

Key Words: High Risk, Naturalized, Weedy Tree, Spiny, Ornamental, Spreads vegetatively

Family: *Fabaceae*

Taxon: *Erythrina speciosa*

Synonym: *Erythrina reticulata* C. Presl
Erythrina graefferi Tineo
Erythrina poianthes Brot.

Common Name: Mulungu
 Coral Tree

Questionnaire :	current 20090513	Assessor:	Chuck Chimera	Designation:	H(HPWRA)
Status:	Assessor Approved	Data Entry Person:	Chuck Chimera	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	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)	y
401	Produces spines, thorns or burrs			y=1, n=0	y
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	
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	y
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	y
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	y
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	
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	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	y
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	1979. National Academy of Sciences. Tropical Legumes: Resources for the Future. NAS, Washington, D.C.	[Is the species highly domesticated? No] No evidence
102	2012. WRA Specialist. Personal Communication.	NA
103	2012. WRA Specialist. Personal Communication.	NA
201	1939. Krukoff, B.A.. <i>Speciosae</i> . <i>Brittonia</i> . 3(2): 243-246.	[Species suited to tropical or subtropical climate(s) 2-High] "Distribution: Southern Brazil"
201	1996. Bruneau, A.. Phylogenetic and Biogeographical Patterns in <i>Erythrina</i> (Leguminosae: Phaseoleae) as Inferred from Morphological and Chloroplast DNA Characters. <i>Systematic Botany</i> . 21(4): 587-605.	[Species suited to tropical or subtropical climate(s) 2-High] "The most "basal" members of the genus, subg. <i>Micropteryx</i> and <i>E. speciosa</i> , occur primarily in South America from coastal and subtropical southeast Brazil and northern Argentina to sub-Andean Peru and Bolivia, and in more tropical regions of the Amazon and Orinoco basins (Krukoff and Barneby 1974; Neill 1988)."
202	1939. Krukoff, B.A.. <i>Speciosae</i> . <i>Brittonia</i> . 3(2): 243-246.	[Quality of climate match data 2-High]
203	2009. Medina, C.L./Sanches, M.C./Tucci, M.L.S./Sousa, C.A.F./Cuzzuol, G.R.F./Joly, C.A.. <i>Erythrina speciosa</i> (Leguminosae - Papilionoideae) under soil water saturation: morphophysiological and growth responses. <i>Annals of Botany</i> . 104: 671-680.	[Broad climate suitability (environmental versatility)? No] " <i>Erythrina speciosa</i> , a neotropical tree species distributed throughout southern and south-eastern Brazil (Krukoff, 1939; Lorenzi, 1992), is typical in fluvial forest and moist plains as well as in flooded-prone habitats, always in open and secondary formations." [Restricted climatic & environmental tolerances]
203	2012. Desert Tropicals. Mulungu - <i>Erythrina speciosa</i> . Faucon, P., http://www.desert-tropicals.com/Plants/Fabaceae/Erythrina_speciosa.html	[Broad climate suitability (environmental versatility)? No] "Recommended Temperature Zone: sunset: 19-24 USDA: 10-11"
