

Taxon: *Stromanthe sanguinea* (Hook.) Sond.

Family: Marantaceae

Common Name(s): stromanthe

Synonym(s): *Maranta sanguineum* Koernicke

Assessor: Chuck Chimera

Status: Assessor Approved

End Date: 14 Dec 2017

WRA Score: 2.0

Designation: L

Rating: Low Risk

Keywords: Neotropical Herb, Rhizomatous, Ornamental, Shade Tolerant, 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	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		
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		
405	Toxic to animals		
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans		
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	y
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y=1, n=0	y

Qsn #	Question	Answer Option	Answer
411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets		
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		
605	Requires specialist pollinators	y=-1, n=0	y
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)	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		
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/m ²)		
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
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)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	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	[No evidence of domestication] "Stromanthe sanguinea is native from Bahia to Rio de Janeiro, Brazil."
	WRA Specialist. 2017. Personal Communication	Cultivars exist, but no evidence of domestication found.

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2017. 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
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 12 Dec 2017]	"Native: Southern America Brazil: Brazil"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 12 Dec 2017]	

203	Broad climate suitability (environmental versatility)	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	"Stromanthe sanguinea is native from Bahia to Rio de Janeiro, Brazil." [Tropical]
	Missouri Botanical Garden. 2017. <i>Stromanthe sanguinea</i> . http://www.missouribotanicalgarden.org . [Accessed 12 Dec 2017]	"Zone: 10 to 12"

Qsn #	Question	Answer
204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 12 Dec 2017]	"Native: Southern America Brazil: Brazil"

205	Does the species have a history of repeated introductions outside its natural range?	y
	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	" <i>Stromanthe sanguinea</i> is native from Bahia to Rio de Janeiro, Brazil. It was more commonly cultivated as a garden ornamental in Hawai'i in the past and is now seen mainly in older gardens and botanical gardens."
	Dave's Garden. 2017. <i>Stromanthe</i> 'Tricolor' - <i>Stromanthe sanguinea</i> . https://davesgarden.com/guides/pf/go/59470/ . [Accessed 12 Dec 2017]	"This plant has been said to grow in the following regions: Mobile, Alabama Hayward, California Santa Barbara, California Apopka, Florida Bartow, Florida Beverly Hills, Florida Big Pine Key, Florida Boca Raton, Florida Brooksville, Florida Cape Coral, Florida Clearwater Beach, Florida Dade City, Florida Fort Myers, Florida Fort Pierce, Florida Gainesville, Florida Hollywood, Florida Jacksonville, Florida (3 reports) Jupiter, Florida Key West, Florida Lake Worth, Florida Lecanto, Florida Melbourne Beach, Florida Merritt Island, Florida Miccosukee Cpo, Florida New Port Richey, Florida (2 reports) Newberry, Florida Ocala, Florida Oldsmar, Florida Orlando, Florida (2 reports) Palm Coast, Florida Port Charlotte, Florida Port Saint Lucie, Florida Saint Cloud, Florida Saint Petersburg, Florida Sarasota, Florida (2 reports) Seffner, Florida Seminole, Florida Sumterville, Florida Tampa, Florida Titusville, Florida Valrico, Florida (2 reports) Venice, Florida Wellborn, Florida Winter Springs, Florida Thomasville, Georgia Kurtistown, Hawaii Baton Rouge, Louisiana (2 reports) Covington, Louisiana Geismar, Louisiana Gonzales, Louisiana Lake Charles, Louisiana (2 reports) Mandeville, Louisiana New Orleans, Louisiana (2 reports) Harbert, Michigan Levittown, New York Asheville, North Carolina Philadelphia, Pennsylvania Hilton Head Island, South Carolina Pawleys Island, South Carolina Saint Helena Island, South Carolina Baytown, Texas Brazoria, Texas Conroe, Texas Desoto, Texas Friendswood, Texas Galveston, Texas Houston, Texas (3 reports) Lake Jackson, Texas Mont Belvieu, Texas Port Arthur, Texas Richmond, Texas San Antonio, Texas Kalama, Washington"

