Key Words: High Risk, Naturalized, Environmental Weed, Ornamental Vine, Smothering, Wind-dispersed

Family: ***Plantaginaceae***

Taxon: ***Lophospermum erubescens***

Synonym: *Asarina erubescens (D. Don) Pennell*
Maurandya erubescens (D. Don) A. Gray
Maurandya scandens var. erubescens (D. Doı

Common Name: larger roving sailor
creeping gloxinia
Mexican twist

Questionaire : current 20090513 **Assessor:** Chuck Chimera **Designation:** H(HPWRA)
Status: Assessor Approved **Data Entry Person:** Chuck Chimera **WRA Score 10**

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)**	
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)**	**n**
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**	
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**	**n**

411	**Climbing or smothering growth habit**	**y=1, n=0**	**y**
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**	**y**
603	**Hybridizes naturally**	**y=1, n=-1**	**n**
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**	**n**
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**	
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**	**y**
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**	**n**
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**	**n**

Designation: H(HPWRA) **WRA Score** **10**

Supporting Data:

101	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Is the species highly domesticated? No evidence]
102	2012. WRA Specialist. Personal Communication.	NA
103	2012. WRA Specialist. Personal Communication.	NA
201	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Species suited to tropical or subtropical climate(s) 2-High] "Forest margins, roadcuts, and canyon walls in Quercus and Quercus-Liquidambar forests in the Sierra Madre Oriental of Mexico; 1000-2200 m." [High elevation tropics]
202	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Quality of climate match data 2-High]
203	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Broad climate suitability (environmental versatility)? Yes] "Lophospermum erubescens, however, does have a fairly large range; it occurs from Tamauli pas to west-central Veracruz in oak forests of the Sierra Madre Oriental." … "Forest margins, roadcuts, and canyon walls in Quer cus and Quercus Liquidambar forests in the Sierra Madre Oriental of Mexico; 1000-2200 m." [elevation range >1000 m]
203	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.	[Broad climate suitability (environmental versatility)? Yes] "200-1,440 m" [elevation range >1000 m]
203	2002. Iremonger, S.. A guide to plants in the Blue Mountains of Jamaica. University of the West Indies Press, Kingston, Jamaica	[Broad climate suitability (environmental versatility)? Yes] "Walls, rocky banks, and trailsides, 450 to 1740 m (1500 to 5700 ft). Introduced from Mexico and naturalized locally" [elevation range >1000 m]
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.	[Native or naturalized in regions with tropical or subtropical climates? Yes] "sparingly naturalized in dry forest, alien grassland, and shrubland, 200-1,440 m" [Hawai'i]
205	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Does the species have a history of repeated introductions outside its natural range? Yes] "Lophospermum erubescens, more than any other species in the Maurandy inae, has been widely cultivated in the New and Old Worlds."
205	2000. Liogier, A.H./ Martorell, L.F.. Flora of Puerto Rico and adjacent islands: a systematic synopsis. Second Edition Revised. La Editorial, UPR, San Juan, Puerto Rico	[Does the species have a history of repeated introductions outside its natural range? Yes] "Occasionally grown and escaped in Puerto Rico; a native to Mexico, introduced into Bermuda, Jamaica, Hawaii and elsewhere."
301	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Naturalized beyond native range? Yes] "There are many collections representing such material and notations suggesting its apparent naturalization in Colombia, Venezuela, Jamaica, and Hawaii."
301	1988. Webb, C. J./Sykes, W.R./Garnock-Jones, P.J.. Flora of New Zealand, Volume IV: Naturalised pteridophytes, gymnosperms, dicotyledons. Botany Division, DSIR, Christchurch, New Zealand http://FloraSeries.LandcareResearch.co.nz	[Naturalized beyond native range? Yes] "N.: apparently only wild on Rangitoto Id near Auckland. Thriving on almost soilless lava under trees for many years without increasing markedly; presumably an escape from cultivation."
301	1999. Starr, F./Martz, K./Loope, L.L.. New plant records from East Maui for 1998. Bishop Museum Occasional Papers. 59(2): 11-15.	[Naturalized beyond native range? Yes] "where it is widely cultivated and sometimes naturalized in dry forest, alien grassland, and shrubland. On Maui, a single population was found by Emil Lynch in Hipapa Gulch, Kula, Maui. This collection represents a new island record of this species from Maui. Material examined. MAUI: Makawao District, East Maui, Kaono'ulu, Kula, H papa Gulch, Emil Lynch collector, 3600 ft [1100 m], 4 Apr 1998, Starr & Martz 980404-22."
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 beyond native range? Yes] "sparingly naturalized in dry forest, alien grassland, and shrubland, 200-1,440 m" [Hawaii]
301	2000. Burger, W. (ed.). Flora Costaricensis - Family #193 Scrophulariaceae. Family #193a Schlegeliaceae. Family #194 Bignoniaceae. Family #195 Pedaliaceae. Family #196 Martyniaceae. Family #197 Orobanchaceae. Fieldiana: Botany. 41: 1-174.	[Naturalized beyond native range? Yes] "It has been collected as an escape at Monteverde, where it was flowering in January and September at ca. 1400 m, and north of San Isidro del General at 1500 m elevation, where it was flowering in April." [Costa Rica]

