

Taxon: Ctenanthe setosa (Roscoe) Eichler

Family: Marantaceae

Common Name(s): never never plant
prayer plant

Synonym(s): Phrynium setosum Roscoe

Assessor: Chuck Chimera

Status: Assessor Approved

End Date: 31 Jan 2023

WRA Score: -4.0

Designation: L

Rating: Low Risk

Keywords: Tropical Herb, Rhizomatous, Dense Cover, Spreads Vegetatively, Rarely Seeds

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	n
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		
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		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
405	Toxic to animals		
406	Host for recognized pests and pathogens	y=1, n=0	n
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		

Qsn #	Question	Answer Option	Answer
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	y
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		
603	Hybridizes naturally		
604	Self-compatible or apomictic		
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	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	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m2)	y=1, n=-1	n
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		
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
	Fraga, F.R.M. (2023). <i>Ctenanthe</i> in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 27 Jan 2023]	No evidence of domestication

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. (2023). Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. (2023). 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, Agricultural Research Service, National Plant Germplasm System. (2023). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 27 Jan 2023]	"Native Southern America BRAZIL: Brazil [Bahia, Ceará, Espírito Santo, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, São Paulo]"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2023). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 27 Jan 2023]	"Native Southern America BRAZIL: Brazil [Bahia, Ceará, Espírito Santo, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, São Paulo]"

203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Dave's Garden. (2023). <i>Ctenanthe</i> Species - <i>Ctenanthe setosa</i> . https://davesgarden.com/guides/pf/go/192384/ . [Accessed 27 Jan 2023]	"Hardiness: USDA Zone 8b: to -9.4 °C (15 °F) USDA Zone 9a: to -6.6 °C (20 °F)"
	Tropicos.org. (2023). Tropicos v3.4.0. Missouri Botanical Garden. http://www.tropicos.org/ . [Accessed 27 Jan 2023]	Collected from 20-50 m to 550-700 m within its native range of Brazil

Qsn #	Question	Answer
204	Native or naturalized in regions with tropical or subtropical climates	n
	Source(s)	Notes
	USDA, Agricultural Research Service, National Plant Germplasm System. (2023). Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. https://npgsweb.ars-grin.gov/ . [Accessed 27 Jan 2023]	"Native Southern America BRAZIL: Brazil [Bahia, Ceará, Espírito Santo, Minas Gerais, Paraná, Rio de Janeiro, Santa Catarina, São Paulo]"
	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]	No reports of naturalization to date

Qsn #	Question	Answer
205	Does the species have a history of repeated introductions outside its natural range?	y
	Source(s)	Notes
	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 26 Jan 2023]	" <i>Ctenanthe setosa</i> (Roscoe) Eichler (Confirmed) Synonyms: Syn. <i>Phrynium setosum</i> Roscoe First Collected: 1979 Locations: Harold L. Lyon Arboretum Harold L. Lyon Arboretum (Confirmed) Wahiawa Botanical Garden Waimea Arboretum & Botanical Garden"
	Guerrero, A. M., Pozo, P., Chamorro, S., Guezou, A., & Buddenhagen, C. E. (2008). Baseline data for identifying potentially invasive plants in Puerto Ayora, Santa Cruz Island, Galapagos. <i>Pacific Conservation Biology</i> , 14(2), 93-107	"Cu: Cultivated (introduced, only found in cultivation)"
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Ornamental"
	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	"There are 15 species in <i>Ctenanthe</i> , of which <i>C. lubbersiana</i> (Morren 1882: 21) Eichl. in Petersen (1890: 159), <i>C. oppenheimiana</i> (Morren 1875: 271) Schumann (1902: 155) and <i>C. setosa</i> Eichler (1884: 84) (fig. 71) are cultivated in Singapore."