204	1939. Krukoff, B.A.. <i>Speciosae</i> . <i>Brittonia</i> . 3(2): 243-246.	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Distribution: Southern Brazil"
205	1939. Krukoff, B.A.. <i>Speciosae</i> . <i>Brittonia</i> . 3(2): 243-246.	[Does the species have a history of repeated introductions outside its natural range?? Yes] "The species has been introduced into Europe, Australia, Asia, and Africa, where it is cultivated occasionally for ornamental purposes."
205	2002. Water and Rivers Commission. Water Notes (WN25). http://www.wrc.wa.gov.au	[Does the species have a history of repeated introductions outside its natural range? Yes] "In Western Australia, a wide variety of deciduous trees have been planted, mainly for aesthetic reasons. Commonly planted trees include the following:" [Includes <i>Erythrina speciosa</i>]
301	2012. Flora of Australia Online. <i>Erythrina speciosa</i> . Australian Biological Resources Study, http://www.anbg.gov.au/abrs/online-resources/flora/stddisplay.xsql?pnid=52642	[Naturalized beyond native range? Yes] "Norfolk Is. A native of south-eastern Brazil, locally naturalised as an escape from cultivation. "
301	2012. Green, P.. Flora - species list. Norfolk Island National Park and Botanic Garden. Department of Sustainability, Environment, Water, Population and Communities, http://www.environment.gov.au/parks/norfolk/nature-science/species-list.html	[Naturalized beyond native range? Yes] "** <i>Erythrina speciosa</i> Andrews" ... "*" = naturalised taxon" [Norfolk Island National Park]
301	2012. Lau, A./Frohlich, D.. Oahu Early Detection Botanists. Pers. Comm. 10 May 2012.	[Naturalized beyond native range? Yes] "Plant tree-like, some stems growing upright to 8+ meters, others arching, sometimes trailing along ground though this was likely from trees falling over and sprouting new stems. Growing in shade, flowering where open to canopy/sunlight. Found along stream in 3 areas, likely an escape from cultivation. In one area it is somewhat thicket forming over stream. At least one resident of area controls the plant when in his yard, or perhaps in the roadway (arching, thorny stems)."
302	2007. Randall, R.P.. The introduced flora of Australia & its weed status. CRC for Australian Weed Management, Glen Osmond, Australia	[Garden/amenity/disturbance weed? Yes] " <i>Erythrina speciosa</i> Andrews Leguminosae - Papilionaceae ♦ Weed" [Weed of unspecified impacts]
302	2012. Lau, A./Frohlich, D.. Oahu Early Detection Botanists. Pers. Comm. 10 May 2012.	[Garden/amenity/disturbance weed? Yes] "Found along stream in 3 areas, likely an escape from cultivation. In one area it is somewhat thicket forming over stream. At least one resident of area controls the plant when in his yard, or perhaps in the roadway (arching, thorny stems)." [Controlled as a nuisance plant in a residential setting]