301	2002. Iremonger, S.. A guide to plants in the Blue Mountains of Jamaica. University of the West Indies Press, Kingston, Jamaica	[Naturalized beyond native range? Yes] "Walls, rocky banks, and trailsides, 450 to 1740 m (1500 to 5700 ft). Introduced from Mexico and naturalized locally."
301	2012. PlantNET. New South Wales flora online - Lophospermum erubescens D.Don [Accessed 18 Aug 2012]. Royal Botanic Gardens & Domain Trust,, Sydney http://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Lophospermum~erubescens	[Naturalized beyond native range? Yes] "Distribution and occurrence: Cultivated for its showy flowers, sometimes naturalized in moist sites; north from Taree district."
302	2001. Werren, G.. Environmental Weeds of the Wet Tropics Bioregion: Risk Assessment & Priority Ranking. Rainforest CRC, Cairns, Australia	[Garden/amenity/disturbance weed? A disturbance adapted weed with negative environmental impacts. See 3.04] "Rampant along road verges of Maalan circuit (Jensen, pers. comm.) and along the Beatrice (Small, pers. comm.)" [possibly a disturbance and roadside weed]
302	2007. Auckland Council. Pest plant - climbing gloxinia [Accessed 18 Aug 2012]. http://www.arc.govt.nz/environment/biosecurity/	[Garden/amenity/disturbance weed? See 3.04] "Open areas, grasslands, shrubland. Prefers rocky, sunny positions...Impact on environment Smothers host species...Control Site Management: Check stumps for regrowth. Recommended approaches: Cut & stump paint with Vigilant gel."
303	2007. Randall, R.P.. Global Compendium of Weeds - Lophospermum erubescens. http://www.hear.org/gcw/species/lophospermum_erubescens/	[Agricultural/forestry/horticultural weed? No evidence]
304	2007. Auckland Council. Pest plant - climbing gloxinia [Accessed 18 Aug 2012]. http://www.arc.govt.nz/environment/biosecurity/	[Environmental weed? Yes] "Open areas, grasslands, shrubland. Prefers rocky, sunny positions...Impact on environment - Smothers host species...Control Site Management: Check stumps for regrowth. Recommended approaches: Cut & stump paint with Vigilant gel."
304	2008. Howell, C.. Consolidated list of environmental weeds in New Zealand. Science & Technical Publishing Department of Conservation, Wellington, New Zealand	[Environmental weed? Yes] "Appendix 4. Species recorded as Environmental weeds for the first time" … "Lophospermum erubescens" … "Weedy on Great Barrier Island (Aotea Island)"
304	2009. Rubenstein, T./Berkowitz, P.. Three Mountain Alliance Weed Management Plan. http://www.hawaiistateassessment.info/library/tmaweedplanjune2009.pdf	[Environmental weed? Yes] "HAVO Weed Species Targeted For Management Action" [Lophospermum erubescens targeted for control in Hawaii Volcanoes National Park]
304	2012. Kaye, S.. Lophospermum erubescens at Pohakuloa Training Area. Unpublished Report.	[Environmental weed? Yes] "Lophospermum erubescens, or larger roving sailor, is known from three locations at PTA, all within Kipuka Alala (1800 m elevation, UTM: 217260, 2174078). The older site is 1.5 acres in size, and has been treated approximately every 6 months since its discovery. When this site was discovered, thick vines completely overtopped trees, smothering all vegetation below. Significant progress has been made in reducing the density of the population, so that the vegetation control crew typically sprays isolated plants on the ground or just beginning to creep upward. Due to the remote location (1.5 hour drive, plus 1.5 hour hike each way), dense vegetation, and relatively low priority of the species, there have not been adequate surveys beyond the edge of the main infestation to map its probable outward spread."
305	2007. Randall, R.P.. Global Compendium of Weeds - Index. http://www.hear.org/gcw/	[Congeneric weed? No evidence] No other Lophospermum spp. Listed as weeds
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.	[Produces spines, thorns or burrs? No] "Vines from a woody caudex. Leaves broadly deltate to cordate, blades 4.5-15.5 cm long, 4.5-15 cm wide, softly glandular pubescent, margins dentate to broadly cuneate, petioles 3 6.5 cm long. Flowers protogynous, peduncles 2-11.5 cm long; calyx 20-26 mm long, the lobes green and sometimes tinged purple, broadly ovate, connate at base, subequal, sparsely glandular pubescent, not enlarging in fruit; corolla pinkish red to red apically and white below, narrowly funnelform, the tube 48 63 mm long, the lobes subequal, 11-14 mm long, recurved, glandular pubescent externally; staminode vestigial; style 44-50 mm long. Capsules globose, symmetrical, 1.5 2 cm long"
402	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Allelopathic? No evidence of allelopathy in genus]
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.	[Parasitic? No] "Vines from a woody caudex. Leaves broadly deltate to cordate, blades 4.5 15.5 cm long, 4.5-15 cm wide, softly glandular pubescent, margins dentate to broadly cuneate, petioles 3-6.5 cm long." [Family: Plantaginaceae tribe: Antirrhineae. Also placed in: Scrophulariaceae Veronicaceae]
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]