Qsn #	Question	Answer
301	Naturalized beyond native range	n
	Source(s)	Notes
	Guerrero, A. M., Pozo, P., Chamorro, S., Guezou, A., & Buddenhagen, C. E. (2008). Baseline data for identifying potentially invasive plants in Puerto Ayora, Santa Cruz Island, Galapagos. <i>Pacific Conservation Biology</i> , 14(2), 93-107	"Table 1. List of introduced plant taxa recorded during the inventory of plants on properties in Puerto Ayora , Galapagos (2002-2004) explanation of column codes below table." [<i>Ctenanthe setosa</i> - Cu: Cultivated (introduced, only found in cultivation)]

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, but not reported as naturalized] "Ctenanthe is a South American genus with variegated leaves, superficially very similar to Goeppertia and used similarly as ornamentals in gardens. The two genera are easiest told apart by the fashion the leaves unfold: in Ctenanthe each leaf curls open in the opposite direction to the previous leaf (antitropic), whereas in Goeppertia (and Calathea) the direction of curling is constant (homotropic) (Andersson 1981). There are 15 species in Ctenanthe, of which <i>C. lubbersiana</i> (Morren 1882: 21) Eichl. in Petersen (1890: 159), <i>C. oppenheimiana</i> (Morren 1875: 271) Schumann (1902: 155) and <i>C. setosa</i> Eichler (1884: 84) (fig. 71) are cultivated in Singapore."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	Imada, C. (2019). <i>Hawaiian Naturalized Vascular Plants Checklist</i> (February 2019 update). Bishop Museum Technical Report 69. Bishop Museum, Honolulu, HI	No evidence in the Hawaiian Islands as of 2019

302	Garden/amenity/disturbance weed	
	Source(s)	Notes
	Save Our Waterways Now. (2023). <i>Ctenanthe</i> spp. (Marantaceae) <i>Ctenanthe</i> . https://sown.com.au/ctenanthe-spp-marantaceae-ctenanthe/ . [Accessed 31 Jan 2023]	[Concern expressed over ability to form monocultures] "Several clumps of <i>Ctenanthe</i> (undetermined species) are well established, presumably originating from dumped garden waste, along Enoggera Creek. Weed risk medium, because although it is isolated, it forms monocultures. Also along the creek several clumps of what might be <i>Ctenanthe oppenheimiana</i> or the cultivar known as <i>Ctenanthe setosa</i> have been found, the largest being a flowering clump about 5 x 5 m in size and very dense, spotted near the creek crossing behind The Gap State High School (opposite Riaweena). These perennials (related to the <i>Calathea</i> and <i>Maranta</i>) are from tropical Brazil. <i>Ctenanthe</i> from the Greek <i>kteis</i> means comb and <i>anthos</i> flower. Pronunciation: tee-NANTH-ee"
	iGarden. (2023). <i>Ctenanthe setosa</i> 'Grey Star'. https://www.igarden.com.au/plant-type.jsp?id=1047&t=Ctenanthe . [Accessed 31 Jan 2023]	[Reported to be weedy and invasive in an Australian garden] "Having grown this for quite a few years, I have realised it IS an invasive plant. Mine was been planted in a very dry, shaded area, where it probably don't spread as much as in a better garden spot, but it still does form very large clumps and start to appear in the middle of other plants. I now don't recommend it, except when confined to a pot or sited in an area where nothing else will grow and you honestly don't mind if it takes over!"
	GBIF Secretariat (2023). <i>Ctenanthe setosa</i> (Roscoe) Eichler. GBIF Backbone Taxonomy. Checklist dataset. https://www.gbif.org/species/2762422 . [Accessed 31 Jan 2023]	Introduced to Ecuador. No Evidence of impact

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

Qsn #	Question	Answer
	GBIF Secretariat (2023). <i>Ctenanthe setosa</i> (Roscoe) Eichler. GBIF Backbone Taxonomy. Checklist dataset. https://www.gbif.org/species/2762422 . [Accessed 31 Jan 2023]	No evidence

