

Family: *Acanthaceae*

Taxon: *Pseuderanthemum carruthersii*

Synonym: *Pseuderanthemum atropurpureum* (W. Bull) I **Common Name** False Eranthemum
Pseuderanthemum reticulatum Radlk.

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation: L
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	WRA Score 1
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)	y	
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	n=0, y = 1*multiplier (see Appendix 2)		
401	Produces spines, thorns or burrs	y=1, n=0	n	
402	Allelopathic	y=1, n=0	n	
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	n	
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		
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	n
601	Evidence of substantial reproductive failure in native habitat	y=1, n=0	n
602	Produces viable seed	y=1, n=-1	n
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	
605	Requires specialist pollinators	y=-1, n=0	y
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	
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	n
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	n
802	Evidence that a persistent propagule bank is formed (>1 yr)	y=1, n=-1	n
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	n

Designation: L

WRA Score **1**

Supporting Data:

101	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.	"Thought to be native somewhere to Melanesia, perhaps Vanuatu, <i>P. carruthersii</i> is highly variable and is now so widely cultivated as an ornamental in the Pacific Basin that it is impossible to determine its original distribution. Although varieties are recognized, the variability of the species and intergradation between its taxonomic varieties suggest that they might more appropriately be recognized as cultivars, especially since the variegated taxa are abundant in cultivation but not found in the wild. Some botanists do not recognize any infraspecific taxa at all but instead regard this as one highly variable species." [domestication may have resulted in less invasive cultivars, but no conclusive evidence that species is highly domesticated]
201	1991. Smith, A. C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 5.. National Tropical Botanical Garden, Lawai, Hawaii	"Probably indigenous in Melanesia (perhaps in New Caledonia and the New Hebrides [Vanuatu]), now widely cultivated" [species suited to tropical and subtropical climates]
202	1991. Smith, A. C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 5.. National Tropical Botanical Garden, Lawai, Hawaii	Highly suited for tropical climates
203	2003. Llamas, K. A.. Tropical Flowering Plants. Timber Press, Portland, OR	zones 10-11
204	1991. Smith, A. C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 5.. National Tropical Botanical Garden, Lawai, Hawaii	"Probably indigenous in Melanesia (perhaps in New Caledonia and the New Hebrides [Vanuatu]), now widely cultivated"
205	1991. Smith, A. C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 5.. National Tropical Botanical Garden, Lawai, Hawaii	"now widely cultivated"
301	2000. Liogier, A. H./ Martorell, L. F.. Flora of Puerto Rico and adjacent islands: a systematic synopsis. La Editorial, UPR, San Juan, Puerto Rico	"Widely cultivated and persistent after cultivation in Puerto Rico" [persistent does not indicate naturalization in this case]
301	2003. Space, J. C./Waterhouse, B./Miles, J. E./Tiobeck, J./Rengulbai, K.. Report to the Republic of Palau on invasive plant species of environmental concern. USDA Forest Service, Honolulu, HI	"Occasional patches of <i>Pseuderanthemum carruthersii</i> were seen on Ngerkebesang, Babeldaob, Peleliu and Tobi, but it is more of a problem on Sonsorol, where it is expanding into the forest along roads and paths." [Palau]
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.	Appendix List of the 52 naturalized acanths in tropical Indo-Pacific islands and other tropical countries [includes <i>P. carruthersii</i> in French Polynesia with the status of LNAT = locally or sparingly naturalized in secondary or primary forests, with isolated and small patches.]
301	2010. Learn 2 Grow. Plant Search - <i>Pseuderanthemum carruthersii</i> . Learn 2 Grow, http://www.learn2grow.com/plants/pseuderanthemum-carruthersii/	"A tender evergreen shrub native to New Caledonia and Vanuata in western Polynesia, it has today become naturalized in many parts of the tropical Pacific and South America."
302	2007. Randall, R.P.. Global Compendium of Weeds - <i>Pseuderanthemum carruthersii</i> . Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/pseuderanthemum_carruthersii/	Possibly a persistent weed of disturbed sites
302	2009. Space, J.C./Lorence, D.H./LaRosa, A.M.. Report to the Republic of Palau: 2008 update on Invasive Plant Species. U.S.D.A. Forest Service, Hilo, HI	Discontinue planting; control outside of cultivation; consider eradication...Occasional cultivated plants and patches of <i>Pseuderanthemum carruthersii</i> are present on Kayangel, Ngerkebesang, Babeldaob, Peleliu and Tobi, but the 2002 survey reported it to be a problem on Sonsorol, where it is expanding into the forest along roads and paths. [suggests this plant may be a nuisance weed, and, at present, of minor significance]
303	2007. Randall, R.P.. Global Compendium of Weeds - <i>Pseuderanthemum carruthersii</i> . Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/pseuderanthemum_carruthersii/	No evidence [as Agricultural/forestry/horticultural weed]