405	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Toxic to animals? No evidence]
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No evidence]
406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Causes allergies or is otherwise toxic to humans? No evidence] "Lophospermum erubescens, more than any other species in the Maurandyinae, has been widely cultivated in the New and Old Worlds." [Widespread cultivation with no reports of poisoning, toxicity or allergies]
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 evidence]
408	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Creates a fire hazard in natural ecosystems? No evidence that this species increases fire hazards or is native to fire prone ecosystems]
408	2012. WRA Specialist. Personal Communication.	[Creates a fire hazard in natural ecosystems? No evidence] Could potentially act as a few ladder if dried vegetation persists in trees.
409	2001. Kirsten, K.. Gardening with Keith Kirsten. Struik Publishers, Cape Town, South Africa	[Is a shade tolerant plant at some stage of its life cycle? Possibly No] "Full sun"
409	2012. Dave's Gardern. PlantFiles: Creeping Gloxinia, Mexican Twist Lophospermum erubescens [Accessed 18 Aug 2012]. http://davesgarden.com/guides/pf/go/53769/	[Is a shade tolerant plant at some stage of its life cycle? Possibly Yes] "Sun Exposure: Sun to Partial Shade"
409	2012. Plant this. Lophospermum erubescens [Accessed 18 Aug 2012]. http://www.plantthis.com.au/plant-information.asp?gardener=17963	[Is a shade tolerant plant at some stage of its life cycle? Possibly No] "Sunlight: hot overhead sun"
409	2012. The Eden Index. Lophospermum Creepin Gloxinia - Lophospermum erubescens [Accessed 18 Aug 2012]. http://gardenplantsearch.org/Lophospermum-erubescens-2.htm	[Is a shade tolerant plant at some stage of its life cycle? Possibly Yes] "Sun: some shade tolerance"
410	2011. Brickell, C.. American Horticultural Society Encyclopedia of Plants and Flowers. DK, London / New York	[Tolerates a wide range of soil conditions? No] "Needs sun and moist but well-drained soil."
410	2012. Plant this. Lophospermum erubescens [Accessed 18 Aug 2012]. http://www.plantthis.com.au/plant-information.asp?gardener=17963	[Tolerates a wide range of soil conditions? No] "Soil Moisture: dry between watering to constantly moist. Soil: ordinary soil, sand, mildly acidic to mildly alkaline"
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.	[Climbing or smothering growth habit? Yes] "Vines from a woody caudex"
411	2000. Burger, W. (ed.). Flora Costaricensis - Family #193 Scrophulariaceae. Family #193a Schlegeliaceae. Family #194 Bignoniaceae. Family #195 Pedaliaceae. Family #196 Martyniaceae. Family #197 Orobanchaceae. Fieldiana: Botany. 41: 1-174.	[Climbing or smothering growth habit? Yes] "Lophospermum erubescens is characterized by its vining habit, twisted petioles, triangular and coarsely dentate leaf blades, broad sepals, and large, tubular, slightly asymmetric pink corollas. This species is native to the oak forests of the Sierra Madre Oriental of Mexico and is now commonly grown in gardens as a climbing ornamental."
411	2012. The Chairman and Councillors. Operations, Monitoring and Regulation Committee Meeting Agenda. 9 August 2012. Bay of Plenty Regional Council, http://www.boprc.govt.nz/media/220516/operations_monitoring_and_regulation_committee_meeting_agenda_-_9_aug	[Climbing or smothering growth habit? Yes] "Climbing gloxinia can grow over and smother host species which can significantly impact native biodiversity especially on forest margins."
412	2012. Kaye, S.. Lophospermum erubescens at Pohakuloa Training Area. Unpublished Report.	[Forms dense thickets? Yes] "Dense thickets were found in a remote part of Kipuka Alala in 2008. Site requires a 1.5 hour 4x4 drive from PTA main gate, followed by a 1.5 km hike. Former `elepaio nesting territory"