304	Environmental weed	
	Source(s)	Notes
	Queensland Government. (2023). Species profile— <i>Ctenanthe setosa</i> . https://apps.des.qld.gov.au/species-search/details/?id=35673 . [Accessed 31 Jan 2023]	"Pest status - Environmental Weed" [No description of impacts. Unable to corroborate with other sources]
	Save Our Waterways Now. (2023). <i>Ctenanthe</i> spp. (Marantaceae) <i>Ctenanthe</i> . https://sown.com.au/ctenanthe-spp-marantaceae-ctenanthe/ . [Accessed 31 Jan 2023]	[Concern expressed over ability to form dense monocultures] "Several clumps of <i>Ctenanthe</i> (undetermined species) are well established, presumably originating from dumped garden waste, along Enoggera Creek. Weed risk medium, because although it is isolated, it forms monocultures. Also along the creek several clumps of what might be <i>Ctenanthe oppenheimiana</i> or the cultivar known as <i>Ctenanthe setosa</i> have been found, the largest being a flowering clump about 5 x 5 m in size and very dense, spotted near the creek crossing behind The Gap State High School (opposite Riaweena)."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	CABI. (2023). CABI Compendium Invasive Species. https://www.cabidigitallibrary.org/product/qi . [Accessed 31 Jan 2023]	No evidence
	GBIF Secretariat (2023). <i>Ctenanthe setosa</i> (Roscoe) Eichler. GBIF Backbone Taxonomy. Checklist dataset. https://www.gbif.org/species/2762422 . [Accessed 31 Jan 2023]	No evidence

Qsn #	Question	Answer
305	Congeneric weed	n
	Source(s)	Notes
	Save Our Waterways Now. (2023). <i>Ctenanthe</i> spp. (Marantaceae) <i>Ctenanthe</i> . https://sown.com.au/ctenanthe-spp-marantaceae-ctenanthe/ . [Accessed 31 Jan 2023]	[Concern expressed over ability to spread and form monocultures in gardens] "Several clumps of <i>Ctenanthe</i> (undetermined species) are well established, presumably originating from dumped garden waste, along Enoggera Creek. Weed risk medium, because although it is isolated, it forms monocultures. Also along the creek several clumps of what might be <i>Ctenanthe oppenheimiana</i> or the cultivar known as <i>Ctenanthe setosa</i> have been found, the largest being a flowering clump about 5 x 5 m in size and very dense, spotted near the creek crossing behind The Gap State High School (opposite Riaweena). These perennials (related to the <i>Calathea</i> and <i>Maranta</i>) are from tropical Brazil."
	Randall, R.P. (2017). <i>A Global Compendium of Weeds</i> . 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence
	CABI. (2023). <i>CABI Compendium Invasive Species</i> . https://www.cabidigitalibrary.org/product/qi . [Accessed 31 Jan 2023]	No evidence

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Fraga, F.R.M. (2023). <i>Ctenanthe</i> in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 25 Jan 2023]	[No evidence] "Root: adventitious filiform. Stem: subterranean rhizomatose; axis aerial rosulate. Leaf: sheath foliar setose/ligule absent; blade foliar elliptic/green , discolorous/side adaxial falcate/side abaxial wine-coloured. Inflorescence: synflorescence paniculiform/compressed/2 - nodal/with 1 to 4 florescence by node/cylindric/fulvous - villose/brown/subtended by bract(s) navicular/prophyllum of the florescence present; cymule of the 2 flower in brachyblast/bract(s) external spathaceous/ovate/apex aristate(s)/coriaceous/tomentose/margin tomentose/green/brown/persistent/bracteole(s) pilose 1 by flower/prophyllum of the cymule navicular/careinate , carina glabrate. Flower: tubular tube floral broad and short/glabrate; sepal 3 free/equals/lanceolate/chartaceous/tomentose/hyaline/persistent; lobe(s) of the corolla membranous/elliptic/glabrous; staminodium external petaloid , 2 , subequal/oblong/apex emarginate/white; staminodium with callous , showy , petaloid , ovate/of the position subterminal; staminodium cucullate hood open/appendix towards base; stamen fertile 1 anther monothealous elliptic/filament adnate to the appendix petaloid ,/appendix petaloid oblong; stigma trilobate funiliform ,/style bent ,; ovary trilocular , 1 locule fertile smooth/without ornamentation/white villose. Fruit: capsule non - observed. Seed: solitary non observed."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. (2023). Personal Communication	Unknown. No evidence found