302	2012. Plant This. <i>Erythrina speciosa</i> . http://plantthis.com/plant-information.asp?gardener=25640	[Garden/amenity/disturbance weed? Yes] "Weed Potential: yes " [Weed potential recognized by a horticultural website]
303	2007. Randall, R.P.. Global Compendium of Weeds - <i>Erythrina speciosa</i> [Online Database]. http://www.hear.org/gcw/species/erythrina_speciosa/	[Agricultural/forestry/horticultural weed? No] No evidence to date
304	2007. Randall, R.P.. Global Compendium of Weeds - <i>Erythrina speciosa</i> [Online Database]. http://www.hear.org/gcw/species/erythrina_speciosa/	[Environmental weed? No] No evidence to date
305	1996. Smith, J.M.B.. Notes on Coral-Trees (<i>Erythrina</i>) in Australia with Particular Reference to <i>E. crista-galli</i> L. in New South Wales. Australian Geographical Studies. 34: 225–236.	[Congeneric weed? Yes] " <i>Erythrina variegata</i> , <i>E. insularis</i> and <i>E. vespertilio</i> (the last two possibly conspecific) are native in Australia, and <i>E. fusca</i> occurs as viable seeds in sea drift on Queensland beaches. Higher diversity elsewhere suggests an extra-Australian origin, with dispersal to Australia by sea drift or birds. At least two introduced ornamental species, <i>E. crista galli</i> (native to South America) and <i>E. X sykesii</i> (a sterile hybrid), have become naturalised. <i>Erythrina crista-galli</i> has become abundant on the Wilson-Richmond floodplain, NSW. Its seeds germinate progressively over three years, and may be dispersed by floodwaters. As well as being perceived locally as invasive weeds, naturalised Coral-trees also have conservational value, particularly with regard to nectarivorous birds."
305	2010. Pittwater Council. Woody Weeds (Trees and Shrubs) - Cocks Comb Coral Tree. http://www.pittwater.nsw.gov.au/environment/noxious_weeds/shrubs/socks_comb_coral_tree	[Congeneric weed? Yes] "Coral Tree (<i>Erythrina crista-galli</i>) is a significant woody weed within the Mullet Creek Catchment. <i>Erythrina crista-galli</i> is easily dispersed by seed and suckering. Branches left on the ground can re-grow into new plants. This species invades natural areas such as creeklines and wetlands. <i>Erythrina crista-galli</i> is a deciduous tree and requires treatment in the growing season. It can be drilled or frilled in-situ and poisoned as felled trees and branches will reshoot if in contact with the ground."
401	1939. Krukoff, B.A.. <i>Speciosae</i> . Brittonia. 3(2): 243-246.	[Produces spines, thorns or burrs? Yes] "Small tree armed with spines, leafy at anthesis; branchlets rather stout, usually aculeate; petioles (8-)14-26 (-38) cm. long, densely pubescent with villous deciduous hairs, soon glabrescent, often aculeate; petiolules 5-13 mm. long, 1-3.5 mm. in diam., pubescent as petioles; leaflet blades chartaceous or subcoriaceous, densely pubescent with villose hairs, soon glabrescent especially on the upper surface, not ceriferous beneath; terminal leaflets rhomboid or subdeltoid, often broader than long, (5.5-) 14.5-20 cm. long, (5-) 15.5-23 cm. broad, usually acuminate to obtuse at apex, subtruncate to subcordate at base; costa often aculeate above or beneath, the secondaries 7-12 per side, occasionally aculeate;"
402	2010. Souza, H.N./Cardoso, I.M./Fernandes, J.M./Garcia, F.C.P./Bonfim, V.R./Santos, A.C./Carvalho, A.F./Mendonca, E.S.. Selection of native trees for intercropping with coffee in the Atlantic Rainforest biome. <i>Agroforestry Systems</i> . 80: 1–16.	[Allelopathic? No evidence] "Among the 22 main tree species intercropped with coffee (Table 3), the farmers listed four species (<i>Dalbergia nigra</i> , <i>Erythrina speciosa</i> , <i>Erythrina verna</i> and <i>S. macranthera</i>) and one genus (<i>Inga</i> spp.) of Leguminosae."
403	1939. Krukoff, B.A.. <i>Speciosae</i> . Brittonia. 3(2): 243-246.	[Parasitic? No] "Small tree armed with spines,..." [Fabaceae]
404	1994. Kass, D. L.. <i>Erythrina</i> species - pantropical multipurpose tree legumes. Pp 84-96 in Gutteridge, R.C. & Shelton, H.M. (eds). Forage tree legumes in tropical agriculture. CABI, Wallingford, UK	[Unpalatable to grazing animals? Unknown] "A brief account is given of the genus <i>Erythrina</i> , including botanical description, origins, environmental adaptation, establishment and cultivation, production and management, and utilization (shade and support trees, live fences, livestock forage, green manure, human food, medicinal uses, ornamental and wood)." ... "Ruminants find the foliage of the various <i>Erythrina</i> species used in Costa Rica more palatable than <i>G. sepium</i> ." [Several <i>Erythrina</i> species provide fodder for livestock, but unknown for <i>E. speciosa</i>]