301	Naturalized beyond native range	n
	Source(s)	Notes
	Chong, K.Y., Tan, H.T.W. & Corlett, R.T. 2009. 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	" <i>Stromanthe sanguinea</i> (Hook.) Sond.; Marantaceae; cultivated only"

Qsn #	Question	Answer
	Niissalo, M. A., Khew, G. S., Webb, E. L., & Leong-Škornickova, J. (2016). Notes on Singaporean native Zingiberales II: revision of Marantaceae, with a new generic record and notes on naturalised and commonly cultivated exotic species. <i>Phytotaxa</i> , 289(3), 201-224	[Cultivated only] "This species has short aerial stems and long leaves that are strongly purple on the abaxial surface. Cultivar S. s. 'Tricolor' (fig. 8D) with variegated green-white-red foliage is popular. The heavily branched, pink red inflorescences are held high above the leaves, but in Singapore's tropical climate flowering occurs only very rarely"
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	Wagner, W.L., Herbst, D.R. & Lorence, D.H. 2017. <i>Flora of the Hawaiian Islands</i> . Smithsonian Institution, Washington, D.C. http://botany.si.edu/ . [Accessed 12 Dec 2017]	No evidence to date
	Imada, C. 2012. <i>Hawaiian Native and Naturalized Vascular Plants Checklist</i> (December 2012 update). Bishop Museum Technical Report 60. Bishop Museum, Honolulu, HI	No evidence. Only <i>Stromanthe tonckat</i> reported to be naturalized on Oahu

302	Garden/amenity/disturbance weed	
	Source(s)	Notes
	Vermeulen, N. 1998. <i>Encyclopedia of House Plants</i> . 2nd Print. Rebo Productions, Lisse, Netherlands	[Identified as a "weed" but with no description of negative impacts] " <i>Stromanthe sanguinea</i> grows as a weed in Brazil around scrub and clearings in the forest and can therefore tolerate more light than the Marantaceae from the middle of the rainforests and may be safely put in the morning sun."

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

304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	
	Source(s)	Notes

Qsn #	Question	Answer
	Daehler, C. C. & Baker, R. F. 2006. New Records of Naturalized and Naturalizing Plants Around Lyon Arboretum, Mānoa Valley, Oʻahu. Bishop Museum Occasional Papers 87: 3-18	[Naturalized] "Stromanthe tonckat (Aubl.) Eichler New naturalized record This erect, rhizomatous herb, native to tropical America, was first planted in 1981. The plant sends up 1-1.2m long internodes, which then produce several leafy branches. Mature berries are ellipsoid, somewhat pear shaped, red then turning black at maturity. This species is common in Haukulu, where it has established along trails and in unmanaged wet areas of the Arboretum. It has definitely increased in abundance in recent years. Material examined: OAHU: Fruiting plants established in Oplismenus, beneath large Ficus trees, Haukulu, Lyon Arboretum, 1 Mar 2005, C. Daehler 1076 (BISH, duplicate HAW); Lyon Arboretum (cultivated), 28 Nov 1984, Nagata 3096 (HLA)."
	Lau, A. 2012. Oahu Early Detection Botanist. Pers. Comm. 25 May 2012	Stromanthe tonckat being evaluated for control, and regarded as a weed to garden staff of Lyon Arboretum. Only report of weediness to date

401	Produces spines, thorns or burrs	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	[No evidence] "... an erect perennial herb 3-6' tall with 3-10 antitropic leaves, 2-ranked in a fanlike duster above a canelike stem; juvenile plants have basal leaves. The leaf sheath is lobed at the apex and light reddish and hairy along the margin, the petiole is usually absent in stem leaves, and the pulvinus is about 2" long, olive green or tinged maroon. The leaf blade is glabrous (the margin with tiny hairs), leathery, ovate-lanceolate, to 21" long and 4.75" wide, the base obtuse to rounded, the apex rounded and with a point, the upper surface dark shiny green, and the underside dark red-purple."

