Taxon: Globba sherwoodiana W.J. Kress & V. Gowda sp. nov. **Family:** Zingiberaceae

Common Name(s): padein gno
weeping goldsmith

Synonym(s): NA

Assessor: Chuck Chimera **Status:** Assessor Approved **End Date:** 16 Jun 2016

WRA Score: **0.0** **Designation:** L **Rating:** Low Risk

Keywords: Herbaceous, Rhizomatous, Shade-Tolerant, Ornamental, Ground Cover

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)	Low
203	Broad climate suitability (environmental versatility)		
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	n
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		
602	Produces viable seed		
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		
707	Propagules dispersed by other animals (externally)		
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	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**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"At present this species is only known in cultivation in Myanmar where it is commonly sold in the markets and used as an offering in Buddhist ceremonies. However, it is suspected that wild populations are present in the border region between Myanmar and Thailand."

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**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"At present this species is only known in cultivation in Myanmar where it is commonly sold in the markets and used as an offering in Buddhist ceremonies. However, it is suspected that wild populations are present in the border region between Myanmar and Thailand."

202	**Quality of climate match data**	**Low**
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	

Qsn #	Question	Answer
203	**Broad climate suitability (environmental versatility)**	
	Source(s)	**Notes**
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	"Altitude: 260 m above sea level Ecology: Found growing as undershrub in the tropical decidous forest floor."
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	[Probably No. Restricted to tropical areas] "Distribution. At present this species is only known in cultivation in Myanmar where it is commonly sold in the markets and used as an offering in Buddhist ceremonies. However, it is suspected that wild populations are present in the border region between Myanmar and Thailand. Ecology. The closest relatives of this species (see relationships) inhabit the understory of monsoon forests. We suspect that the same is true for Globba sherwoodiana."

204	**Native or naturalized in regions with tropical or subtropical climates**	**y**
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"At present this species is only known in cultivation in Myanmar where it is commonly sold in the markets and used as an offering in Buddhist ceremonies. However, it is suspected that wild populations are present in the border region between Myanmar and Thailand."
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	"G. sherwoodiana was originally described from a cultivated source in Myanmar. It is also assumed that wild populations might be present in the border region between Myanmar and Thailand (Gowda et al. 2012). This finding presents the first wild collection of G. sherwoodiana with populations in the Indian region bordering Myanmar."

205	**Does the species have a history of repeated introductions outside its natural range?**	**n**
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"At present this species is only known in cultivation in Myanmar where it is commonly sold in the markets and used as an offering in Buddhist ceremonies. However, it is suspected that wild populations are present in the border region between Myanmar and Thailand."

301	**Naturalized beyond native range**	**n**
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"At present this species is only known in cultivation in Myanmar where it is commonly sold in the markets and used as an offering in Buddhist ceremonies. However, it is suspected that wild populations are present in the border region between Myanmar and Thailand."
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	"G. sherwoodiana was originaly described from a cultivated source in Myanmar. It is also assumed that wild populations might be present in the border region between Myanmar and Thailand (Gowda et al. 2012). This finding presents the first wild collection of G. sherwoodiana with populations in the Indian region bordering Myanmar."

Qsn #	Question	Answer
	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/pacificislandbiodiversity/hawaiianflora/index.htm. [Accessed]	No evidence

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

305	Congeneric weed	
	Source(s)	**Notes**
	Randall, R.P. 2012. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Two species are listed as weeds, but impacts are unspecified] "Globba fasciata Ridl. Zingiberaceae 1211-A Globba parviflora Presl Zingiberaceae Cultivated 87-W"

401	Produces spines, thorns or burrs	n
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	[No evidence] "Small perennial herbs from 38–45 cm in height to the top of uppermost leaf sheath. Rhizomes compact, non-tuberulous, white with a light orange center internally. Leafy shoots densely clumped, 6 to 8-leaved, stems bright green in color, sparsely hirsute. Basal sheaths 5–7 × 1–2 cm, sparsely hirsute. Plane of distichy perpendicular to rhizome. Leaves glabrous and soft, only midvein of the ventral surface pubescent, lamina 17–20 × 5–8 cm elliptic bright green adaxially and pale green abaxially, margin entire, base attenuate, apex acuminate; petiole 0.5–0.7 × 0.3–0.4 cm, sparsely hirsute, green. Ligule small, 2–3 mm in length, hirsutulous, emarginate not becoming papery."

