

Family: *Acanthaceae*

Taxon: *Justicia carnea*

Synonym: *Cyrtanthera magnifica* Nees
Cyrtanthera pohliana var. *velutina* Nees
Jacobinia carnea (Lindl.) G. Nicholson
Jacobinia magnifica (Nees) Voss
Jacobinia velutina (Nees) Voss
"Justicia magnifica Pohl ex Nees, nom. inval.

Common Name: Brazilian-plume
flamingo-flower
king's-crown
plumeflower

Questionnaire :	current 20090513	Assessor:	Patti Clifford	Designation: H(HPWRA)
Status:	Assessor Approved	Data Entry Person:	Patti Clifford	WRA Score 12
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	n
204	Native or naturalized in regions with tropical or subtropical climates		y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?		y=-2, ?=-1, n=0	y
301	Naturalized beyond native range		y = 1*multiplier (see Appendix 2), n= question 205	y
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)	y
305	Congeneric weed		n=0, y = 1*multiplier (see Appendix 2)	y
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	n
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	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	y=1, n=-1	
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	
605	Requires specialist pollinators	y=-1, n=0	
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	
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	y
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	n
707	Propagules dispersed by other animals (externally)	y=1, n=-1	n
708	Propagules survive passage through the gut	y=1, n=-1	
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	y
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	y=-1, n=1	

Designation: H(HPWRA)

WRA Score 12

Supporting Data:

101	2004. Meyer, J-Y./Lavergne, C.. Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands. Diversity and Distributions. 10: 333-347.	[Is the species highly domesticated? No] No evidence.
101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive ability.
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2-High] Native distribution: Brazil - Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Santa Catarina; Argentina - Misiones; Paraguay - Alto Parana.
202	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Quality of climate match data? 2-High] Native distribution: Brazil - Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Santa Catarina; Argentina - Misiones; Paraguay - Alto Parana.
203	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	[Broad climate suitability (environmental versatility)?] Tolerates a wide range of environmental conditions (except salt spray) as long as ample water is supplied.
203	2007. Gilman, E.F.. Justicia carnea Jacobinia, flamingo plant FPS-308. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., http://edis.ifas.ufl.edu/pdf/FP/FP30800 .	[Broad climate suitability (environmental versatility)? No] USDA Hardiness Zones: 8b-11.
203	2012. Dave's Garden. PlantFiles: Brazilian Plume Flower - Justicia carnea 'Huntington'. http://davesgarden.com/guides/pf/go/68086/	[Broad climate suitability (environmental versatility)? No] USDA Hardiness Zones: 8a-11.
204	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution: Brazil - Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Santa Catarina; Argentina - Misiones; Paraguay - Alto Parana.
205	2004. Meyer, J-Y./Lavergne, C.. Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands. Diversity and Distributions. 10: 333-347.	[Does the species have a history of repeated introductions outside its natural range? Yes] "Justica carnea is an ornamental shrub commonly grown in tropical countries and islands for its dense inflorescence of attractive pink flowers"
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	[Does the species have a history of repeated introductions outside its natural range? Yes] "Introduced from its native Brazil to horticulture in Europe around 1827, flamingo flower is an old favorite with gardeners."
301	2004. Meyer, J-Y./Lavergne, C.. Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands. Diversity and Distributions. 10: 333-347.	[Naturalized beyond native range? Yes] Justicia carnea was only known in one or two gardens in the 1930's on Rarotonga (Cook Island) and has since extensively spread (infested area > 500 m2)in a single valley of the island, choking out the native and secondary wet vegetation.
301	2010. New Zealand Plant Conservation Network. Justicia carnea. New Zealand Plant Conservation Network, http://www.nzpcn.org.nz/flora_details.asp?ID=4243	[Naturalized beyond native range? Yes] Noted as naturalized in New Zealand in 1989.
302	2012. WRA Specialist. Personal Communication.	[Garden/amenity/disturbance weed? No] Noted as an environmental weed.
303	2012. WRA Specialist. Personal Communication.	[Agricultural/forestry/horticultural weed? No] No evidence of weediness in these systems.
304	2004. Meyer, J-Y./Lavergne, C.. Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands. Diversity and Distributions. 10: 333-347.	[Environmental weed? Yes] Justicia carnea was only known in one or two gardens in the 1930's on Rarotonga (Cook Island) and has since extensively spread (infested area > 500 m2)in a single valley of the island, choking out the native and secondary wet vegetation.