405	1994. Kass, D. L.. Erythrina species - pantropical multipurpose tree legumes. Pp 84-96 in Gutteridge, R.C. & Shelton, H.M. (eds). Forage tree legumes in tropical agriculture. CABI, Wallingford, UK	[Toxic to animals? Unknown] "There has been considerable research on Erythrina species as livestock forage even though most species, with the apparent exception of <i>E. edulis</i> , have yielded alkaloids having curare-like poisoning action (Allen and Allen 1981, Payne 1991). However, these alkaloids appear to be more concentrated in the seeds and bark than in the leaves. In a study of alkaloid content of different clones of the species <i>E. berteroana</i> , <i>E. poeppigiana</i> and <i>E. costarricensis</i> , Payne (1991) identified the major alkaloid as b -erythroidine, a naturally derived drug used in the 1950s and 1960s as a neuromuscular blocking agent in surgery and electroshock treatments. Other biologically active alkaloids identified were a erythroidine, erybidine, erythraline, erysodine and oxo-b -erythroidine. There was a difference of more than two orders of magnitude in the b -erythroidine contents of the clones of the species tested, indicating at least partial genetic control of the alkaloid content. A feeding study performed with goats demonstrated that the b -erythroidine present in the foliage of Erythrina species is hydrogenated in the rumen and that these metabolites are detected in milk. Synthetic studies showed that the dihydroerythroidine isomers present in the milk and rumen samples were not the same isomers produced by catalytic hydrogenation. The toxicology of the rumen and milk derived compounds is therefore unknown (Payne 1991)." [No information on <i>E. speciosa</i>]
405	2010. Lollato, G./Scarmínio, I.S./Moreira, E.G.. Behavioral effects of aqueous and dichloromethane extracts of <i>Erythrina speciosa</i> Andrews, Fabaceae, leaves in mice. Brazilian Journal of Pharmacognosy. 20(6): 939-944.	[Toxic to animals? Possibly] "Erythrina speciosa Andrews, Fabaceae, is used in the South of Brazil as sedative and tranquilizers. In this study, behavioral effects of aqueous (AE) and dichloromethane (DCM) extracts of <i>E. speciosa</i> leaves were evaluated in male mice, as well as their lethal dose 50% (LD50)." ... "Regarding the acute toxicity of <i>E. speciosa</i> , the result obtained in this study suggests it as having low acute toxicity since the estimated LD50 was higher than 2000 mg/kg."
406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	1998. Riffle, R.L.. The Tropical Look - An Encyclopedia of Dramatic Landscape Plants. Timber Press, Portland, OR	[Causes allergies or is otherwise toxic to humans? No] No evidence
407	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Causes allergies or is otherwise toxic to humans? No] No evidence
408	2009. Medina, C.L./Sanches, M.C./Tucci, M.L.S./Sousa, C.A.F./Cuzzuol, G.R.F./Joly, C.A.. Erythrina speciosa (Leguminosae - Papilionoideae) under soil water saturation: morphophysiological and growth responses. Annals of Botany. 104: 671-680.	[Creates a fire hazard in natural ecosystems? No] "Erythrina speciosa, a neotropical tree species distributed throughout southern and south eastern Brazil (Krukoff, 1939; Lorenzi, 1992), is typical in fluvial forest and moist plains as well as in flooded-prone habitats, always in open and secondary formations." [No evidence, and unlikely given flood prone habitat]
409	1992. Engel, V.L./Poggiani, F.. Influence of shading on the growth of tropical tree species seedlings and its ecological and silvicultural implications. Piracicaba. (2): 10-19.	[Is a shade tolerant plant at some stage of its life cycle? Yes] "E. speciosa is able to survive in shade, but suffers a decrease in its stem diameter growth, what might reflect a poorer developed root system, and a decrease in its shoot dry weight."
409	2012. Lau, A./Frohlich, D.. Oahu Early Detection Botanists. Pers. Comm. 10 May 2012.	[Is a shade tolerant plant at some stage of its life cycle? Yes] "Growing in shade, flowering where open to canopy/sunlight."
410	2012. Plant This. Erythrina speciosa. http://plantthis.com/plant-information.asp?gardener=25640	[Tolerates a wide range of soil conditions ? Yes] "Soil: ordinary soil, enriched soil, mildly acidic to mildly alkaline" [Can tolerate both acidic and basic soils]
411	2012. Lau, A./Frohlich, D.. Oahu Early Detection Botanists. Pers. Comm. 10 May 2012.	[Climbing or smothering growth habit? No] "In one area it is somewhat thicket forming over stream. At least one resident of area controls the plant when in his yard, or perhaps in the roadway (arching, thorny stems)." [But may get leggy in shady settings]
412	2012. Lau, A./Frohlich, D.. Oahu Early Detection Botanists. Pers. Comm. 10 May 2012.	[Forms dense thickets? Yes] "In one area it is somewhat thicket forming over stream. At least one resident of area controls the plant when in his yard, or perhaps in the roadway (arching, thorny stems)."
501	2009. Medina, C.L./Sanches, M.C./Tucci, M.L.S./Sousa, C.A.F./Cuzzuol, G.R.F./Joly, C.A.. Erythrina speciosa (Leguminosae - Papilionoideae) under soil water saturation: morphophysiological and growth responses. Annals of Botany. 104: 671-680.	[Aquatic? No] "Background and Aims Erythrina speciosa is a Neotropical tree that grows mainly in moist habitats. To characterize the physiological, morphological and growth responses to soil water saturation, young plants of <i>E. speciosa</i> were subjected experimentally to soil flooding. " [A terrestrial species that tolerates flooding]
502	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	[Grass? No] Fabaceae