402	Allelopathic	
	Source(s)	**Notes**
	WRA Specialist. 2016. Personal Communication	Unknown

403	Parasitic	n
	Source(s)	**Notes**
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	"Perennial herbs. Leafy shoots slender, 30–40 cm tall, light green in colour. Rhizomes compact, non tuberous, white." [Zingiberaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	**Notes**
	WRA Specialist. 2016. Personal Communication	Unknown

405	Toxic to animals	n
	Source(s)	**Notes**
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence
	Specialized Information Services, U.S. National Library of Medicine. 2016. TOXNET toxicology data network [online database]. http://toxnet.nlm.nih.gov/. [Accessed 16 Jun 2016]	No evidence

406	Host for recognized pests and pathogens	
	Source(s)	**Notes**
	Floridata. 2015. Globba winitii. http://www.floridata.com/Plants/Zingiberaceae/Globba%20winitii/620. [Accessed 16 Jun 2016]	[Unknown for G. sherwoodiana] "These plants are virtually pest free and very easy to grow if given suitable conditions."

407	Causes allergies or is otherwise toxic to humans	n

Qsn #	Question	Answer
	Source(s)	**Notes**
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence
	Specialized Information Services, U.S. National Library of Medicine. 2016. TOXNET toxicology data network [online database]. http://toxnet.nlm.nih.gov/. [Accessed 16 Jun 2016]	No evidence

408	Creates a fire hazard in natural ecosystems	n
	Source(s)	**Notes**
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	[No evidence. Herbaceous plant] "Perennial herbs. Leafy shoots slender, 30–40 cm tall, light green in colour." ... "Found growing as undershrub in the tropical deciduous forest floor."

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	**Notes**
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	[Presumably yes. Understory plant] "Found growing as undershrub in the tropical deciduous forest floor."

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	[Unknown] "At present this species is only known in cultivation in Myanmar where it is commonly sold in the markets and used as an offering in Buddhist ceremonies. However, it is suspected that wild populations are present in the border region between Myanmar and Thailand."
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	[Unknown] "Found growing as undershrub in the tropical decidous forest floor."

411	Climbing or smothering growth habit	n
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Small perennial herbs from 38–45 cm in height to the top of uppermost leaf sheath. Rhizomes compact, non-tuberulous, white with a light orange center internally."

Qsn #	Question	Answer
412	**Forms dense thickets**	
	Source(s)	**Notes**
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	[Unknown] "During a floristic assessment of Chavangphai Village in the Moreh region of Chandel district, Manipur in the year 2010, a small population of dry vegetative parts was encountered." ... "Found growing as undershrub in the tropical decidous forest floor."

501	Aquatic	n
	Source(s)	**Notes**
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	[Terrestrial] "Perennial herbs. Leafy shoots slender,30–40 cm tall, light green in colour." ... "Found growing as undershrub in the tropical deciduous forest floor."

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 16 Jun 2016]	Family: Zingiberaceae Subfamily: Zingiberoideae Tribe: Globbeae

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 16 Jun 2016]	Family: Zingiberaceae Subfamily: Zingiberoideae Tribe: Globbeae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Small perennial herbs from 38–45 cm in height to the top of uppermost leaf sheath. Rhizomes compact, non-tuberulous, white with a light orange center internally. Leafy shoots densely clumped, 6 to 8-leaved, stems bright green in color, sparsely hirsute. Basal sheaths 5–7 × 1–2 cm, sparsely hirsute. Plane of distichy perpendicular to rhizome."
	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/ stolons"

601	Evidence of substantial reproductive failure in native habitat	

Qsn #	Question	Answer
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"At present this species is only known in cultivation in Myanmar where it is commonly sold in the markets and used as an offering in Buddhist ceremonies. However, it is suspected that wild populations are present in the border region between Myanmar and Thailand." ... "Because this species is commonly cultivated it is in no danger or threat of extinction. However, the lack of known natural populations may suggest that this cultivated species may have low levels of genetic diversity. Genetic studies will provide a better understanding of the conservation status of this species."

