, A. R. (1996). <i>Breeding Anthuriums in Hawaii</i> . University of Hawaii Press, Honolulu, HI	[Cultivated in Hawaii. No indication of natural enemies limiting spread of this or other <i>Anthurium</i> species] "A native of Colombia, this species is probably the most handsome member of the section."

Summary of Risk Traits:

High Risk / Undesirable Traits

- Elevation range exceeds 1000 m, demonstrating environmental versatility
- Thrives in tropical climates
- Unpalatable to animals
- Contains calcium oxalate crystals; potentially toxic to animals and people if ingested
- Reproduces by seeds and vegetatively by offsets
- Self-fertile
- Seeds dispersed by birds and people

Low Risk Traits

- No reports of invasiveness or naturalization to date
- Unarmed (no spines, thorns, or burrs)
- Seeds recalcitrant, and not likely to form a persistent seed bank