503	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	[Nitrogen fixing woody plant? Yes] Fabaceae
504	1939. Krukoff, B.A.. <i>Speciosae</i> . <i>Brittonia</i> . 3(2): 243-246.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Small tree armed with spines, leafy at anthesis; branchlets rather stout, usually aculeate; petioles (8-)14-26 (-38) cm. long, densely pubescent with villous deciduous hairs, soon glabrescent, often aculeate; petiolules 5-13 mm. long, 1-3.5 mm. in diam., pubescent as petioles; leaflet blades chartaceous or subcoriaceous, densely pubescent with villose hairs, soon glabrescent especially on the upper surface, not ceriferous beneath; terminal leaflets rhomboid or subdeltoid, often broader than long, (5.5-) 14.5-20 cm. long, (5-) 15.5-23 cm. broad, usually acuminate to obtuse at apex, subtruncate to subcordate at base; costa often aculeate above or beneath, the secondaries 7-12 per side, occasionally aculeate;"
601	2008. Ziffer Berger, J.. <i>Vascular Flora of the Babitonga Bay Region (Santa Catarina, Brazil): Diversity and Origins</i> . PhD. Dissertation.. University of Erlangen - Nürnberg, Erlangen, Germany	[Evidence of substantial reproductive failure in native habitat? No] " <i>Erythrina speciosa</i> Andrews: treelet or shrub; forest edge, mangrove periphery and still beaches; common; distribution: Atlantic forest from Minas Gerais to Santa Catarina" [No evidence. Common tree in native range]
602	2012. <i>Desert Tropicals</i> . Mulungu - <i>Erythrina speciosa</i> . Faucon, P., http://www.desert-tropicals.com/Plants/Fabaceae/Erythrina_speciosa.html	[Produces viable seed? Yes] "Propagation: Seeds, cuttings"
602	2012. <i>Flora of Australia Online</i> . <i>Erythrina speciosa</i> . Australian Biological Resources Study, http://www.anbg.gov.au/abrs/online-resources/flora/stddisplay.xsql?pnid=52642	[Produces viable seed? Yes] "Pods 15–30 cm long, not or only slightly constricted between seeds. Seeds ellipsoidal, c. 1 cm long, red. "
603	1997. Hanum, I.F./Van der Maesen, L.J.G. (eds.). <i>PROSEA : Plant Resources of South-East Asia 11, Auxiliary Plants</i> . Prosea Foundation, Bogor, Indonesia	[Hybridizes naturally? Possibly] "The species of <i>Erythrina</i> L. can, as far as is known, all be intercrossed to produce fertile hybrids."
604	1988. Neill, D.A.. <i>Experimental Studies on Species Relationships in Erythrina (Leguminosae: Papilionoideae)</i> . <i>Annals of the Missouri Botanical Garden</i> . 75(3): 886-969.	[Self-compatible or apomictic? Yes] " <i>Erythrina</i> species are self-compatible, but some inbreeding depression is associated with selfing...Self-incompatibility has previously been reported for seven species of <i>Erythrina</i> : <i>E. senegalensis</i> and <i>E. speciosa</i> (East, 1940); <i>E. crista galli</i> (Fryxell, 1957); <i>E. mitis</i> and <i>E. poeppigiana</i> (Arroyo, 1981); <i>E. leptorhiza</i> (Hernandez & Toledo, 1979); and <i>E. montana</i> (Hernandez, 1982). Only for <i>E. montana</i> was the assertion of self incompatibility supported by evidence from experimental self pollinations and outcrossing controls." [<i>E. speciosa</i> shown to be self-compatible]
604	2000. Vitali-Veigal, M.J./Machado, V.L.L.. <i>Flowering Visitors of Erythrina speciosa</i> Andr., Leguminosae. <i>Revista Brasileira de Zoologia</i> . 17(2): 369-383.	[Self-compatible or apomictic? Yes] " <i>E. speciosa</i> is Biocompatible, but xenogamy is the predominant system of reproduction."
605	2000. Vitali-Veigal, M.J./Machado, V.L.L.. <i>Flowering Visitors of Erythrina speciosa</i> Andr., Leguminosae. <i>Revista Brasileira de Zoologia</i> . 17(2): 369-383.	[Requires specialist pollinators? No] "In spite of <i>Erythrina</i> species exhibit morphologic attributes for adaptation to pollination by nectarivorous birds mentioned in the literature, <i>E. speciosa</i> is pollinated by lots of bees (Apinae and Meliponinae) which show a great urban occurrence. Systems of <i>E. speciosa</i> floral reproduction, phenology, diversity, frequency and constancy of insects visiting at different hours and flowering periods were studied. <i>E. speciosa</i> is Biocompatible, but xenogamy is the predominant system of reproduction. A large diversity of insects visiting the inflorescences was observed, with predominance of bees."
605	2006. Mendonça, L.B./dos Anjos, L.. <i>Feeding behavior of hummingbirds and perching birds on Erythrina speciosa</i> Andrews (Fabaceae) flowers in an urban area, Londrina, Paraná, Brazil. <i>Revista Brasileira de Zoologia</i> . 23(1): 42-49.	[Requires specialist pollinators? No] " <i>E. speciosa</i> seemed best suited for pollination by long-billed hummingbirds but some short to medium-billed species may play some role on its pollination." [Avifauna in Hawaiian Islands suited for such pollination]
606	1979. National Academy of Sciences. <i>Tropical Legumes: Resources for the Future</i> . NAS, Washington, D.C.	[Reproduction by vegetative fragmentation? Yes] "The plants are easy to propagate; branches stuck in the ground take root and grow vigorously."
606	2012. Lau, A./Frohlich, D.. <i>Oahu Early Detection Botanists</i> . <i>Pers. Comm.</i> 10 May 2012.	[Reproduction by vegetative fragmentation? Yes] "Plant tree-like, some stems growing upright to 8+ meters, others arching, sometimes trailing along ground though this was likely from trees falling over and sprouting new stems."