602	Produces viable seed	
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Fruit and seeds unknown. Bulbils not observed."

603	Hybridizes naturally	
	Source(s)	**Notes**
	Kiew, R., Teo, L. L., & Gan, Y. Y. (2003). Assessment of the hybrid status of some Malesian plants using amplified fragment length polymorphism. Telopea, 10(1), 225-233	[Unknown for Globba sherwoodiana] "In contrast, in the Malesian tropics, natural hybridization is very rare and confined to very few genera, such as Cryptocoryne (Araceae), Globba (Zingiberaceae), Nepenthes (Nepenthaceae), Rhododendron (Ericaceae), and a few other isolated instances. For almost all of these, hybrid status has been suggested by their intermediate morphology between two other species that are presumed to be the putative parents. Very few hybrids, e.g. in Globba (Lim 1973), and Begonia (Teo & Kiew 1999) have been subject to quantitative study using a hybrid index to assess this morphological intermediacy and even fewer have been subject to cytological study, e.g. Globba (Lim 1972)."

604	Self-compatible or apomictic	
	Source(s)	**Notes**
	Liu, Z., Chen, J., & Bai, Z. (2004). Reproductive characteristics of Globba lancangensis and their evolutionary implications. Chinese Journal of Plant Ecology, 2004, 28(1): 1-8	[Unknown. Self-incompatibility documented in genus] "In contrast to previous reports that butterflies were visitors for Globba, two species of bees, Megapis dorstata and Nomia strigata, are the main visitors for G. lancangensis, while the former is the effective pollinator. G. lancangensis may encourage out-crossing by means of both andromonoecy and self-incompatibility."

605	Requires specialist pollinators	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Box, M. S., & Rudall, P. J. (2006). Floral structure and ontogeny in Globba (Zingiberaceae). Plant Systematics and Evolution, 258(1-2): 107-122	"Flower biology. Pollination biology is poorly known in Globba and other Zingiberaceae (Endress 1994, Ippolito and Armstrong 1993). However, the highly specialised morphology and long narrow floral tube of Globba suggest that the pollinator is a lepidopteran (Muller 1931). The nectar source is located at the very base of the long and narrow floral tube, which would necessitate a relatively long and slender proboscis. Other Zingiberaceae have avian, hymenopteran and lepidopteran pollinators such as hummingbirds and euglossine bees, but these are unlikely pollinators for Globba due to the very small size of the flower and the location of the nectar source at the very base of the floral tube. The characteristic anther wings are believed to function as levers, which allow the anther to be oriented into a favourable position for the transfer of pollen; their lateral position may orient the anther correctly if the flower is approached laterally by the pollinator (Endress 1994)."
	Williams, K. J., Kress, W. J., & Manos, P. S. (2004). The phylogeny, evolution, and classification of the genus Globba and tribe Globbeae (Zingiberaceae): appendages do matter. American Journal of Botany, 91(1), 100-114	"Flowers in the Globbeae (Figs. 1-6) like all Zingiberaceae, are among the most highly derived in angiosperms (Endress, 1994; Kress et al., 2002)."
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Inflorescence terminal on leafy shoots, pendent 11–15 cm; peduncle 2.5–4 × 0.35–0.5 cm, hirsute, pale green; rachis hirsute, straight, visible; inflorescence bracts 25–30 per inflorescence, bracts decreasing in size from base to the tip, median bract 2.5–3.5 cm × 1.5–1.8 cm, spirally arranged, imbricate and widely separated, sharply reflexed105–107° from vertical axis, glabrous, white. Cincinni ca. 1.4–2 cm long to the first flower, originating under the inflorescence bract, 2–8 mm apart on the rachis, one per bract containing 2–3 flowers; flowers maturing from base to apex of inflorescence; bracteoles tubular, basal and largest bracteole 2.6–3 × 3.5–5 mm, glabrous, light green. Flowers conspicuous; calyx tubular 4.5–5 mm long, reflexed at ca. 3–5mm from base, tri-lobed, yellow green; corolla tube 1.1–1.4 cm long, sparsely puberulous, with lobes reflexed; lobes cucullate, ca. 4–6 mm × 2–3 mm; lateral staminodes 7–9 × 2.3–2.6 mm in length, elliptic, glabrous, orange; labellum 6.2–7.6 × 2.2–2.4 mm, triangular, bi-lobed, glabrous, orange with deep orange center; fertile stamen with filament 1.6–2.6 cm long, orange, glabrous, anther 2.2–2.6 mm long, thecae elliptic with four appendages, glabrous, crest not extended beyond thecae; style held in the ventral furrow of the filament; stigma cup-shaped, pubescent with ciliate margin; ovary uni-locular, 1.2–2 × 1.6–2.7 mm, glabrous, white, with parietal placentation. Epigynous (stylodial) nectaries 2, linear septal, 3–4 mm long, light orange."