402	Allelopathic	n
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. No evidence found

403	Parasitic	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	"... an erect perennial herb 3-6' tall with 3-10 antitropic leaves, 2-ranked in a fanlike duster above a canelike stem; juvenile plants have basal leaves." [Marantaceae. No evidence]

Qsn #	Question	Answer
404	Unpalatable to grazing animals	
	Source(s)	Notes
	Looking at Plants. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://looking-at-plants.com/ . [Accessed 14 Dec 2017]	[Potentially unpalatable, or not preferred by deer] "DEER Resistant There are very few totally "deer-proof" plants. There are also, relatively speaking, few plants that are considered a preferred food supply of deer. Most plants fall in the big gap between. One of the biggest variables is the available preferred food supply in a given area. If their preferred food is scarce, they will munch on most anything."

405	Toxic to animals	
	Source(s)	Notes
	Looking at Plants. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://looking-at-plants.com/ . [Accessed 14 Dec 2017]	[No evidence] "TOXICITY A search of California Poison Control, ASPCA, Texas A&M University, Canadian Poisonous Plants Information System, University of Wisconsin, Poisonous Houseplants and Ornamentals - Merck Vet Manual, Purdue University - Guide to Toxic Plants in Forages, Poisonous Plants of the Southeastern United States - Alabama Cooperative Extension, Florida Poison Control, and The Cat Fanciers Association did not show this plant on any of their lists."
	Shoot Gardening. 2017. <i>Stromanthe sanguinea</i> (Bloody stromanthe). https://www.shootgardening.co.uk/plant/stromanthe-sanguinea . [Accessed 14 Dec 2017]	[Unknown if animals are affected] "Toxicity All parts may cause stomach upset if ingested."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Shoot Gardening. 2017. <i>Stromanthe sanguinea</i> (Bloody stromanthe). https://www.shootgardening.co.uk/plant/stromanthe-sanguinea . [Accessed 14 Dec 2017]	"Specific pests Red spider mite (box and other) "
	Looking at Plants. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://looking-at-plants.com/ . [Accessed 14 Dec 2017]	[Affected by common pests] "PESTS Slugs - University of Florida Caterpillars - University of Missouri Snails - University of California Mealybugs - University of California Spider Mites - University of California DISEASES - Canna Rust - University of Hawaii"

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes

Qsn #	Question	Answer
	Shoot Gardening. 2017. <i>Stromanthe sanguinea</i> (Bloody stromanthe). https://www.shootgardening.co.uk/plant/stromanthe-sanguinea . [Accessed 14 Dec 2017]	"Toxicity: All parts may cause stomach upset if ingested."
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	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	"erect perennial herb" [Unlikely given growth habit]
	Learn 2 Grow. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://www.learn2grow.com/plants/stromanthe-sanguinea-triostar/ . [Accessed 12 Dec 2017]	"These tropical plants are grown outside only in the warmest, most humid locations." [No evidence. Herbaceous and grows in areas that are not fire prone]

409	Is a shade tolerant plant at some stage of its life cycle	y
	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	"It is tolerant of full sun, and its height and distinctive habit make it ideal for use as a background planting."
	Learn 2 Grow. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://www.learn2grow.com/plants/stromanthe-sanguinea-triostar/ . [Accessed 12 Dec 2017]	"Sun Exposure Partial Shade, Full Shade"
	Looking at Plants. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://looking-at-plants.com/ . [Accessed 14 Dec 2017]	"Tricolor Ginger is a shade lover, preferring light to full shade. Full sun tends to burn the foliage. <i>Stromanthe sanguinea</i> 'Triostar'"
	Missouri Botanical Garden. 2017. <i>Stromanthe sanguinea</i> . http://www.missouribotanicalgarden.org . [Accessed 12 Dec 2017]	"Winter hardy to USDA zones 10-12 where it is best grown in fertile, moist but well-drained soils in light or dappled shade. Performs well with morning sun and afternoon shade. Foliage will usually burn in direct sun, particularly in hot summer months." ... "Houseplants may be taken outdoors to protected locations in summer in part sun to nearly full shade."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	y
	Source(s)	Notes
	Looking at Plants. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://looking-at-plants.com/ . [Accessed 14 Dec 2017]	"It prefers a moist, rich soil, but it will grow on a wide variety of well-drained soils in the pH range of 5.5 to 7.5."
	Shoot Gardening. 2017. <i>Stromanthe sanguinea</i> (Bloody stromanthe). https://www.shootgardening.co.uk/plant/stromanthe-sanguinea . [Accessed 14 Dec 2017]	"Soil type: Loamy, Sandy Soil drainage: Moist but well-drained, Moisture-retentive Soil pH: Acid, Neutral"

