

Taxon: *Goepertia cylindrica* (Roscoe) Borchs. & S. Suarez

Family: Marantaceae

Common Name(s): green ice

Synonym(s): *Calathea cylindrica* (Roscoe) K.
Phrynium cylindricum Roscoe

Assessor: Chuck Chimera

Status: Assessor Approved

End Date: 22 Aug 2016

WRA Score: -1.0

Designation: L

Rating: Low Risk

Keywords: Tropical, Herb, Ornamental, Rhizomatous, Propagated Vegetatively

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	?
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		
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems	y=1, n=0	n
409	Is a shade tolerant plant at some stage of its life cycle	y=1, n=0	y

Qsn #	Question	Answer Option	Answer
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		
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		
603	Hybridizes naturally		
604	Self-compatible or apomictic	y=1, n=-1	y
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		
707	Propagules dispersed by other animals (externally)		
708	Propagules survive passage through the gut		
801	Prolific seed production (>1000/m ²)	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
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: <i>Calathea cylindrica</i> (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. <i>Revista Brasileira de Botânica</i> , 30(3), 421-431	No evidence of domestication

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2016. 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, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 18 Aug 2016]	"Native: Southern America Brazil: Brazil - Alagoas, - Bahia, - Espirito Santo, - Minas Gerais, - Parana, - Pernambuco, - Rio de Janeiro, - Santa Catarina, - Sao Paulo, - Sergipe"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 18 Aug 2016]	

Qsn #	Question	Answer
203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Dave's Garden. 2016. Calathea - Calathea cylindrical. https://davesgarden.com/guides/pf/go/64958/ . [Accessed 22 Aug 2016]	"Hardiness: USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	Tropicos.org. 2016. Tropicos [Online Database]. Missouri Botanical Garden. http://www.tropicos.org/ . [Accessed 22 Aug 2016]	No evidence. Tropical distribution. Collected at elevations <500 m and at latitudes between 03°37'00"N and 22°58'00"S

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 18 Aug 2016]	"Native: Southern America Brazil: Brazil - Alagoas, - Bahia, - Espirito Santo, - Minas Gerais, - Parana, - Pernambuco, - Rio de Janeiro, - Santa Catarina, - Sao Paulo, - Sergipe"

205	Does the species have a history of repeated introductions outside its natural range?	?
	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 22 Aug 2016]	"Calathea cylindrica (Roscoe) K. Schumann cv. 'Green Ice' (Confirmed) Common Names: Green-ice First Collected: 1984 Locations: Harold L. Lyon Arboretum"
	El Arish Tropical Exotics. 2016. Calathea cylindrica "green ice" (Green Ice). http://www.elarishtropicalexotics.com/online-plant-store-profiles/calathea-cylindrica-green-ice/234.aspx . [Accessed 22 Aug 2016]	[Sold commercially in Australia] "Calathea cylindrica "green ice" is similar to Blue Ice with lime green flowers. Makes an excellent landscaping plant with it's luxurious paddle leaves. Semi cold tolerant, great for pots."
	Dave's Garden. 2016. Calathea - Calathea cylindrical. https://davesgarden.com/guides/pf/go/64958/ . [Accessed 22 Aug 2016]	Grown as an ornamental

Qsn #	Question	Answer
301	Naturalized beyond native range	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence
	Wagner, W.L., Herbst, D.R.& Lorence, D.H. 2016. Flora of the Hawaiian Islands. Smithsonian Institution, Washington, D.C. http://botany.si.edu/ . [Accessed 22 Aug 2016]	No evidence to date

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

304	Environmental weed	n
	Source(s)	Notes
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	No evidence

Qsn #	Question	Answer
305	Congeneric weed	
	Source(s)	Notes
	Leoni, J. M., & Costa, F. R. C. (2013). Sustainable use of <i>Calathea lutea</i> in handicrafts: A case study from the Amanã Sustainable Development Reserve in the Brazilian Amazon. <i>Economic Botany</i> , 67(1), 30-40	[<i>Calathea lutea</i> considered a weed by farmers. <i>G. cylindrica</i> formerly included in <i>Calathea</i> genus] "The cauçu (area dominated by cauçu - <i>Calathea lutea</i>) is a plant formation that arises in abandoned fields. <i>C. lutea</i> sprouts quickly after forest or fallow areas are cut and burned; cauçu grows so vigorously that farmers eliminate it to prevent it from overcrowding crop plants. Dense stands are usually associated with high várzeas along the river channel that passes through the Corací sector." ... "Cauçu is considered a weed by farmers of Corací, and by contrast, a NTFP by artisans." [NTFP = non-timber forest products] "Cauçu is considered a weed because the stands grow fast and compete with other plants in the same areas. Due to its aggressive nature, cauçu must be cut frequently, a task considered arduous by local farmers."
	Randall, R.P. 2012. <i>A Global Compendium of Weeds</i> . 2nd Edition. Department of Agriculture and Food, Western Australia	Possibly. Several <i>Calathea</i> species listed as naturalized or as weeds of unspecified impacts. No evidence of invasive <i>Goepertia</i> species