305	2012. Save Our Waterways Now. <i>Justicia betonica</i> (Acanthaceae) - white shrimp plant. http://www.saveourwaterwaysnow.com.au/01_cm/s/details.asp?ID=51	[Congeneric weed? Yes] <i>Justicia betonica</i> is a weed in creeks in Australia, where it forms dense mats and is difficult to remove.
401	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	[Produces spines, thorns or burrs? No] Shrubs 4-6' tall; stems 4-angled. Lf peti to 2" long , blades oblong-ovate, to 10" long, sparsely hairy, base running down onto peti, veins prominent. Fruit not produced in Hawaii.
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	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	[Parasitic? No] Acanthaceae.
403	2010. Nickrent, D.. The parasitic plant connection. Department of Plant Biology, Southern Illinois University, Carbondale http://www.parasiticplants.siu.edu/index.html	[Parasitic? No] Acanthaceae.
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Toxic to animals? No] No evidence.
405	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Toxic to animals? No] No evidence.
406	2007. Gilman, E.F.. <i>Justicia carnea</i> Jacobinia, flamingo plant FPS-308. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., http://edis.ifas.ufl.edu/pdffiles/FP/FP30800 .	[Host for recognized pests and pathogens?] No pests or diseases are of major concern.
407	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Causes allergies or is otherwise toxic to humans? No] No evidence.
407	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Causes allergies or is otherwise toxic to humans? No] No evidence.
408	2007. Gilman, E.F.. <i>Justicia carnea</i> Jacobinia, flamingo plant FPS-308. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., http://edis.ifas.ufl.edu/pdffiles/FP/FP30800 .	[Creates a fire hazard in natural ecosystems? No] Slow-growing shrub. [doesn't rapidly accumulate biomass]
409	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	[Is a shade tolerant plant at some stage of its life cycle? Yes] Propagate by cuttings. Moist, well-drained soils in sunnny or partially shaded places are preferred.
409	2007. Gilman, E.F.. <i>Justicia carnea</i> Jacobinia, flamingo plant FPS-308. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., http://edis.ifas.ufl.edu/pdffiles/FP/FP30800 .	[Is a shade tolerant plant at some stage of its life cycle? Yes] Grows in the shade.
409	2012. Dave's Garden. PlantFiles: Brazilian Plume Flower - <i>Justicia carnea</i> 'Huntington'. http://davesgarden.com/guides/pf/go/68086/	[Is a shade tolerant plant at some stage of its life cycle? Yes] Sun to partial shade; light shade.
410	2007. Gilman, E.F.. <i>Justicia carnea</i> Jacobinia, flamingo plant FPS-308. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., http://edis.ifas.ufl.edu/pdffiles/FP/FP30800 .	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] Soil tolerances: acidic; slightly alkaline; sand; loam; clay