411	Climbing or smothering growth habit	n
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Qsn #	Question	Answer
	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	"... an erect perennial herb 3-6' tall with 3-10 antitropic leaves, 2-ranked in a fanlike duster above a canelike stem; juvenile plants have basal leaves. The leaf sheath is lobed at the apex and light reddish and hairy along the margin, the petiole is usually absent in stem leaves, and the pulvinus is about 2" long, olive green or tinged maroon. The leaf blade is glabrous (the margin with tiny hairs), leathery, ovate-lanceolate, to 21" long and 4.75" wide, the base obtuse to rounded, the apex rounded and with a point, the upper surface dark shiny green, and the underside dark red-purple."

412	Forms dense thickets	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. No evidence of dense stands found from native or introduced range

501	Aquatic	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	[Terrestrial] "... an erect perennial herb 3-6' tall with 3-10 antitropic leaves, 2-ranked in a fanlike duster above a canelike stem; juvenile plants have basal leaves."

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 12 Dec 2017]	"Native: Southern America Brazil: Brazil"

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 12 Dec 2017]	"Native: Southern America Brazil: Brazil"

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Missouri Botanical Garden. 2017. <i>Stromanthe sanguinea</i> . http://www.missouribotanicalgarden.org . [Accessed 12 Dec 2017]	" <i>Stromanthe sanguinea</i> , commonly called stromanthe, is an upright rhizomatous perennial that typically grows to 5' tall and 3' wide outdoors ..."

Qsn #	Question	Answer
	Gordon, D. R., Mitterdorfer, B., Pheloung, P. C., Ansari, S., Buddenhagen, C., Chimera, C., ... & Williams, P. A. 2010). Guidance for addressing the Australian Weed Risk Assessment questions. Plant Protection Quarterly, 25(2): 56-74	"This question addresses taxa that have specialized organs and should not include plants with just rhizomes/stolons ..."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Vermeulen, N. 1998. Encyclopedia of House Plants. 2nd Print. Rebo Productions, Lisse, Netherlands	[Apparently not experiencing reproductive failure] "Stromanthe sanguinea grows as a weed in Brazil around scrub and clearings in the forest and can therefore tolerate more light than the Marantaceae from the middle of the rainforests and may be safely put in the morning sun."
	USDA, ARS, Germplasm Resources Information Network. 2017. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 14 Dec 2017]	[No evidence of substantial reproductive failure from native range found] "Native: Southern America Brazil: Brazil"

602	Produces viable seed	y
	Source(s)	Notes
	Shoot Gardening. 2017. <i>Stromanthe sanguinea</i> (Bloody stromanthe). https://www.shootgardening.co.uk/plant/stromanthe-sanguinea . [Accessed 14 Dec 2017]	"Propagation: Divide after flowering or when dormant. Propagation methods: Division, Seed" ... "Sow seed in containers with heat (spring)"
	Dave's Garden. 2017. <i>Stromanthe</i> 'Tricolor' - <i>Stromanthe sanguinea</i> . https://davesgarden.com/guides/pf/go/59470/ . [Accessed 12 Dec 2017]	"Seed Collecting: N/A: plant does not set seed, flowers are sterile, or plants will not come true from seed"

603	Hybridizes naturally	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. No evidence found

604	Self-compatible or apomictic	
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume IV. Flowering plants, Monocotyledons: Alismatanae and Commelinanae (except Gramineae). Springer-Verlag, Berlin, Heidelberg, New York	[Unknown. Generic description] "Autogamy in chasmogamous flowers is also suspected on the basis of unexpectedly high fruit set in most species of <i>Maranta</i> subgen. <i>Maranta</i> (Andersson 1986), in <i>Thalia geniculata</i> , and several species of <i>Ctenanthe</i> and <i>Stromanthe</i> ."

