

Family: *Costaceae*

Taxon: *Cheilocostus speciosus*

Synonym: *Banksea speciosa* J. Koenig (*basionym*)
Costus speciosus (J. Koenig) Sm.

Common Name: cane-reed
crepe-ginger
wild ginger

Questionnaire :	current 20090513	Assessor:	Patti Clifford	Designation: H(HPWRA)
Status:	Assessor Approved	Data Entry Person:	Patti Clifford	WRA Score 11
101	Is the species highly domesticated?		y=-3, n=0	n
102	Has the species become naturalized where grown?		y=1, n=-1	
103	Does the species have weedy races?		y=1, n=-1	
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"		(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data		(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)		y=1, n=0	y
204	Native or naturalized in regions with tropical or subtropical climates		y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?		y=-2, ?=-1, n=0	y
301	Naturalized beyond native range		y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed		n=0, y = 1*multiplier (see Appendix 2)	y
303	Agricultural/forestry/horticultural weed		n=0, y = 2*multiplier (see Appendix 2)	
304	Environmental weed		n=0, y = 2*multiplier (see Appendix 2)	n
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		y=1, n=0	
403	Parasitic		y=1, n=0	n
404	Unpalatable to grazing animals		y=1, n=-1	
405	Toxic to animals		y=1, n=0	
406	Host for recognized pests and pathogens		y=1, n=0	
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
410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)		y=1, n=0	y

411	Climbing or smothering growth habit	y=1, n=0	n
412	Forms dense thickets	y=1, n=0	n
501	Aquatic	y=5, n=0	n
502	Grass	y=1, n=0	n
503	Nitrogen fixing woody plant	y=1, n=0	n
504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	y=1, n=0	y
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	y
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	y
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
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	y=1, n=-1	
706	Propagules bird dispersed	y=1, n=-1	y
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	y
801	Prolific seed production (>1000/m2)	y=1, n=-1	
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	
803	Well controlled by herbicides	y=-1, n=1	
804	Tolerates, or benefits from, mutilation, cultivation, or fire	y=1, n=-1	
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: H(HPWRA)

WRA Score **11**

Supporting Data:

101	2010. WRA Specialist. Personal Communication.	No evidence of domestication to reduce invasiveness.
201	2011. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database Index]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	Native range: China - Guangdong, Guangxi, Yunnan; Taiwan; Bhutan; India; Nepal; Sri Lanka; Cambodia; Laos; Myanmar; Thailand; Vietnam.
202	2011. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database Index]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	Native range: China - Guangdong, Guangxi, Yunnan; Taiwan; Bhutan; India; Nepal; Sri Lanka; Cambodia; Laos; Myanmar; Thailand; Vietnam.
203	2004. Farooqi, A.A., Sreeramu, B.S.. Cultivation of medicinal and aromatic crops. Universities Press, http://books.google.com/books?id=Meqij7-B0_8C&pg=PA91&dq=costus+speciosus&hl=en&ei=br9ITYC4AZT6swOGmMzoBA&sa=X&oi=book_result&ct=result&resnum=1&ved=0CC	<i>C. speciosus</i> can be grown from sea-level to about 1500 m.
203	2010. Dave's Garden. Plant Files: crepe ginger <i>Cheilocostus speciosus</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/1900/	USDA Hardiness zones 8a-10b.
204	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Naturalized on Lanai.
204	2011. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Online Database Index]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	Native range: China - Guangdong, Guangxi, Yunnan; Taiwan; Bhutan; India; Nepal; Sri Lanka; Cambodia; Laos; Myanmar; Thailand; Vietnam.
205	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	<i>C. speciosus</i> is widely cultivated in the tropics for its showy flowers.
301	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Naturalized on Lanai, Hawaii.
301	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	Naturalized on Lanai and Kauai.
302	2001. De Costa, W.A.J.M./Hitinayake, H.M.G.S.B./Dharmawardena, I.U.. A physiological investigation into the invasive behaviour of some plant species in a mid-country forest reserve in Sri Lanka. J. Natn. Sci. Foundation Sri Lanka. 29(1 & 2): 35-50.	<i>Costus speciosus</i> (<i>Cheilocostus speciosus</i>) is considered to be an invasive weed in a forest reserve in Sri Lanka. There is no mention of control or impact. The research investigates the physiological behavior of <i>C. speciosus</i> in the reserve.
303	2010. WRA Specialist. Personal Communication.	Unknown. [The Global Compendium of Weeds lists <i>C. speciosus</i> as an agricultural weed in Thailand. There is not evidence of control or impact.]
304	2010. WRA Specialist. Personal Communication.	No evidence of control or impacts. [see 3.02]
305	2007. Randall, R.P.. Global Compendium of Weeds - Index [Online Database]. http://www.hear.org/gcw/	No evidence of weediness in the genera.
401	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	No spines, thorns, or burrs.