606	Reproduction by vegetative fragmentation	y
	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	[Generic description] "Most Zingiberaceae can be propagated by fragmenting the rhizome. Several Globba species, maybe most, produce bulbils either in the axils of the lower bracts instead of flowers, or further down the stem, or even on separate, thin shoots. A few species, such as G. marantina and G. aphanantha, rarely produce flowers but regularly bulbils. With increasing ploidy levels, sexual reproduction is weakened or even lost."

Qsn #	Question	Answer
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	[Presumably yes, as in other members of genus] "Perennial herbs. Leafy shoots slender, 30–40 cm tall, light green in colour. Rhizomes compact, non tuberous, white."

607	Minimum generative time (years)	
	Source(s)	**Notes**
	Criley, R. A., & Kim, H. J. (2015). Year around production of Globba sherwoodiana 'white dragon' cut flowers. Acta Horticulturae, 1097: 251-255	"One of several Globba species native to Southeast Asia, Globba sherwoodiana produces stems up to 60 cm long from perennial rhizomes. Short-lived true flowers are borne in the axils of persistent, showy white bracts borne on pendent inflorescences. In its native habitat, flowering occurs during the warm, long days of summer, and aboveground portions die back during the short days of winter. Vase life of freshly-opened cut stems averaged 28 days, with a few lasting more than 60 days. To obtain winter flower production, interrupted night lighting was provided from 10 pm to 2 am. Rhizomes were held at 15°C from 25 April 2012 until planting, with the first planting 1 July 2012, continuing monthly through 1 June 2013. By 1 November 2012, some sprouting had occurred in storage (6 months after entering storage), a trend which continued through the remaining serial planting dates. This caused a difference in mean plant to-sprout times from 4 to about 20 days. Mean sprout-to-flower times varied, with less time required when greenhouse DLI was 15 mol m-2 d-1 or greater while more time was required during winter when DLI was less than 10 mol m-2 d-1. Over the 12 month experimental period, mean plant-to-flowering times ranged from 49 to 82 days, suggesting that closer planting dates would be required in winter months to assure a uniform flower supply. Additionally, the production period increased as the storage period increased. While varying with season, 4 or more inflorescence-bearing stems were produced in the first 60 days from the harvest of the first one. Although plant-to-sprout and sprout-to-flower times were longer, flower production could be achieved under cool conditions above 18/15°C (D/N)."

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	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	"Capsule usually globose, smooth, verrucose or ribbed, dehiscent; seed with lacerate aril." [Genus description. Seeds, if produced, lack seeds of external attachment]
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	[No means of external attachment] "Small perennial herbs from 38–45 cm in height to the top of uppermost leaf sheath. Rhizomes compact, non-tuberulous, white with a light orange center internally." ... "Fruit and seeds unknown. Bulbils not observed."