605	Requires specialist pollinators	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Snow, D. W., & Teixeira, D. L. (1982). Hummingbirds and their flowers in the coastal mountains of southeastern Brazil. <i>Journal of Ornithology</i> , 123(4), 446-450	"Apart from general statements by Ruschi (1973), nothing seems to have been published on the relationships between hummingbirds and flowers in the southeastern Brazilian coastal mountains." ... "Table 1. Characteristics of hummingbird flowers" [Stromanthe sanguinea classified as a hummingbird flower]
	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 inflorescence is terminal, with short branches; the stem, bracts, and sepals are bright red, and the sterile stamens are white."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Looking at Plants. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://looking-at-plants.com/ . [Accessed 15 Dec 2017]	"It is upright and clump-forming, arising from rhizomes with a fast growth rate." ... "PROPAGATION Division of rhizomes in the early spring"
	Shoot Gardening. 2017. <i>Stromanthe sanguinea</i> (Bloody stromanthe). https://www.shootgardening.co.uk/plant/stromanthe-sanguinea . [Accessed 14 Dec 2017]	"S. sanguinea - S. sanguinea is a tender, erect, rhizomatous, evergreen perennial with broadly linear to lance-shaped, dark olive-green leaves, red beneath"

607	Minimum generative time (years)	
	Source(s)	Notes
	Learn 2 Grow. 2017. <i>Stromanthe sanguinea</i> 'Triostar'. http://www.learn2grow.com/plants/stromanthe-sanguinea-triostar/ . [Accessed 14 Dec 2017]	"Growth Rate - Medium"
	WRA Specialist. 2017. Personal Communication	Time to sexual maturity unknown, but plants may be able to reproduce vegetatively at an earlier age

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	Galetti, M., Pizo, M. A., & Morellato, L. P. C. (2011). Diversity of functional traits of fleshy fruits in a species-rich Atlantic rain forest. <i>Biota Neotropica</i> , 11(1), 181-193	[Bird-dispersed] "Appendix 1. Growth form, colour, and mean morphological measures of vertebrate-dispersed fruits of the Saibadela forest. Values are based on at least ten fruits per species. Values for mean seed number and fruit and seed dimensions were rounded to the nearest integer." [Stromanthe sanguinea - Disperser group = b = bird]

702	Propagules dispersed intentionally by people	y
	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	"Stromanthe sanguinea is native from Bahia to Rio de Janeiro, Brazil. It was more commonly cultivated as a garden ornamental in Hawai'i in the past and is now seen mainly in older gardens and botanical gardens."

Qsn #	Question	Answer
703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Dave's Garden. 2017. <i>Stromanthe</i> 'Tricolor' - <i>Stromanthe sanguinea</i> . https://davesgarden.com/guides/pf/go/59470/ . [Accessed 14 Dec 2017]	"Seed Collecting: N/A: plant does not set seed, flowers are sterile, or plants will not come true from seed" [Seed set may be limited in cultivation. Propagation usually by division of rhizomes]
	WRA Specialist. 2017. Personal Communication	Probably not - no evidence that this species is grown in or around seed crops.

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Galetti, M., Pizo, M. A., & Morellato, L. P. C. (2011). Diversity of functional traits of fleshy fruits in a species-rich Atlantic rain forest. <i>Biota Neotropica</i> , 11(1), 181-193	[Bird-dispersed] "Appendix 1. Growth form, colour, and mean morphological measures of vertebrate-dispersed fruits of the Saibadela forest. Values are based on at least ten fruits per species. Values for mean seed number and fruit and seed dimensions were rounded to the nearest integer." [<i>Stromanthe sanguinea</i> - Disperser group = b = bird]

705	Propagules water dispersed	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. Possible that seeds or rhizome fragments could be moved by water if growing in riparian areas