304	2007. Randall, R.P.. Global Compendium of Weeds - <i>Pseuderanthemum carruthersii</i> . Hawaii Ecosystems at Risk Project (HEAR), http://www.hear.org/gcw/species/pseuderanthemum_carruthersii/	No evidence [as an Environmental weed]
305	2007. Randall, R.. Global Compendium of Weeds. http://www.hear.org/gcw/	Several other species of <i>Pseuderanthemum</i> are listed as naturalized or invasive [but evidence of negative impacts is generally lacking]
401	1970. Stone, B.C.. The flora of Guam. <i>Micronesica</i> . 6: 1-659.	Glabrous ornamental shrub, leaves often variegated magenta-purple with or without pink and/or white, elliptic-ovate, acute, decurrent on the 1-3 cm petiole, 5-15 cm long; racemes spikelike, calyx green or reddish, up to 8 mm long; corolla white to rosy-purple, glabrous or merely slightly ciliate, capsule clavate, 4-seeded [no spines, thorns, or burrs]
402	2010. WRA Specialist. Personal Communication.	No evidence of allelopathy
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.	Not parasitic
404	2010. WRA Specialist. Personal Communication.	Palatability to animals unknown
405	2010. WRA Specialist. Personal Communication.	No evidence of toxicity to animals
406	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.	"Few pests trouble <i>P. carruthersii</i> , although scales, nematodes, and mites may occasionally infest shrubs."
407	2010. WRA Specialist. Personal Communication.	No evidence of toxicity or allergenicity to humans
408	2010. WRA Specialist. Personal Communication.	No evidence of fire hazard or flammability
409	2003. Llamas, K. A.. Tropical Flowering Plants. Timber Press, Portland, OR	Full to part sun.
409	2010. Dave's Garden. PlantFiles: Purple False Eranthemum. Dave's Garden, http://davesgarden.com/guides/pf/go/55464/	Sun Exposure: Sun to Partial Shade
409	2010. Learn 2 Grow. Plant Search - <i>Pseuderanthemum carruthersii</i> . Learn 2 Grow, http://www.learn2grow.com/plants/pseuderanthemum-carruthersii/	Full Sun, Partial Sun, Partial Shade
410	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	"prefers rich, well-watered, well-drained soil, but will grow in sandy locations if soil is mixed with considerable amounts of mulch or compost and if irrigation is constant"
410	2003. Llamas, K. A.. Tropical Flowering Plants. Timber Press, Portland, OR	Fertile, well-drained soil.
410	2010. Learn 2 Grow. Plant Search - <i>Pseuderanthemum carruthersii</i> . Learn 2 Grow, http://www.learn2grow.com/plants/pseuderanthemum-carruthersii/	Soil pH: Acidic, Neutral, Alkaline; Soil type: Loam, Sand [tolerates two of three major soil types]
411	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	Shrub to 2 m high (6 1/2 ft) or more. [not climbing or smothering]
412	2010. WRA Specialist. Personal Communication.	No evidence that <i>P. carruthersii</i> forms dense thickets in native or introduced range.
501	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	Terrestrial shrub
502	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	Acanthaceae [not a grass]
503	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	Acanthaceae [not a nitrogen fixing woody plant]
504	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	Not a geophyte