412	2012. Tropicos.org. Tropicos [Online Database]. Missouri Botanical Garden, http://www.tropicos.org/	[Forms dense thickets? Potentially Yes] "The seeds of the above interesting plant were obtained from specimens collected in thickets, near Jalapa, in September, 1829, by Messrs. Deppe & Schiede. "
501	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Aquatic? No] "Forest margins, roadcuts, and canyon walls in Quercus and Quercus-Liquidambar forests in the Sierra Madre Oriental of Mexico; 1000-2200 m."
502	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Grass? No] "Family: Plantaginaceae tribe: Antirrhineae. Also placed in: Scrophulariaceae Veronicaceae "
503	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Nitrogen fixing woody plant? No] "Family: Plantaginaceae tribe: Antirrhineae. Also placed in: Scrophulariaceae Veronicaceae "
504	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.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Vines from a woody caudex. Leaves broadly deltate to cordate, blades 4.5-15.5 cm long, 4.5-15 cm wide, softly glandular pubescent, margins dentate to broadly cuneate, petioles 3 6.5 cm long."
601	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Evidence of substantial reproductive failure in native habitat? No evidence]
602	2007. Smith, J.. A Complete Guide to Botany. Global Media, West Sussex, UK	[Produces viable seed? Yes] "Seedpod is round, inside the calyx. Seeds are small, papery, brown, Many seeds in a pod."
602	2012. Dave's Gardern. PlantFiles: Creeping Gloxinia, Mexican Twist Lophospermum erubescens [Accessed 18 Aug 2012]. http://davesgarden.com/guides/pf/go/53769/	[Produces viable seed? Yes] "Seed Collecting: Allow pods to dry on plant; break open to collect seeds"
602	2012. Kaye, S.. Lophospermum erubescens at Pohakuloa Training Area. Unpublished Report.	[Produces viable seed? Yes] "Light weight seeds with wings are adapted to spread moderate distances via wind. April 2008"
603	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Hybridizes naturally? No] "All the taxa are 2n = 24, and there is little morphological or cytological evidence to suggest natural interspecific hybridization."
604	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Self-compatible or apomictic Yes] "As demonstrated in Table 2, all 17 species that have been cultivated in glass houses exhibit self-compatibility" [Table 2 includes Lophospermum erubescens]
605	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Requires specialist pollinators? No. Although adapted for hummingbird pollination, this species sets seed and does not require pollination by birds] "There is little correlation of mean seed number with generic delimitation, seed morphology, habitat, or pollination syndrome. For example, the circum alate-tumid-tuberculate/cristate seeded L. atrosanguineum, L. erubescens, and L. purpusii have floral morphologies characteristic of ornithophily and occur in montane cloud-forest, seasonably dry oak, and tropical deciduous forests, respectively. The mean seed numbers resulting from self-pollinations range from 86 to 553. Further work is required before postulations." … "the sturdy, long-tubed (48-63 mm), open-throated, stereomorphic red corollas of Lophospermum erubescens are adapted to hummingbird pollination. Field studies have confirmed these observations." … "the sturdy, long-tubed (48-63 mm), open-throated, stereomorphic red corollas of Lophospermum erubescens are adapted to hummingbird pollination. Field studies have confirmed these observations."
605	2012. Dave's Gardern. PlantFiles: Creeping Gloxinia, Mexican Twist Lophospermum erubescens [Accessed 18 Aug 2012]. http://davesgarden.com/guides/pf/go/53769/	[Requires specialist pollinators? No] "This plant is attractive to bees, butterflies and/or birds"
605	2012. Kaye, S.. Lophospermum erubescens at Pohakuloa Training Area. Unpublished Report.	[Requires specialist pollinators? No] "Pollinators appear to be present." [Photograph of honeybees vesting flowers]
606	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Reproduction by vegetative fragmentation? No evidence]
607	2012. Kwantlen Polytechnic University School of Horticutlure. Plant Database Details of...Lophospermum erubescens [Accessed 18 Aug 2012]. https://plantdatabase.kwantlen.ca/plant/plantDetail/1196	[Minimum generative time (years)? 1] "Annual, Vine or climber...Growth Rate: Fast"