607	1992. Engel, V.L./Poggiani, F.. Influence of shading on the growth of tropical tree species seedlings and its ecological and silvicultural implications. Piracicaba. (2): 10-19.	[Minimum generative time (years)? Unknown] "E. speciosa is then adequate to open sky plantings, in degraded lands and in agroforestry systems. Its rapid growth and high rate of leaf renovation help the reestablishment of soil organic cover."
607	2012. Plant This. <i>Erythrina speciosa</i> . http://plantthis.com/plant-information.asp?gardener=25640	[Minimum generative time (years)? Unknown] "Growth rate: average"
701	2012. Flora of Australia Online. <i>Erythrina speciosa</i> . Australian Biological Resources Study, http://www.anbg.gov.au/abrs/online-resources/flora/stdtdisplay.xsql?pnid=52642	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "Pods 15–30 cm long, not or only slightly constricted between seeds. Seeds ellipsoidal, c. 1 cm long, red." [Pods & seeds lack means of external attachment, although green waste could be a method of inadvertent dispersal]
702	2006. Mendonça, L.B./dos Anjos, L.. Feeding behavior of hummingbirds and perching birds on <i>Erythrina speciosa</i> Andrews (Fabaceae) flowers in an urban area, Londrina, Paraná, Brazil. <i>Revista Brasileira de Zoologia</i> . 23(1): 42-49.	[Propagules dispersed intentionally by people? Yes] " <i>Erythrina speciosa</i> Andrews is naturally found in Brazil, being widely used as an ornamental species. Its red flowers attract many birds and insects"
703	1939. Krukoff, B.A.. <i>Speciosae</i> . <i>Brittonia</i> . 3(2): 243-246.	[Propagules likely to disperse as a produce contaminant? No] "seeded; seeds sooty with tawny markings, 11 13 mm. long and about 6 mm. broad" [Unlikely that such large seeds would ever become contaminants of produce]
704	1939. Krukoff, B.A.. <i>Speciosae</i> . <i>Brittonia</i> . 3(2): 243-246.	[Propagules adapted to wind dispersal? No] "fruit-pedicels about 1 cm. long and 2.5 mm. in diam.; pods subligneous, 18-31 cm. long, 1.2-1.6 cm. broad, not at all or shallowly constricted between seeds, with a stipe about 2 cm. long, with a stiff acumination 1-1.8 cm. long, many-seeded; seeds sooty with tawny markings, 11-13 mm. long and about 6 mm. broad"
705	2009. Medina, C.L./Sanches, M.C./Tucci, M.L.S./Sousa, C.A.F./Cuzzuol, G.R.F./Joly, C.A.. <i>Erythrina speciosa</i> (Leguminosae - Papilionoideae) under soil water saturation: morphophysiological and growth responses. <i>Annals of Botany</i> . 104: 671–680.	[Propagules water dispersed? Possibly] " <i>Erythrina speciosa</i> , a neotropical tree species distributed throughout southern and south eastern Brazil (Krukoff, 1939; Lorenzi, 1992), is typical in fluvial forest and moist plains as well as in flooded-prone habitats, always in open and secondary formations."
705	2012. Lau, A./Frohlich, D.. Oahu Early Detection Botanists. <i>Pers. Comm.</i> 10 May 2012.	[Propagules water dispersed? Potentially] "Found along stream in 3 areas, likely an escape from cultivation." [Pods, seeds or vegetative fragments possibly moved by water]