601	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	No evidence of substantial reproductive failure in native habitat
602	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	"Flowers are followed by small club-shaped fruiting capsules, each containing 4 flat seeds...Easily grown from cuttings" [although seed description is given, propagation method suggests seeds are not used, and may be rarely produced, or not viable]
602	2010. Dave's Garden. PlantFiles: Purple False Eranthemum. Dave's Garden, http://davesgarden.com/guides/pf/go/55464/	Seed Collecting: N/A: plant does not set seed, flowers are sterile, or plants will not come true from seed
603	2010. WRA Specialist. Personal Communication.	Ability to hybridize naturally unknown
604	2010. Learn 2 Grow. Plant Search - Pseuderanthemum carruthersii. Learn 2 Grow, http://www.learn2grow.com/plants/pseuderanthemum-carruthersii/	Self-Sowing: No [probably not self-compatible or self-pollinating]
605	1991. Smith, A. C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 5.. National Tropical Botanical Garden, Lawai, Hawaii	"fruits have not been obtained in Fiji" [suggests that the plant may not be adequately pollinated in Fiji]
605	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.	Fruit not seen [suggests that the plant may not be adequately pollinated in the Hawaiian Islands]
605	2010. Williams, G./Adam, P.. The Flowering of Australia's Rainforests: A Plant and Pollination Miscellany. CSIRO Publishing, Collingwood, Australia	"For example, deep gullet (e.g. Pandorea [Bignoniaceae]) or lobed flowers (e.g. Alpinia [Zingiberaceae], Pseuderanthemum [Acanthaceae] and Orchidaceae) are adapted to be pollinated by a certain taxonomic class, or a size class, of pollinators." [Reference does not indicate what pollinates Pseuderanthemum, but suggests that specialized pollinators are required, a supposition supported by the lack or rarity of capsule and seed production within its introduced range]
606	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.	Spreads vegetatively in French Polynesia
607	2010. Plant This. Pseuderanthemum carruthersii var. variegatum. http://www.plantthis.com.au/plant-information.asp?gardener=25175&tabview=design&plantSpot=5	Growth rate: average [time to reproductive maturity unknown, but plants rarely produce seeds in cultivation]
701	2009. Space, J.C./Lorence, D.H/LaRosa, A.M.. Report to the Republic of Palau: 2008 update on Invasive Plant Species. U.S.D.A. Forest Service, Hilo, HI	"Occasional cultivated plants and patches of Pseuderanthemum carruthersii are present on Kayangel, Ngerkebesang, Babeldaob, Peleliu and Tobi, but the 2002 survey reported it to be a problem on Sonsorol, where it is expanding into the forest along roads and paths." [Suggests plants are either being dispersed along roads and paths, or plants prefer disturbed habitats found in human-trafficked areas]
702	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"widely and commonly cultivated for the dark purple or yellow variegated leaves and the relatively small, attractive, white to purple flowers." [popular ornamental]
703	2010. WRA Specialist. Personal Communication.	No evidence that plant contaminates produce, and seeds rarely produced in cultivation
704	1998. Vazquez, J.A./Givnish, T.J.. Altitudinal gradients in tropical forest composition, structure, and diversity in the Sierra de Manantlan. Journal of Ecology. 86: 999-1020.	Seeds drop to the ground close to or beneath the parent plant [No adaptations for wind dispersal. Description for genus, but presumably true for P. carruthersii, which rarely produces seeds outside native range]
705	1998. Vazquez, J.A./Givnish, T.J.. Altitudinal gradients in tropical forest composition, structure, and diversity in the Sierra de Manantlan. Journal of Ecology. 86: 999-1020.	Seeds drop to the ground close to or beneath the parent plant [No evidence for water dispersal. Description for genus, but presumably true for P. carruthersii, which rarely produces seeds outside native range]
706	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	"Flowers are followed by small club-shaped fruiting capsules, each containing 4 flat seeds [not fleshy-fruited]
707	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	"Flowers are followed by small club-shaped fruiting capsules, each containing 4 flat seeds [no evidence, and no means of external attachment]
708	2010. WRA Specialist. Personal Communication.	Unknown if propagules survive passage through gut [although capsules unlikely to be consumed by animals]

801	1991. Smith, A. C.. Flora Vitiensis Nova - A New Flora of Fiji (Spermatophytes Only). Volume 5.. National Tropical Botanical Garden, Lawai, Hawaii	"fruits have not been obtained in Fiji"
801	2000. Whistler, W.A.. Tropical Ornamentals: A Guide. Timber Press, Portland, OR	"Fruit a club shaped capsule, infrequently formed in cultivation."
801	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.	Fruit not seen [Hawaiian Islands]
802	2010. WRA Specialist. Personal Communication.	Seed longevity unknown [but unlikely that a seed bank will form considering seeds are rarely produced in cultivation]
803	2010. WRA Specialist. Personal Communication.	Unknown [No information found on control of this species with herbicides]
804	1987. Clay, H.F./Hubbard, J.C.. The Hawaii Garden: Tropical Shrubs. University of Hawaii Press, Honolulu, HI	"Prune vigorously to reduce size, to induce new growth and foliage, and to produce more compact plants." [tolerates heavy pruning]
805	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.	"Few pests trouble <i>P. carruthersii</i> , although scales, nematodes, and mites may occasionally infest shrubs." [suggests no natural enemies are present locally, and no evidence of, or reason for, biocontrol release at this point]