706	Propagules bird dispersed	y
	Source(s)	Notes
	Snow, D. W. (1981). Tropical frugivorous birds and their food plants: a world survey. <i>Biotropica</i> , 13(1): 1-14	[Generic description indicates <i>Stromanthe</i> fruits are eaten by unspecialized frugivorous birds] "TABLE 1. Plant genera recorded" in the diets of frugivorous birds in the tropics (including subtropical South Africa and Australasia, and excluding oceanic islands and Madagascar)." [<i>Stromanthe</i> U - eaten by unspecialized frugivores]
	Galetti, M., Pizo, M. A., & Morellato, L. P. C. (2011). Diversity of functional traits of fleshy fruits in a species-rich Atlantic rain forest. <i>Biota Neotropica</i> , 11(1), 181-193	[Yes, if seeds are produced] "Appendix 1. Growth form, colour, and mean morphological measures of vertebrate-dispersed fruits of the Saibadela forest. Values are based on at least ten fruits per species. Values for mean seed number and fruit and seed dimensions were rounded to the nearest integer." [<i>Stromanthe sanguinea</i> - Disperser group = b = bird]

Qsn #	Question	Answer
707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes
	Snow, D. W., & Teixeira, D. L. (1982). Hummingbirds and their flowers in the coastal mountains of southeastern Brazil. <i>Journal of Ornithology</i> , 123(4), 446-450	[Generic description indicates <i>Stromanthe</i> fruits are eaten by unspecialized frugivorous birds. No means of external attachment] "TABLE 1. Plant genera recorded" in the diets of frugivorous birds in the tropics (including subtropical South Africa and Australasia, and excluding oceanic islands and Madagascar)." [<i>Stromanthe</i> U - eaten by unspecialized frugivores]
708	Propagules survive passage through the gut	y
	Source(s)	Notes
	Galetti, M., Pizo, M. A., & Morellato, L. P. C. (2011). Diversity of functional traits of fleshy fruits in a species-rich Atlantic rain forest. <i>Biota Neotropica</i> , 11(1), 181-193	[Presumably Yes, if seeds are produced] "Appendix 1. Growth form, colour, and mean morphological measures of vertebrate-dispersed fruits of the Saibadela forest. Values are based on at least ten fruits per species. Values for mean seed number and fruit and seed dimensions were rounded to the nearest integer." [<i>Stromanthe sanguinea</i> - Disperser group = b = bird]
801	Prolific seed production (>1000/m2)	
	Source(s)	Notes
	Dave's Garden. 2017. <i>Stromanthe</i> 'Tricolor' - <i>Stromanthe sanguinea</i> . https://davesgarden.com/guides/pf/go/59470/ . [Accessed 14 Dec 2017]	"Seed Collecting: N/A: plant does not set seed, flowers are sterile, or plants will not come true from seed" [Unknown, but seed set may be limited or absent in cultivation]
802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2017) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ . [Accessed 14 Dec 2017]	Unknown. No information on seed storage or longevity
803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2017. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

Qsn #	Question	Answer
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y
	Source(s)	Notes
	Dave's Garden. 2017. Stromanthe 'Tricolor' - Stromanthe sanguinea. https://davesgarden.com/guides/pf/go/59470/ . [Accessed 12 Dec 2017]	[Anecdotal report indicates plant will tolerate freezing & mowing] "On Sep 21, 2010, ptooming from Titusville, FL (Zone 9a) wrote: ... This is an amazing plant, will tolerate being cold bitten to the ground like during our freak week long below 30 temps here in Florida and jump back when it gets consistantly 60. ... By accident hubby mowed one clump down, it laughed and came right back up."

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	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	"It was more commonly cultivated as a garden ornamental in Hawai'i in the past and is now seen mainly in older gardens and botanical gardens." [Unknown. No mention of pests or pathogens]

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives in tropical climates
- Other *Stromanthe* species have become naturalized & are potential weeds
- Shade tolerant
- Tolerates many soil types
- Reproduces by seeds & vegetatively by rhizomes
- Seeds dispersed by birds & intentionally by people
- Able to resprout from rhizomes after cutting

Low Risk Traits

- No reports of invasiveness or naturalization
- Unarmed (no spines, thorns, or burrs)
- Ornamental
- Bird-pollination requirement may limit seed set in introduced range

Second Screening Results for Herb/Low Stature Shrubby Life Form

(A) Reported as a weed of cultivated lands? No
Outcome = Accept (Low Risk)