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Anonymous. 1945. <i>Flora of Panama</i> . Part III. Fascicle I. <i>Annals of the Missouri Botanical Garden</i> , 32(1): 1-105	[No evidence] "Plants rather stout, caulescent, 1-2 m. tall; leaves oblong to oblong-elliptic, obtuse to very shortly acuminate, base broadly obtuse or rounded, 15-45 cm. long, 8-25 cm. broad, glabrous; petiole 2-20 cm. long, wholly callous or only in the upper portion; sheath 15-30 cm. long,"

402	Allelopathic	n
	Source(s)	Notes
	Leoni, J. M., & Costa, F. R. C. (2013). Sustainable use of <i>Calathea lutea</i> in handicrafts: A case study from the Amanã Sustainable Development Reserve in the Brazilian Amazon. <i>Economic Botany</i> , 67(1), 30-40	[Unknown, Related genus may have species with allelopathic properties] "Shading, mechanical interference by litter, or even allelopathy are possible causes of suppression, as has been observed in experimental studies of other species (Bosyl and Reader 1995)."

403	Parasitic	n
	Source(s)	Notes
	Anonymous. 1945. <i>Flora of Panama</i> . Part III. Fascicle I. <i>Annals of the Missouri Botanical Garden</i> , 32(1): 1-105	"Plants rather stout, caulescent, 1-2 m. tall; leaves oblong to oblong-elliptic, obtuse to very shortly acuminate, base broadly obtuse or rounded, 15-45 cm. long, 8-25 cm. broad, glabrous; petiole 2-20 cm. long, wholly callous or only in the upper portion; sheath 15-30 cm. long," [Marantaceae. No evidence]

404	Unpalatable to grazing animals	n
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Palatability of foliage unknown

Qsn #	Question	Answer
405	Toxic to animals	n
	Source(s)	Notes
	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
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Missouri Botanical Garden. 2016. <i>Goepertia roseopicta</i> . http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=364366&isprofile=0&:// . [Accessed 22 Aug 2016]	[Unknown. Related taxon affected by minor pests] "Problems: No serious insect or disease problems. Watch for aphids, scale, mealybugs and spider mites. Leaf spots may appear. Plants do not thrive in low humidity where leaves may roll or turn brown. Direct sun usually causes leaf scorch."

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	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
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Llamas, K.A. 2003. Tropical Flowering Plants. Timber Press, Portland, OR	"Of lowland moist tropical forest." [Unlikely given habit & habitat]
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	"Plants rather stout, caulescent, 1-2 m. tall" [No evidence. Unlikely given habit & habitat]

Qsn #	Question	Answer
409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Dave's Garden. 2016. Calathea - Calathea cylindrical. https://davesgarden.com/guides/pf/go/64958/ . [Accessed 22 Aug 2016]	"Sun Exposure: Partial to Full Shade"
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: Calathea cylindrica (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. Revista Brasileira de Botânica, 30(3), 421-431	[Possibly shade tolerant. Forms clonal fragments with an aggregate distribution , preferably in locales with direct light only part of the day, such as edges and clearings in the woods] "Calathea cylindrica é uma espécie endêmica da Mata Atlântica da Bahia a São Paulo, que forma fragmentos clonais (figura 1) com distribuição agregada, preferencialmente em locais com luz direta somente em parte do dia, tais como bordas e clareiras na mata"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	Llamas, K.A. 2003. Tropical Flowering Plants. Timber Press, Portland, OR	"Fertile, sandy, humus-rich, well-drained soil."
	Zone 9 Tropicals. 2016. Calathea cylindrica "Green Ice Calathea". http://www.zone9tropicals.com/ . [Accessed 22 Aug 2016]	"Regular moisture and humidity, in fertile, sandy, humus-rich, well drained soil."
	Dave's Garden. 2016. Calathea - Calathea cylindrical. https://davesgarden.com/guides/pf/go/64958/ . [Accessed 22 Aug 2016]	"Soil pH requirements: 6.1 to 6.5 (mildly acidic)"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	"Plants rather stout, caulescent, 1-2 m. tall; leaves oblong to oblong-elliptic, obtuse to very shortly acuminate, base broadly obtuse or rounded, 15-45 cm. long, 8-25 cm. broad, glabrous; petiole 2-20 cm. long, wholly callous or only in the upper portion; sheath 15-30 cm. long,"