607	2012. Shoot Gardening. Lophospermum erubescens 'Eden Project' (Climbing snapdragon) [Accessed 18 Aug 2012]. http://www.shootgardening.co.uk/plant/lophospermum-erubescens-eden-project	[Minimum generative time (years)? Annual or >2] "2-5 years to maturity"
701	2001. Werren, G.. Environmental Weeds of the Wet Tropics Bioregion: Risk Assessment & Priority Ranking. Rainforest CRC, Cairns, Australia	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Possibly] "Rampant along road verges of Maalan circuit (Jensen, pers. comm.) and along the Beatrice (Small, pers. comm.)"
701	2010. New Zealand Plant Conservation Network. Flora Details - Lophospermum erubescens [Accessed 18 Aug 2012]. http://www.nzpcn.org.nz/flora_details.asp?ID=3445	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? Possibly] "Capsule to about 15 mm diameter, contains numerous small winged seeds...Dispersal : People, wind" [Possible that small seeds may be inadvertently dispersed, although they possess no means of external attachment]
702	1985. Elisens, W.J.. Monograph of the Maurandyinae (Scrophulariaceae - Antirrhineae). Systemic Botany Monographs. 5: 1-97.	[Propagules dispersed intentionally by people? Yes] "Lophospermum erubescens, more than any other species in the Maurandyinae, has been widely cultivated in the New and Old Worlds" [ornamental]
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No evidence that this plant is grown with produce or otherwise has become a seed contaminant of other commercial crops or plants]
704	2004. Kadereit, J.W.. Flowering plants, dicotyledons: Lamiales (except Acanthaceae including Avicenniaceae). Springer-Verlag, New York, NY	[Propagules adapted to wind dispersal? Yes] "Seed dispersal is usually effected by wind shaking the mature capsules that are open only when dry."
704	2007. Smith, J.. A Complete Guide to Botany. Global Media, West Sussex, UK	[Propagules adapted to wind dispersal? Yes] "Seedpod is round, inside the calyx. Seeds are small, papery, brown, Many seeds in a pod."
704	2010. New Zealand Plant Conservation Network. Flora Details - Lophospermum erubescens [Accessed 18 Aug 2012]. http://www.nzpcn.org.nz/flora_details.asp?ID=3445	[Propagules adapted to wind dispersal? Yes] "Capsule to about 15 mm diameter, contains numerous small winged seeds...Dispersal : People, wind"
705	2004. Kadereit, J.W.. Flowering plants, dicotyledons: Lamiales (except Acanthaceae including Avicenniaceae). Springer-Verlag, New York, NY	[Propagules water dispersed? Unknown] "Seed dispersal is usually effected by wind shaking the mature capsules that are open only when dry." [Small seeds may be moved by overland water flow, but adaptations are for wind dispersal]
706	2007. Smith, J.. A Complete Guide to Botany. Global Media, West Sussex, UK	[Propagules bird dispersed? No] "Seedpod is round, inside the calyx. Seeds are small, papery, brown, Many seeds in a pod."
706	2010. New Zealand Plant Conservation Network. Flora Details - Lophospermum erubescens [Accessed 18 Aug 2012]. http://www.nzpcn.org.nz/flora_details.asp?ID=3445	[Propagules bird dispersed? No] "Capsule to about 15 mm diameter, contains numerous small winged seeds...Dispersal : People, wind"
707	2004. Kadereit, J.W.. Flowering plants, dicotyledons: Lamiales (except Acanthaceae including Avicenniaceae). Springer-Verlag, New York, NY	[Propagules dispersed by other animals (externally)? No] "Seed dispersal is usually effected by wind shaking the mature capsules that are open only when dry." [Although possible that small seeds may become caught in hair or mud on hooves or feet, this plant is primarily adapted for wind dispersal]
708	2007. Smith, J.. A Complete Guide to Botany. Global Media, West Sussex, UK	[Propagules survive passage through the gut? No] "Seedpod is round, inside the calyx. Seeds are small, papery, brown, Many seeds in a pod."[No evidence that seeds are consumed by animals and unlikely that small, wind-dispersed seeds would survive passage through the digestive tract]
801	2007. Smith, J.. A Complete Guide to Botany. Global Media, West Sussex, UK	[Prolific seed production (>1000/m2)? Unknown] "Seedpod is round, inside the calyx. Seeds are small, papery, brown, Many seeds in a pod."
801	2010. New Zealand Plant Conservation Network. Flora Details - Lophospermum erubescens [Accessed 18 Aug 2012]. http://www.nzpcn.org.nz/flora_details.asp?ID=3445	[Prolific seed production (>1000/m2)? Unknown] "Capsule to about 15 mm diameter, contains numerous small winged seeds."
801	2012. Roseland House Garden & Nursery. Lophospermum erubescens. [Accessed 18 Aug 2012]. http://www.roselandhouse.co.uk/climbers/lophospermum%20erubescens.htm#lophospermum	[Prolific seed production (>1000/m2)? Possibly] "Its a useful climber in that its easy to raise from seed (which it produces in copious quantities)…"