706	2010. Brancalion, P.H.S./Novembre, A.D.L.C./Rodrigues, R.R./Filho, J.M.. Dormancy as exaptation to protect mimetic seeds against deterioration before dispersal. <i>Annals of Botany</i> . 105: 991–998.	[Propagules bird dispersed? No] " <i>Erythrina speciosa</i> , a 'basal' species in its genus, which has monochromatic brown seeds and no mimetic displays." [Not fleshy-fruited]
707	2012. Flora of Australia Online. <i>Erythrina speciosa</i> . Australian Biological Resources Study, http://www.anbg.gov.au/abrs/online-resources/flora/stdtdisplay.xsql?pnid=52642	[Propagules dispersed by other animals (externally)? No] "Pods 15–30 cm long, not or only slightly constricted between seeds. Seeds ellipsoidal, c. 1 cm long, red." [No evidence. Unlikely, as pods and seeds lack means of external attachment]
708	2012. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	2012. Flora of Australia Online. <i>Erythrina speciosa</i> . Australian Biological Resources Study, http://www.anbg.gov.au/abrs/online-resources/flora/stdtdisplay.xsql?pnid=52642	[Prolific seed production (>1000/m ²)? No] "Shrubs or small trees to c. 4 m tall." ... "Pods 15–30 cm long, not or only slightly constricted between seeds. Seeds ellipsoidal, c. 1 cm long" [Unlikely. Relatively small tree with fairly large seeds]
802	1992. Engel, V.L./Poggiani, F.. Influence of shading on the growth of tropical tree species seedlings and its ecological and silvicultural implications. Piracicaba. (2): 10-19.	[Evidence that a persistent propagule bank is formed (>1 yr)? Yes] "By its characteristics of high seeds dormancy, high growth rates at full daylight and large proportion of water in its tissues, it is assumed that this species is adapted to grow in open lands belonging to later phases of secondary succession and approaching to pioneer plants..." [Hard-seeded legume with "high seed dormancy" assumed to produce a persistent propagule bank]
802	2008. Royal Botanic Gardens Kew. Seed Information Database (SID). Version 7.1. http://data.kew.org/sid/	[Evidence that a persistent propagule bank is formed (>1 yr)? Yes] "Storage Behaviour: Orthodox Storage Conditions: Long-term storage under IPGRI preferred conditions at RBG Kew, WP. Oldest collection 2 years" [<i>Erythrina</i> species have orthodox seeds]
802	2010. Brancalion, P.H.S./Novembre, A.D.L.C./Rodrigues, R.R./Filho, J.M.. Dormancy as exaptation to protect mimetic seeds against deterioration before dispersal. <i>Annals of Botany</i> . 105: 991–998.	[Evidence that a persistent propagule bank is formed (>1 yr)? Yes] "In addition to the present results obtained for <i>E. speciosa</i> , seed dormancy studies carried out with two species from this 'basal' clade, namely <i>E. crista-galli</i> (Silva et al., 2006) and <i>E. falcata</i> (Fowler and Bianchetti, 2000), indicated that these species have impermeable seed coats, suggesting this trait is a plesiomorphic, 'basal' character state in the genus <i>Erythrina</i> ."