Qsn #	Question	Answer
403	Parasitic	n
	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	"Rosulate or caulescent plants with antitropic leaves; cauline leaves mostly clustered." [Genus description. No evidence in genus or family Marantaceae]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	WRA Specialist. (2023). Personal Communication	Unknown. Some species may be anecdotally reported to be deer resistant

405	Toxic to animals	
	Source(s)	Notes
	PlantsInsights. (2022). Ctenanthe Setosa Compact Star Never Never Plant Care Tips. https://plantsinsights.com/ctenanthe-setosa-compact-star/ . [Accessed 31 Jan 2023]	[Possible problems if ingested] "Ctenanthe Setosa is not toxic to humans or animals. However, it is important to keep this plant away from children and pets, as the leaves can cause skin irritation. If ingested, this plant can cause stomach upset. If you suspect that your child or pet has ingested this plant, please contact your local poison control center."
	The Jungle Collective. (2023). Ctenanthe Setosa Plant Care Tips. https://www.thejunglecollective.com.au/ctenanthe-setosa-plant-care-tips/ . [Accessed 31 Jan 2023]	[Possibly, if ingested] "A Ctenanthe plant is slightly poisonous. Some plants contain chemicals such as oxalates, solanine, glycosides, or alkaloid lycorine that may cause vomiting, nausea, diarrhea, swelling and redness of the mouth, throat, and lips, and trouble breathing."
	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

Qsn #	Question	Answer
406	Host for recognized pests and pathogens	n
	Source(s)	Notes
	PlantsInsights. (2022). Ctenanthe Setosa Compact Star Never Never Plant Care Tips. https://plantsinsights.com/ctenanthe-setosa-compact-star/ . [Accessed 31 Jan 2023]	"Ctenanthe Setosa is generally a low-maintenance plant, but a few pests, diseases, and common problems can affect it. Pests: Some of the most common pests that may attack Ctenanthe Setosa are mealybugs, spider mites, and grey mold." ... "Ctenanthe Setosa is susceptible to a few diseases, the most common of which is root rot. Root rot is caused by too much moisture around the plant's roots. Poor drainage or frequent plant watering can cause water logging, leading to root rot as the roots suffocate. The roots will start to decay, and the plant will eventually die."
	The Spruce. (2023). How to Grow and Care for Ctenanthe Setosa 'Grey Star'. https://www.thespruce.com/ctenanthe-setosa-grey-star-plant-care-5088732 . [Accessed 31 Jan 2023]	"Spider mites and mealybugs are the two main culprits that bother Ctenanthe setosa. You'll know your plant has nearly transparent spider mites if you spot tiny spider webs or small yellow bumps on the underside of the leaves. You may also find evidence of scale, thrips, and whiteflies on the plant. The common plant diseases that may bother Ctenanthe include root rot, leaf spot, botrytis, leaf rust, and powdery mildew. Some of the problems may stem from soggy soil conditions."

407	Causes allergies or is otherwise toxic to humans	
	Source(s)	Notes
	PlantsInsights. (2022). Ctenanthe Setosa Compact Star Never Never Plant Care Tips. https://plantsinsights.com/ctenanthe-setosa-compact-star/ . [Accessed 31 Jan 2023]	[Possible problems if ingested] "Ctenanthe Setosa is not toxic to humans or animals. However, it is important to keep this plant away from children and pets, as the leaves can cause skin irritation. If ingested, this plant can cause stomach upset. If you suspect that your child or pet has ingested this plant, please contact your local poison control center."
	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
	Fraga, F.R.M. (2023). Ctenanthe in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 31 Jan 2023]	"Seasonally Semideciduous Forest, Ombrophyllous Forest (Tropical Rain Forest)" [No evidence of fire risk or flammability reported from native or introduced range]