402	2010. WRA Specialist. Personal Communication.	Unknown.
403	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Not parasitic.
404	2010. WRA Specialist. Personal Communication.	Unknown.
405	2010. WRA Specialist. Personal Communication.	Unknown.
406	2004. Farooqi, A.A., Sreeramu, B.S.. Cultivation of medicinal and aromatic crops. Universities Press, http://books.google.com/books?id=Meqij7-B0_8C&pg=PA91&dq=costus+speciosus&hl=en&ei=br9ITYC4AZT6swOGmMzoBA&sa=X&oi=book_result&ct=result&resnum=1&ved=0CC	There are no major pests that affect <i>C. speciosus</i> . However, there are several diseases that affect it; <i>Phytophthora solani</i> , <i>Pythium spinosum</i> , and <i>Curvularia paradisi</i> .
407	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	<i>C. speciosus</i> has a long history of medical use in its native range: for earache in Thailand, for dysentery and syphilis in Java., as a purgative in Malay, and as a famine food in India.
408	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Herbaceous. [unlikely]
409	2010. Dave's Garden. Plant Files: crepe ginger <i>Cheilocostus speciosus</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/1900/	Partial to full shade.
410	2004. Farooqi, A.A., Sreeramu, B.S.. Cultivation of medicinal and aromatic crops. Universities Press, http://books.google.com/books?id=Meqij7-B0_8C&pg=PA91&dq=costus+speciosus&hl=en&ei=br9ITYC4AZT6swOGmMzoBA&sa=X&oi=book_result&ct=result&resnum=1&ved=0CC	"The plant can be grown on a variety of soils ranging from coastal alluvium to the heavy, brown, forest type. It grows more luxuriantly on alluvial soils which have a sandy to clay loam texture with a pH of 5.7-7.5.
410	2010. Dave's Garden. Plant Files: crepe ginger <i>Cheilocostus speciosus</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/1900/	Soil pH requirements: 5.6 to 6.0 (acidic), 6.1 to 6.5 (mildly acidic), 6.6 to 7.5 (neutral)
411	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Perennial herbs 0.5-4.0m tall.
412	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Herbaceous.
501	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Terrestrial.
502	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Costaceae.
503	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	Herbaceous.
504	2010. Dave's Garden. Plant Files: crepe ginger <i>Cheilocostus speciosus</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/1900/	Propagation methods: by dividing rhizomes, tubers, corms, or bulbs (including offsets).
601	2010. WRA Specialist. Personal Communication.	No evidence.

602	2004. Farooqi, A.A., Sreeramu, B.S.. Cultivation of medicinal and aromatic crops. Universities Press, http://books.google.com/books?id=Meqij7-B0_8C&pg=PA91&dq=costus+speciosus&hl=en&ei=br9ITYC4AZT6swOGmMzoBA&sa=X&oi=book_result&ct=result&resnum=1&ved=0CC	The plant can be grown from seeds, commercially it is grown from rhizomes.
603	2010. WRA Specialist. Personal Communication.	Unknown.
604	2010. WRA Specialist. Personal Communication.	Unknown.
605	1999. Sakai, S., Kato, M., Inoue, T.. Three pollination guilds and variation in floral characteristics of Bornean gingers. American Journal of Botany. 86: 646-658.	In this study of pollinations guilds and variation if floral characteristics of Bornean gingers, <i>Costus speciosus</i> was pollinated by <i>Amegilla insularis</i> and <i>Amegilla pendleburyi</i> .
606	2010. Dave's Garden. Plant Files: crepe ginger <i>Cheilocostus speciosus</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/1900/	Propagation methods: dividing rhizomes, tubers, corms, or bulbs (including offsets).
607	2004. Farooqi, A.A., Sreeramu, B.S.. Cultivation of medicinal and aromatic crops. Universities Press, http://books.google.com/books?id=Meqij7-B0_8C&pg=PA91&dq=costus+speciosus&hl=en&ei=br9ITYC4AZT6swOGmMzoBA&sa=X&oi=book_result&ct=result&resnum=1&ved=0CC	"The rhizome is differentiated into nodes and internodes. The vegetative activity above the ground lasts for about 7-8 months. Stems sprout during the month of April, flowering commences during July and continues till the end of September and the fruits ripen during the middle of November, after which the leaves are shed and the majority of the canes start drying up. The underground portion remains dormant from December to March."
701	2010. WRA Specialist. Personal Communication.	No evidence of unintentional dispersal.
702	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	<i>C. speciosus</i> is widely propagated throughout the tropics for its showy flowers.
702	2010. Dave's Garden. Plant Files: crepe ginger <i>Cheilocostus speciosus</i> . Dave's Garden, http://davesgarden.com/guides/pf/go/1900/	Three vendors on Dave's Garden have <i>Cheilocostus speciosus</i> for sale.
703	2010. WRA Specialist. Personal Communication.	No evidence of dispersal as a produce contaminant.
704	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Fruit red, ellipsoid, 1-2.5 cm in diameter, crowned by a persistent calyx. Seeds black, angular, ca. 3 mm long with a white aril." [no adaptation for wind dispersal]
705	2010. WRA Specialist. Personal Communication.	Unknown.
706	2000. Sakai, S.. Reproductive phenology of gingers in a lowland mixed Dipterocarp forest in Borneo. Journal of Tropical Ecology. 16: 337-354.	"Fruits of <i>Costus speciosus</i> automatically dehisced to expose seeds with arils that were dispersed by birds."
707	1999. Wagner, W.L./Herbst, D.R./Sohmer, S.H.. Manual of the flowering plants of Hawaii. Revised edition.. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI.	"Fruit red, ellipsoid, 1-2.5 cm in diameter, crowned by a persistent calyx. Seeds black, angular, ca. 3 mm long with a white aril." [no means of external attachment]
708	2000. Sakai, S.. Reproductive phenology of gingers in a lowland mixed Dipterocarp forest in Borneo. Journal of Tropical Ecology. 16: 337-354.	"Fruits of <i>Costus speciosus</i> automatically dehisced to expose seeds with arils that were dispersed by birds."
801	2010. WRA Specialist. Personal Communication.	Unknown.
802	2010. WRA Specialist. Personal Communication.	Unknown.
803	2010. WRA Specialist. Personal Communication.	Unknown.
804	2010. WRA Specialist. Personal Communication.	Unknown.
805	2010. WRA Specialist. Personal Communication.	Unknown.