702	Propagules dispersed intentionally by people	y
	Source(s)	**Notes**

Qsn #	Question	Answer
	Plant Group Hawai'i. 2016. Globba. http://www.plantgrouphawaii.com/#!globba/cz8t. [Accessed 16 Jun 2016]	"Globba sherwoodiana 'White Dragon' $19.99" [Sold as an ornamental]

703	Propagules likely to disperse as a produce contaminant	n
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Small perennial herbs from 38–45 cm in height to the top of uppermost leaf sheath. Rhizomes compact, non-tuberulous, white with a light orange center internally." ... "Fruit and seeds unknown. Bulbils not observed." [Unlikely]

704	Propagules adapted to wind dispersal	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	"Capsule usually globose, smooth, verrucose or ribbed, dehiscent; seed with lacerate aril." [Fruits & seeds not adapted for wind dispersal]

705	Propagules water dispersed	
	Source(s)	**Notes**
	WRA Specialist. 2016. Personal Communication	Unknown if rhizome fragments or seeds could be dispersed by water if growing in riparian areas

706	Propagules bird dispersed	
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Fruit and seeds unknown. Bulbils not observed."
	MalaysiaFlora.com. 2015. The Gingers of Malaysia and Borneo. http://www.malaysiaflora.com. [Accessed 16 Jun 2016]	"Myrmecochory, seed dispersal by ants, has been found in several species of Globba that occur in Borneo. Globba species are typical of the Zingiberaceae in reference to the aril, a fleshy appendage that particially encloses the seed. The cells in the aril are usually rich in lipids and also contain proteins and some starch. The aril in Globba species functions as an elaiosome (ant fruit) that the ants can use as a handle to carry the seed and as a source of food. After the aril is eaten by the ants, the seed is discarded intact having been dispersed by the ants."
	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 if arils would attract birds] "Capsule usually globose, smooth, verrucose or ribbed, dehiscent; seed with lacerate aril."

707	Propagules dispersed by other animals (externally)	
	Source(s)	**Notes**

Qsn #	Question	Answer
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Fruit and seeds unknown. Bulbils not observed."
	Pfeiffer, M., Nais, J., & Linsenmair, K. E. (2004). Myrmecochory in the Zingiberaceae: seed removal of Globba franciscii and G. propinqua by ants (Hymenoptera–Formicidae) in rain forests on Borneo. Journal of Tropical Ecology, 20(06), 705-708	[Possibly Yes if seeds are produced] "Globba have an aril, a fleshy appendage that partially encloses the seed and attaches to the seed coat at the micropylar region (Liao & Wu 2000). Aril cells are usually rich in lipids and also contain proteins, starch grains and other polysaccharides (Liao & Wu 2000)." ... "In both Globbas pecies examined the fleshy aril formed a large elaiosome (ant fruit) that served as food for ants and allowed them to handle the seed easily."

708	**Propagules survive passage through the gut**	
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Fruit and seeds unknown. Bulbils not observed." [Unknown]

801	**Prolific seed production (>1000/m2)**	**n**
	Source(s)	**Notes**
	Gowda, V., Kress, W. J., & Htun, T. (2012) Two new species of Gingers (Zingiberaceae) from Myanmar. PhytoKeys 13: 5–14	"Fruit and seeds unknown. Bulbils not observed."

802	**Evidence that a persistent propagule bank is formed (>1 yr)**	
	Source(s)	**Notes**
	WRA Specialist. 2016. Personal Communication	Unknown

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**	**y**
	Source(s)	**Notes**
	Thongam, B., Konsam, B., & Sarangthem, N. (2013). Globba sherwoodiana (Zingiberaceae)–A new record for India from Manipur. Rheedea, 23(1), 34-36	"Perennial herbs. Leafy shoots slender, 30–40 cm tall, light green in colour. Rhizomes compact, non tuberous, white." [Can presumably tolerate cutting and resprout from rhizomes]

Qsn #	Question	Answer
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
• Grows in tropical climates
• Other Globba species may be weeds
• Shade-tolerant
• Reproduces vegetatively by rhizomes
• Seeds, if produced, might be dispersed by ants & intentionally by people
• Limited ecological information reduces accuracy of risk prediction

Low Risk Traits
• No reports of naturalization or invasiveness
• Unarmed (no spines, thorns or burrs)
• Non-toxic
• Ornamental
• May require specialized pollinators to produce seeds
• Seed production in cultivation may be limited or absent