410	2012. Dave's Garden. PlantFiles: Brazilian Plume Flower - <i>Justicia carnea</i> 'Huntington'. http://davesgarden.com/guides/pf/go/68086/	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] Soil pH requirements: 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral)
411	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	[Climbing or smothering growth habit? No] Shrubs 4-6' tall.
412	2004. Meyer, J-Y./Laverigne, C.. Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands. Diversity and Distributions. 10: 333-347.	[Forms dense thickets? Yes] <i>Justicia carnea</i> forms dense monospecific thickets in the wet forests of Tropical Islands. (Raratonga)
501	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	[Aquatic? No] Terrestrial; shrub.
502	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	[Grass? No] Acanthaceae; shrub.
503	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	[Nitrogen fixing woody plant? No] Acanthaceae.
504	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	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Woody; shrub.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	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	[Produces viable seed?] Fruits are not produced in Hawaii.
602	2012. WRA Specialist. Personal Communication.	[Produces viable seed? Unknown]
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2012. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]
605	2000. Buzato, S./Sazima, M./Sazima, I.. Hummingbird-pollinated floras at three Atlantic forest sites. Biotropica. 32: .	[Requires specialist pollinators?] <i>Justicia carnea</i> is pollinated by a hummingbird, <i>Ramphodon naevius</i> ; Amfi in southeastern Brazil.
606	2004. Meyer, J-Y./Laverigne, C.. Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands. Diversity and Distributions. 10: 333-347.	[Reproduction by vegetative fragmentation? Yes] <i>Justicia carnea</i> appears to just reproduce by vegetative means.
606	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	[Reproduction by vegetative fragmentation? Yes] Propagation is always from cuttings, which root readily.
606	2010. New Zealand Plant Conservation Network. <i>Justicia carnea</i> . New Zealand Plant Conservation Network, http://www.nzpcn.org.nz/flora_details.asp?ID=4243	[Reproduction by vegetative fragmentation? Yes] Propagate from cuttings.
607	2007. Gilman, E.F.. <i>Justicia carnea</i> Jacobinia, flamingo plant FPS-308. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., http://edis.ifas.ufl.edu/pdffiles/FP/FP30800 .	[Minimum generative time (years)?] Slow growth rate.
607	2012. WRA Specialist. Personal Communication.	[Minimum generative time (years)? Unknown]

701	2010. New Zealand Plant Conservation Network. <i>Justica carnea</i> . New Zealand Plant Conservation Network, http://www.nzpcn.org.nz/flora_details.asp?ID=4243	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Yes] Dispersal is mainly by deliberate planting and subsequent vegetative spread; although also through careless disposal of garden waste and by seed."
702	2004. Meyer, J-Y./Lavergne, C.. <i>Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands</i> . Diversity and Distributions. 10: 333-347.	[Propagules dispersed intentionally by people? Yes] " <i>Justica carnea</i> is an ornamental shrub commonly grown in tropical countries and islands for its dense inflorescence of attractive pink flowers"
702	2005. Staples, G.W./Herbst, D.R.. <i>A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places</i> . Bishop Museum Press, Honolulu, HI	[Propagules dispersed intentionally by people? Yes] "Introduced from its native Brazil to horticulture in Europe around 1827, flamingo flower is an old favorite with gardeners."
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	2000. Whistler, W.A.. <i>Tropical Ornamentals: A Guide</i> . Timber Press, Portland, OR	[Propagules adapted to wind dispersal? No] Fruit a capsule.
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown]
706	2000. Whistler, W.A.. <i>Tropical Ornamentals: A Guide</i> . Timber Press, Portland, OR	[Propagules bird dispersed? No] Fruit a capsule.
707	2000. Whistler, W.A.. <i>Tropical Ornamentals: A Guide</i> . Timber Press, Portland, OR	[Propagules dispersed by other animals (externally)? No] Fruit is a capsule, infrequently formed in cultivation. [no means of external attachment]
708	2012. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	2012. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m2)? Unknown]
802	2004. Meyer, J-Y./Lavergne, C.. <i>Beautés fatales : Acanthaceae species as invasive alien plants on tropical Indo-Pacific Islands</i> . Diversity and Distributions. 10: 333-347.	[Evidence that a persistent propagule bank is formed (>1 yr)?] On the island of Rarotonga, <i>Justica carnea</i> is spreading, it appears that it is reproducing vegetatively and not producing seed.
802	2012. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2007. Gilman, E.F.. <i>Justicia carnea</i> Jacobinia, flamingo plant FPS-308. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., http://edis.ifas.ufl.edu/pdf/FP/FP30800 .	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Older plants benefit from rejuvenation type pruning where most of the taller stems are cut back to a node close to the ground. If this is performed each year, plants should last for many years.
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk Traits

- Environmental weed on Rarotonga (Cook's Island), crowding out native species.
- Shade tolerant.
- Tolerates wide-range of soil conditions.
- Forms dense thickets (crowds out natives).
- Reproduces vegetatively.
- Accidentally dispersed by humans.
- Tolerates heavy pruning.

Low Risk Traits

- Not recognized as toxic to humans or animals.
- Mainly propagated from cuttings.
- Fruits not known to develop in Hawaii.
- Slow growing.