412	Forms dense thickets	
	Source(s)	Notes
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: Calathea cylindrica (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. Revista Brasileira de Botânica, 30(3), 421-431	[Unknown. Forms clonal fragments with an aggregate distribution , preferably in locales with direct light only part of the day, such as edges and clearings in the woods] "Calathea cylindrica é uma espécie endêmica da Mata Atlântica da Bahia a São Paulo, que forma fragmentos clonais (figura 1) com distribuição agregada, preferencialmente em locais com luz direta somente em parte do dia, tais como bordas e clareiras na mata"

501	Aquatic	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: <i>Calathea cylindrica</i> (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. Revista Brasileira de Botânica, 30(3), 421-431	[Terrestrial. Forms clonal fragments with an aggregate distribution , preferably in locales with direct light only part of the day, such as edges and clearings in the woods] " <i>Calathea cylindrica</i> é uma espécie endêmica da Mata Atlântica da Bahia a São Paulo, que forma fragmentos clonais (figura 1) com distribuição agregada, preferencialmente em locais com luz direta somente em parte do dia, tais como bordas e clareiras na mata"

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 18 Aug 2016]	Marantaceae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 18 Aug 2016]	Marantaceae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Llamas, K.A. 2003. Tropical Flowering Plants. Timber Press, Portland, OR	"Semi-deciduous rhizomatous herb, 3-4 ft"
	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 is specifically to deal with plants that have specialized organs and should not include plants merely with rhizomes" [<i>Goepertia cylindrica</i> is rhizomatous, and can likely can spread vegetatively]

Qsn #	Question	Answer
601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network, 2016. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 22 Aug 2016]	"Native: Southern America Brazil: Brazil - Alagoas, - Bahia, - Espirito Santo, - Minas Gerais, - Parana, - Pernambuco, - Rio de Janeiro, - Santa Catarina, - Sao Paulo, - Sergipe"
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: <i>Calathea cylindrica</i> (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. <i>Revista Brasileira de Botânica</i> , 30(3), 421-431	No evidence

602	Produces viable seed	
	Source(s)	Notes
	Dave's Garden. 2016. <i>Calathea - Calathea cylindrical</i> . https://davesgarden.com/guides/pf/go/64958/ . [Accessed 22 Aug 2016]	"Seed Collecting: N/A: plant does not set seed, flowers are sterile, or plants will not come true from seed"
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: <i>Calathea cylindrica</i> (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. <i>Revista Brasileira de Botânica</i> , 30(3), 421-431	[Specialized pollination system & pollinator requirements may limit seed set outside native range] "Pollination specialization is promoted by floral features that favor pollinator fidelity and hinder the access to resources by other visitors. We investigated the pollination mechanism of one understory herb in southeastern Brazil. <i>Calathea cylindrica</i> flowers year-round and its flowers are peculiar because of the fusion and modification of some elements, asymmetry, secondary pollen presentation, hidden nectar, and a long and narrow tube, which is closed before pollinator visit. Pollination occurs by means of an explosive mechanism, and once it is triggered, the floral parts do not return to their initial position. Thus, there is only a single possibility for pollen transference. Pollinators are female Euglossini bees and all flowers have already been visited by mid-morning. Specific movements with enough force are necessary for the visitors to access the nectar. Bagged flowers secreted around 13 µL of nectar with 32% of sugar concentration. Nectar secretion continues after removals, but in small volumes. Continual flowering, high production of nectar and secretion after pollination may promote pollinator fidelity. The complex floral structure, the secretion in which the flower base (nectar chamber) is dipped, and the narrow tube with inner hairs make the access to nectar difficult and may work as barriers for other visitors. Altogether, these factors seem to regulate the highly specialized pollination system of <i>Calathea cylindrica</i> ."

Qsn #	Question	Answer
603	Hybridizes naturally	
	Source(s)	Notes
	Kennedy, H. (1978). Systematics and Pollination of the "closed flowered" Species of <i>Calathea</i> (Marantaceae). University of California Publications in Botany Volume 71. University of California Press, Berkeley and Los Angeles, CA	[Unknown. Natural hybrids documented in genus <i>Calathea</i>] "A more detailed study of the breeding system of these plants and their potential for crossing with related species should prove of interest, since both self-compatible and self-incompatible species are present and since one natural hybrid has been found ."