409	Is a shade tolerant plant at some stage of its life cycle	
	Source(s)	Notes
	PlantsInsights. (2022). Ctenanthe Setosa Compact Star Never Never Plant Care Tips. https://plantsinsights.com/ctenanthe-setosa-compact-star/ . [Accessed 31 Jan 2023]	"Dappled or diffused sunlight works best for this plant. We recommend using grow lights if you don't have a bright spot in your home. Please make sure to give the plant at least 6 hours of light daily."

Qsn #	Question	Answer
	Planting Man. (2023). <i>Ctenanthe setosa</i> – Indoor Plant. https://plantingman.com/ctenanthe-setosa/ . [Accessed 31 Jan 2023]	"It thrives best in bright, indirect light. Will tolerate some degree of shade, however, insufficient light may cause loss of variegation in the leaves. If there is too much light, the colors in the leaves fade."
	The Spruce. (2023). How to Grow and Care for <i>Ctenanthe Setosa</i> 'Grey Star'. https://www.thespruce.com/ctenanthe-setosa-grey-star-plant-care-5088732 . [Accessed 31 Jan 2023]	"Too much direct sunlight can result in fading colors on the leaves of <i>Ctenanthe setosa</i> 'Grey Star'. Provide the plant with a sheltered spot that gets bright but indirect sunlight to ensure the most dramatic foliage display. Too much shade can also result in diminished variegation and leggy growth."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	n
	Source(s)	Notes
	PlantsInsights. (2022). <i>Ctenanthe Setosa Compact Star</i> Never Never Plant Care Tips. https://plantsinsights.com/ctenanthe-setosa-compact-star/ . [Accessed 31 Jan 2023]	" <i>Ctenanthe Setosa Compact star</i> requires a soil mix that is moist, well-draining and contains organic matter. The ideal pH level for <i>Ctenanthe Compact star</i> is between 6.0 and 7.0."
	The Spruce. (2023). How to Grow and Care for <i>Ctenanthe Setosa</i> 'Grey Star'. https://www.thespruce.com/ctenanthe-setosa-grey-star-plant-care-5088732 . [Accessed 31 Jan 2023]	"Soil Type - Well-drained, moist Soil pH - Slightly acidic to neutral (6.1 to 7.3)"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Fraga, F.R.M. (2023). <i>Ctenanthe</i> in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 31 Jan 2023]	"Root: adventitious filiform. Stem: subterranean rhizomatose; axis aerial rosulate. Leaf: sheath foliar setose/ligule absent; blade foliar elliptic/green , discolourous/side adaxial falcate/side abaxial wine-coloured. Inflorescence: synflorescence paniculiform/compressed/2 - nodal/with 1 to 4 florescence by node/cylindric/fulvous - villose/brown/subtended by bract(s) navicular/prophyllum of the florescence present; cymule of the 2 flower in brachyblast/bract(s) external spathaceous/ovate/apex aristate (s)/coriaceous/tomentose/margin tomentose/green/brown/persistent/bracteole(s) pilose 1 by flower/prophyllum of the cymule navicular/carenate , carina glabrate"

Qsn #	Question	Answer
412	Forms dense thickets	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	"Ctenanthe setosa is cultivated in Hawai'i as a landscape plant. In time, the plants form dense clumps, making this ideal as a border plant."
	Save Our Waterways Now. (2023). Ctenanthe spp. (Marantaceae) Ctenanthe. https://sown.com.au/ctenanthe-spp-marantaceae-ctenanthe/ . [Accessed 31 Jan 2023]	"Several clumps of Ctenanthe (undetermined species) are well established, presumably originating from dumped garden waste, along Enoggera Creek. Weed risk medium, because although it is isolated, it forms monocultures. Also along the creek several clumps of what might be Ctenanthe oppenheimiana or the cultivar known as Ctenanthe setosa have been found, the largest being a flowering clump about 5 x 5 m in size and very dense, spotted near the creek crossing behind The Gap State High School (opposite Riaweena)."