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)? No storage information available]
802	2012. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2007. Auckland Council. Pest plant - climbing gloxinia [Accessed 18 Aug 2012]. http://www.arc.govt.nz/environment/biosecurity/	[Well controlled by herbicides? Unknown] "Cut & stump paint with Vigilant gel." [no information on success of herbicide treatments]
803	2012. Kaye, S.. Lophospermum erubescens at Pohakuloa Training Area. Unpublished Report.	[Well controlled by herbicides? Possibly Yes] "Cut and drip treatment of woody lianas using Garlon 3A was rather effective!" … "Significant regrowth or plants that were missed? (Same view as photo #1). June, 2008" … "Most plants are about this size in 2012. New satellite population found 2 km away. Crews now apply a foliar spray of Garlon 4 (0.5%) and Roundup (1.3%), with mixed results, probably weather dependent. Garlon 3A deemed too hazardous." [Photgraphic documentation show substantial dieback of treated plants followed by resprouting.]
803	2012. The Chairman and Councillors. Operations, Monitoring and Regulation Committee Meeting Agenda. 9 August 2012. Bay of Plenty Regional Council, http://www.boprc.govt.nz/media/220516/operations_monitoring_and_regulation_committee_meeting_agenda_-_9_aug	[Well controlled by herbicides? Unknown] "Management plans for known sites are in development. Control has been undertaken on minor infestations using glyphosate and to contain the major infestation in Te Puke a mixture of manual removal and glyphosate is being trialed. A site management plan is in development for the continuing control at the Te Puke site." [Effectiveness of treatments not specified]
804	2007. Auckland Council. Pest plant - climbing gloxinia [Accessed 18 Aug 2012]. http://www.arc.govt.nz/environment/biosecurity/	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "Check stumps for regrowth. Recommended approaches: Cut & stump paint with Vigilant gel." [will resprout after cutting without herbicide treatment]
804	2012. Roseland House Garden & Nursery. Lophospermum erubescens. [Accessed 18 Aug 2012]. http://www.roselandhouse.co.uk/climbers/lophospermum%20erubescens.htm#lophospermum	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] "The plant itself climbs to about 10' using its leaf stems to attach, it has a tuberous root system to which it dies back in winter. "
805	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.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? No] "sparingly naturalized in dry forest, alien grassland, and shrubland, 200-1,440 m"[successfully reproducing in Hawaiian Islands without any apparent enemies]

Summary of Risk Traits

High Risk / Undesirable Traits

- Naturalized in Hawaiian Islands, New Zealand, Australia, Jamaica, Costa Rica and possible elsewhere
- Thrives in tropical climates
- Environmentally versatile [grows in a range of elevation >1000 m]
- Environmental weed that smothers other vegetation and forms dense thickets
- Self-compatible
- Produces numerous, wind-dispersed seeds
- May resprout after cutting or after cold season dieback

Low Risk / Desirable Traits

- Unarmed (no spines, thorns or burrs)
- Non-toxic
- Landscaping and ornamental value