803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information found on herbicide efficacy or chemical control for his species.
804	1979. National Academy of Sciences. Tropical Legumes: Resources for the Future. NAS, Washington, D.C.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Possibly] "The plants are easy to propagate; branches stuck in the ground take root and grow vigorously." [Ability for parts of plant to root suggest tree may be able to coppice or resprout after cutting]
805	2009. Messing, R.H./Noser, S./Hunkeler, J.. Using host plant relationships to help determine origins of the invasive <i>Erythrina</i> gall wasp, <i>Quadrastichus erythrinae</i> Kim (Hymenoptera: Eulophidae). <i>Biological Invasions</i> . 11: 2233–2241.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Possibly] "The <i>Erythrina</i> gall wasp has recently invaded a wide swath of Asian and Pacific countries, causing severe damage to several species of <i>Erythrina</i> trees. It poses an imminent threat to native <i>Erythrina</i> species in Latin America, Asia, Australia and the Pacific. While an African origin of the pest is presumed, it's exact home on the continent remains unknown. We examined host plant relationships of the wasp using 71 of the world's species of <i>Erythrina</i> that are planted in the botanical gardens of Hawaii. Observational and experimental data indicate that species endemic to Africa are more resistant to the wasp than those from other continents. Complete absence of galling on all <i>Erythrina</i> native to Benin, Burundi, Congo, Gambia, Lesoto, Rwanda, and Somalia make those countries highly unlikely to be the origin of the wasp. Mozambique, South Africa, Swaziland, and Zimbabwe were also shown to be unlikely sources. We present susceptibility indices of all 71 <i>Erythrina</i> species, including a number of economically useful trees, and we provide a warning for several species of conservation concern...We found a wide range of susceptibility to gall wasp damage among Latin America's native <i>Erythrina</i> species (Appendix 1)." [<i>Erythrina speciosa</i> listed among species damaged by EGW]

Summary of Risk Traits

High Risk / Undesirable Traits

- Naturalized in Norfolk Island and Hawaii (Oahu)
- Thrives in tropical climates
- Armed with spines
- Tolerates many soil conditions (and potentially able to exploit many different habitat types)
- Nitrogen-fixing (potential to alter soil nutrients in invaded habitat)
- Branch fragments can root; spreads vegetatively
- Possibly water-dispersed
- Hard seeds likely persist in seed bank

Low Risk / Desirable Traits

- Landscaping and ornamental value
- Large pods & seeds unlikely to be inadvertently dispersed