501	Aquatic	n
	Source(s)	Notes
	Fraga, F.R.M. (2023). Ctenanthe in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 31 Jan 2023]	[Terrestrial] "Seasonally Semideciduous Forest, Ombrophylous Forest (Tropical Rain Forest)"

502	Grass	n
	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	Marantaceae

503	Nitrogen fixing woody plant	n
	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	Marantaceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Fraga, F.R.M. (2023). Ctenanthe in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 31 Jan 2023]	"Root: adventitious filiform. Stem: subterranean rhizomatose; axis aerial rosulate."
	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	"The roots are usually fibrous, but in many species of Calathea, in Saranthe leptostachya, and in Monotagma sp., terminal root tubers have been recorded (Mats Hagberg, pers. comm.; Tomlinson 1961, pers. observ.)."

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. <i>Plant Protection Quarterly</i> , 25(2): 56-74	"This question relates to perennial plants with tubers, corms or bulbs. This question is specifically to deal with plants that have specialized organs and should not include plants merely with rhizomes/ stolons"

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	Fraga, F.R.M. (2023). <i>Ctenanthe</i> in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 31 Jan 2023]	"Confirmed occurrences: Northeast (Bahia, Ceará) Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo) South (Paraná, Santa Catarina)" [No evidence]

602	Produces viable seed	
	Source(s)	Notes
	The Spruce. (2023). How to Grow and Care for <i>Ctenanthe Setosa</i> 'Grey Star'. https://www.thespruce.com/ctenanthe-setosa-grey-star-plant-care-5088732 . [Accessed 31 Jan 2023]	" <i>Ctenanthe setosa</i> 'Grey Star' is easy to propagate from stem cuttings or offsets, both of which will produce a copy of the mother plant, rather than trying to find rare seeds to grow the plant. "
	Fraga, F.R.M. (2023). <i>Ctenanthe</i> in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 31 Jan 2023]	"Fruit: capsule non - observed. Seed: solitary non observed."
	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	"Seed set is generally very low in Marantaceae, often as low as 1 seed per 100 flowers, or less. This may relate to the hazards of a complex pollination mechanism, which are obviously compensated for by large numbers of flowers, large seeds with copious perisperm, and by the longevity of the mature plant."
	WRA Specialist. (2023). Personal Communication	Seed set in cultivation may be low or absent.

603	Hybridizes naturally	
	Source(s)	Notes
	Winterfeld, G., Ley, A., Hoffmann, M. H., Paule, J., & Röser, M. (2020). Dysploidy and polyploidy trigger strong variation of chromosome numbers in the prayer-plant family (Marantaceae). <i>Plant Systematics and Evolution</i> , 306, 1-17	[Unknown] "Despite this, hybridization is rather frequent in Marantaceae as shown by recent phylogenetic (interspecific) and phylogeographic (intraspecific) studies (Ley and Claßen-Bockhoff 2011; Ley and Hardy 2013, 2014, 2017). However, due to the facts that species of Marantaceae (1) propagate mainly by vegetative means, (2) seed setting after flowering is very rare (Sharma and Bhattacharyya 1958) and (3) the origin of such chromosomal biotypes through sexual reproduction is fairly impossible (Mahanty 1970), we suppose that hybridization plays also, but only an ancillary role in the chromosome evolution of Marantaceae species in our investigation."

604	Self-compatible or apomictic	

Qsn #	Question	Answer
	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	"From the artificial pollinations made by Kennedy (1978), it seems that most species are self-compatible, but one case of suspected self-incompatibility was also reported. Seed set is generally very low in Marantaceae, often as low as 1 seed per 100 flowers, or less. This may relate to the hazards of a complex pollination mechanism, which are obviously compensated for by large numbers of flowers, large seeds with copious perisperm, and by the longevity of the mature plant."
	Kennedy, H. (2000). Diversification in pollination mechanisms in the Marantaceae. Pp. 335-344 in Monocots: systematics and evolution. CSIRO Publishing, Collingwood, Australia	"Marantaceae flowers are hermaphroditic and self-compatible."