604	Self-compatible or apomictic	y
	Source(s)	Notes
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: <i>Calathea cylindrica</i> (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. Revista Brasileira de Botânica, 30(3), 421-431	[It is a self compatible plant, with some degree of spontaneous selfing or apomixis , and presents vegetative propagation.] "Apesar da alta especificidade do sistema de polinização de <i>C. cylindrica</i> , não existe necessariamente alta suscetibilidade desta espécie a mudanças populacionais de seus polinizadores, já que é uma planta autocompatível, com algum grau de autopolinização espontânea ou apomixia, além de apresentar propagação vegetativa."

605	Requires specialist pollinators	y
	Source(s)	Notes
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: <i>Calathea cylindrica</i> (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. Revista Brasileira de Botânica, 30(3), 421-431	[Specialized pollinators & pollination] "(Floral traits in a specialized pollination system: <i>Calathea cylindrica</i> (Roscoe) K. Schum. (Marantaceae) and Euglossini bees). Pollination specialization is promoted by floral features that favor pollinator fidelity and hinder the access to resources by other visitors. We investigated the pollination mechanism of one understory herb in southeastern Brazil. <i>Calathea cylindrica</i> flowers year-round and its flowers are peculiar because of the fusion and modification of some elements, asymmetry, secondary pollen presentation, hidden nectar, and a long and narrow tube, which is closed before pollinator visit. Pollination occurs by means of an explosive mechanism, and once it is triggered, the floral parts do not return to their initial position. Thus, there is only a single possibility for pollen transference. Pollinators are female Euglossini bees and all flowers have already been visited by mid-morning. Specific movements with enough force are necessary for the visitors to access the nectar. Bagged flowers secreted around 13 µL of nectar with 32% of sugar concentration. Nectar secretion continues after removals, but in small volumes. Continual flowering, high production of nectar and secretion after pollination may promote pollinator fidelity. The complex floral structure, the secretion in which the flower base (nectar chamber) is dipped, and the narrow tube with inner hairs make the access to nectar difficult and may work as barriers for other visitors. Altogether, these factors seem to regulate the highly specialized pollination system of <i>Calathea cylindrica</i> ."

606	Reproduction by vegetative fragmentation	y
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Qsn #	Question	Answer
	Source(s)	Notes
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: <i>Calathea cylindrica</i> (Roscoe) K. Schum. (Marantaceae) e abelhas Euglossini. <i>Revista Brasileira de Botânica</i> , 30(3), 421-431	[Capable of apomixes and spreading vegetatively] "com algum grau de autopolinização espontânea ou apomixia, além de apresentar propagação vegetativa."

607	Minimum generative time (years)	
	Source(s)	Notes
	Llamas, K.A. 2003. <i>Tropical Flowering Plants</i> . Timber Press, Portland, OR	"Semi-deciduous rhizomatous herb, 3-4 ft.; zones 10-11. Blooms warm months." [Time to first flowering 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
	Anonymous. 1945. <i>Flora of Panama</i> . Part III. Fascicle I. <i>Annals of the Missouri Botanical Garden</i> , 32(1): 1-105	"fruit a loculicidally dehiscent, 3-seeded capsule." [Generic description. Seeds may be rarely produced in cultivation & lack means of external attachment]

702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Zone 9 Tropicals. 2016. <i>Calathea cylindrica</i> "Green Ice Calathea". http://www.zone9tropicals.com/ . [Accessed 25 Aug 2016]	[Sold commercially] "This plant is offered as a potted rhizome - plants are cut to fit in a three-foot tall box."

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	Notes
	Dave's Garden. 2016. <i>Calathea - Calathea cylindrical</i> . https://davesgarden.com/guides/pf/go/64958/ . [Accessed 22 Aug 2016]	"Seed Collecting: N/A: plant does not set seed, flowers are sterile, or plants will not come true from seed" [Seeds rarely, if ever, produced outside native range. Limits potential to become a produce contaminant]

704	Propagules adapted to wind dispersal	n
	Source(s)	Notes
	Anonymous. 1945. <i>Flora of Panama</i> . Part III. Fascicle I. <i>Annals of the Missouri Botanical Garden</i> , 32(1): 1-105	"fruit a loculicidally dehiscent, 3-seeded capsule." [Seeds may be rarely, if ever, produced in cultivation]