605	Requires specialist pollinators	
	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	"Data are available only for American members of the family (Kennedy 1978). Here, euglossine bees of the genera Euglossa, Eulaema, Euplusia, and Exaerete have been reported to visit representatives of most New World genera. Pollination by species of Euglossa and Eulaema has been studied in detail."

606	Reproduction by vegetative fragmentation	y
	Source(s)	Notes
	Dave's Garden. (2023). <i>Ctenanthe setosa</i> . https://davesgarden.com/guides/pf/go/192384/ . [Accessed 27 Jan 2023]	"On Feb 14, 2017, theailurophile from Houston, TX wrote: Grows well here in Houston, Tx. My only caution would be that the corms spread readily. Be prepared to thin often."
	Fraga, F.R.M. (2023). <i>Ctenanthe</i> in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 27 Jan 2023]	"Root: adventitious filiform. Stem: subterranean rhizomatose; axis aerial rosulate."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	
	Source(s)	Notes
	Save Our Waterways Now. (2023). <i>Ctenanthe</i> spp. (Marantaceae) <i>Ctenanthe</i> . https://sown.com.au/ctenanthe-spp-marantaceae-ctenanthe/ . [Accessed 31 Jan 2023]	[May be able to be accidentally dispersed as green waste or dumped garden waste] "Several clumps of <i>Ctenanthe</i> (undetermined species) are well established, presumably originating from dumped garden waste, along Enoggera Creek. Weed risk medium, because although it is isolated, it forms monocultures. Also along the creek several clumps of what might be <i>Ctenanthe oppenheimiana</i> or the cultivar known as <i>Ctenanthe setosa</i> have been found, the largest being a flowering clump about 5 x 5 m in size and very dense, spotted near the creek crossing behind The Gap State High School (opposite Riaweena)."

702	Propagules dispersed intentionally by people	y
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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	"Ctenanthe setosa is cultivated in Hawai'i as a landscape plant. In time, the plants form dense clumps, making this ideal as a border plant."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Ornamental"

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Fraga, F.R.M. (2023). Ctenanthe in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 31 Jan 2023]	"Fruit: capsule non - observed. Seed: solitary non observed."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	"Major Pathway/s: Ornamental Dispersed by: Humans, Escapee"
	WRA Specialist. (2023). Personal Communication	No evidence. Unlikely. Seeds rarely produced in cultivation. Propagated vegetatively

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Andersson, L. (1981). The neotropical genera of Marantaceae. Circumscription and relationships. Nordic Journal of Botany, 1(2), 218-245	"Fruit a rather thin-walled capsule, ± pericarp, sclerotic at maturity. Seeds rather small with knobby surface, perisperm canal distally branched." [No evidence of adaptations for wind dispersal]

705	Propagules water dispersed	n
	Source(s)	Notes
	Save Our Waterways Now. (2023). Ctenanthe spp. (Marantaceae) Ctenanthe. https://sown.com.au/ctenanthe-spp-marantaceae-ctenanthe/ . [Accessed 31 Jan 2023]	[Could possibly be dispersed by vegetative fragments if cultivated near waterways] "Several clumps of Ctenanthe (undetermined species) are well established, presumably originating from dumped garden waste, along Enoggera Creek. Weed risk medium, because although it is isolated, it forms monocultures. Also along the creek several clumps of what might be Ctenanthe oppenheimiana or the cultivar known as Ctenanthe setosa have been found, the largest being a flowering clump about 5 x 5 m in size and very dense, spotted near the creek crossing behind The Gap State High School (opposite Riaweena)."

706	Propagules bird dispersed	n
	Source(s)	Notes
	Andersson, L. (1981). The neotropical genera of Marantaceae. Circumscription and relationships. Nordic Journal of Botany, 1(2), 218-245	"Fruit a rather thin-walled capsule, pericarp ± sclerotic at maturity. Seeds rather small with knobby surface, perisperm canal distally branched." [Genus description]

707	Propagules dispersed by other animals (externally)	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Andersson, L. (1981). The neotropical genera of Marantaceae. Circumscription and relationships. Nordic Journal of Botany, 1(2), 218-245	"Fruit a rather thin-walled capsule, pericarp ± sclerotic at maturity. Seeds rather small with knobby surface, perisperm canal distally branched." [Genus description. No means of attachment]

708	Propagules survive passage through the gut	
	Source(s)	Notes
	Andersson, L. (1981). The neotropical genera of Marantaceae. Circumscription and relationships. Nordic Journal of Botany, 1(2), 218-245	"Fruit a rather thin-walled capsule, pericarp ± sclerotic at maturity. Seeds rather small with knobby surface, perisperm canal distally branched." [Genus description. Seeds may be rarely, or never produced, in cultivation]

801	Prolific seed production (>1000/m2)	n
	Source(s)	Notes
	The Spruce. (2023). How to Grow and Care for Ctenanthe Setosa 'Grey Star'. https://www.thespruce.com/ctenanthe-setosa-grey-star-plant-care-5088732 . [Accessed 31 Jan 2023]	"Ctenanthe setosa 'Grey Star' is easy to propagate from stem cuttings or offsets, both of which will produce a copy of the mother plant, rather than trying to find rare seeds to grow the plant. "
	Fraga, F.R.M. (2023). Ctenanthe in Flora e Funga do Brasil. Jardim Botânico do Rio de Janeiro. https://floradobrasil.jbrj.gov.br/FB9343 . [Accessed 31 Jan 2023]	"Fruit: capsule non - observed. Seed: solitary non observed."
	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	[Family Description] "Seed set is generally very low in Marantaceae, often as low as 1 seed per 100 flowers, or less. This may relate to the hazards of a complex pollination mechanism, which are obviously compensated for by large numbers of flowers, large seeds with copious perisperm, and by the longevity of the mature plant."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	WRA Specialist. (2023). Personal Communication	Longevity of seeds, if produced, unknown. May be able to persist from rhizomes or vegetative fragments.

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. (2023). Personal Communication	Unknown. No information found on herbicide efficacy, or chemical control, of this species.

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	The Spruce. (2023). How to Grow and Care for Ctenanthe Setosa 'Grey Star'. https://www.thespruce.com/ctenanthe-setosa-grey-star-plant-care-5088732 . [Accessed]	"The only pruning this plant needs is removing damaged or dying foliage. This tends to happen with the older leaves towards the base of the stem. Trimming these off will direct all the plant's energy into young growth." [Probably able to resprout from rhizomes]

Qsn #	Question	Answer
	WRA Specialist. (2023). Personal Communication	Vegetative propagation, presence of subterranean rhizomatous stems, and tolerance of some pruning suggests plants would tolerate mutilation, cultivation, and possibly fire.

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. (2023). Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Grows, and may spread, in regions with tropical climates.
- Anecdotally reported to be aggressive, and potentially invasive, in landscape settings.
- May be mildly toxic if ingested and may cause dermatitis.
- Able to form monocultures that may exclude other vegetation.
- Reproduces vegetatively by rhizomatous stems.
- Members of family Marantaceae reported to be self-compatible.
- Vegetative fragments may be spread by dumped garden waste, and possibly water.
- Also spread through intentional cultivation.

Low Risk Traits

- No confirmed reports of naturalization found.
- Cultivated in the Hawaiian Islands with no reports of naturalization or negative impacts found.
- Unarmed (no spines, thorns, or burrs).
- Grows best in high light environments (dense shade may inhibit spread).
- Seed set may be rare, or absent, in cultivation.
- Lack of seed production reduces risk of long-distance of accidental dispersal.