705	Propagules water dispersed	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown. Seeds, if produced, or rhizome fragments, might be secondarily dispersed by water if growing in riparian areas

706	Propagules bird dispersed	
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Qsn #	Question	Answer
	Source(s)	Notes
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	"fruit a loculicidally dehiscent, 3-seeded capsule." [Arillate seeds, if produced, might be bird or ant-dispersed]

707	Propagules dispersed by other animals (externally)	
	Source(s)	Notes
	Kubitzki, K. (ed.). 1998. The Families and genera of vascular plants. Volume III. Flowering plants, Monocotyledons: Liliaceae (except Orchidaceae). Springer-Verlag, Berlin, Heidelberg, New York	"Most species with arillate seeds are probably myrmecochorous." [Arillate seeds, if produced, might be bird or ant-dispersed]

708	Propagules survive passage through the gut	
	Source(s)	Notes
	Anonymous. 1945. Flora of Panama. Part III. Fascicle I. Annals of the Missouri Botanical Garden, 32(1): 1-105	"fruit a loculicidally dehiscent, 3-seeded capsule." [Unknown. Seeds may be rare or absent in cultivation. Possibly bird or ant-dispersed]

801	Prolific seed production (>1000/m ²)	n
	Source(s)	Notes
	Dave's Garden. 2016. Calathea - Calathea cylindrical. https://davesgarden.com/guides/pf/go/64958/ . [Accessed 22 Aug 2016]	"Propagation Methods: By dividing rhizomes, tubers, corms or bulbs (including offsets) Seed Collecting: N/A: plant does not set seed, flowers are sterile, or plants will not come true from seed"
	Barreto, A. A., & Freitas, L. (2007). Atributos florais em um sistema de polinização especializado: Calathea cylindrica (Roscoe) K. Schum.(Marantaceae) e abelhas Euglossini. Revista Brasileira de Botânica, 30(3), 421-431	[Specialized pollination system & pollinator requirements may limit seed set outside native range] "Pollination specialization is promoted by floral features that favor pollinator fidelity and hinder the access to resources by other visitors. We investigated the pollination mechanism of one understory herb in southeastern Brazil. Calathea cylindrica flowers year-round and its flowers are peculiar because of the fusion and modification of some elements, asymmetry, secondary pollen presentation, hidden nectar, and a long and narrow tube, which is closed before pollinator visit. Pollination occurs by means of an explosive mechanism, and once it is triggered, the floral parts do not return to their initial position. Thus, there is only a single possibility for pollen transference. Pollinators are female Euglossini bees and all flowers have already been visited by mid-morning. Specific movements with enough force are necessary for the visitors to access the nectar. Bagged flowers secreted around 13 µL of nectar with 32% of sugar concentration. Nectar secretion continues after removals, but in small volumes. Continual flowering, high production of nectar and secretion after pollination may promote pollinator fidelity. The complex floral structure, the secretion in which the flower base (nectar chamber) is dipped, and the narrow tube with inner hairs make the access to nectar difficult and may work as barriers for other visitors. Altogether, these factors seem to regulate the highly specialized pollination system of Calathea cylindrica."

Qsn #	Question	Answer
802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Dalling, J. W., Swaine, M. D., & Garwood, N. C. (1998). Dispersal patterns and seed bank dynamics of pioneer trees in moist tropical forest. <i>Ecology</i> , 79(2): 564-578	[Other Calathea species form a persistent seed bank] "Most seeds of Calathea ovandensis, a gap-dependent herb, can persist for several years in the soil under natural conditions (Horvitz and Schemske 1994)."

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2016. 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
	Llamas, K.A. 2003. <i>Tropical Flowering Plants</i> . Timber Press, Portland, OR	"Semi-deciduous rhizomatous herb," [Unknown. Possible that mechanical damage to rhizomes may result in resprouting]

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2016. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives in tropical climates
- Other Calathea species have become invasive. Formerly classified in genus
- Shade tolerant
- Possibly reproduces by seeds & vegetatively by rhizomes
- Self-compatible
- Seeds, if produced, may be dispersed by ants, birds & intentionally by people
- Seeds, if produced, may persist in the soil
- Limited seed production may reduce risk of inadvertent dispersal

Low Risk Traits

- Unarmed (no spines, thorns or burrs)
- Ornamental
- Non-toxic
- Requires specialized pollinators
- Limited or no seed production may reduce risk of inadvertent dispersal