Keywords: Evaluate, Tropical, Herbaceous, Climbing Habitat, Wind-dispersed

Family: ***Begoniaceae***

Taxon: ***Begonia glabra***

Synonym: *Begonia scandens Sw.*
Begonia elliptica HBK.

Common Name: trailing begonia

Questionaire : current 20090513 **Assessor:** Assessor **Designation:** EVALUATE
Status: Assessor Approved **Data Entry Person:** Assessor **WRA Score** 5

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**	**?**
301	**Naturalized beyond native range**	**y = 1*multiplier (see Appendix 2), n= question 205**	**n**
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)**	**n**
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**	**y**

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	y
603	Hybridizes naturally	y=1, n=-1	
604	Self-compatible or apomictic	y=1, n=-1	
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation	y=1, n=-1	
607	Minimum generative time (years)	1 year = 1, 2 or 3 years = 0, 4+ years = -1	1
701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	y=1, n=-1	n
702	Propagules dispersed intentionally by people	y=1, n=-1	y
703	Propagules likely to disperse as a produce contaminant	y=1, n=-1	n
704	Propagules adapted to wind dispersal	y=1, n=-1	y
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	
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: EVALUATE **WRA Score** 5

Supporting Data:

101	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Is the species highly domesticated? No] No evidence
102	2013. WRA Specialist. Personal Communication.	NA
103	2013. WRA Specialist. Personal Communication.	NA
201	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Species suited to tropical or subtropical climate(s) 2-High] "Southern Mexico and the West Indies to Guiana, Bolivia and Peru."
202	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Quality of climate match data 2-High]
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] "Damp shade woodland, on trees and rocks, 300 to 1,400 m (1,000 to 4,600 ft.)." [Environmental versatility - elevation range exceeds 1000 m]
204	1937. Standley, P.C./Dahlgren, B.E.. Flora of Costa Rica - Vol. 18 - Part II. Fieldiana. 18: 1-780.	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Widely distributed in tropical America."
204	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Native or naturalized in regions with tropical or subtropical climates? Yes] "Southern Mexico and the West Indies to Guiana, Bolivia and Peru."
205	2007. Randall, R.P.. The introduced flora of Australia and its weed status. CRC for Australian Weed Management, Glen Osmond, Australia	[Does the species have a history of repeated introductions outside its natural range? Australia]
205	2013. WRA Specialist. Personal Communication.	[Does the species have a history of repeated introductions outside its natural range? Unknown] Sold commercially, but frequency of introduction outside native range not known
301	2007. Randall, R.P.. The introduced flora of Australia and its weed status. CRC for Australian Weed Management, Glen Osmond, Australia	[Naturalized beyond native range? No evidence from Australia]
301	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Naturalized beyond native range? No evidence]
302	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Garden/amenity/disturbance weed? No] No evidence
303	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Agricultural/forestry/horticultural weed? No] No evidence
304	2012. Randall, R.P.. A Global Compendium of Weeds. 2nd Edition. Department of Agriculture and Food, Western Australia	[Environmental weed? No] No evidence
305	2001. Strahm, W.. Invasive species in Mauritius: examining the past and charting the future. Pp. 325-348 in Sandlund et al. (eds.). Invasive Species and Biodiversity Management. Kluwer Academic Publishers, Norwell, MA	[Congeneric weed? Yes] "Table 22.5. Other invasive and naturalized species in the Mascarenes" [Begonia cucullata listed as invasive in Reunion]
305	2006. Baret, S./Rouget, M./Richardson, D.M./Lavergne, C./Egoh, B./Dupont, J./Strasberg, D.. Current distribution and potential extent of the most invasive alien plant species on La Réunion (Indian Ocean, Mascarene islands). Austral Ecology. 31: 47–758.	[Congeneric weed? Yes] "Appendix I: List of the 46 most widespread invasive alien plants (sensu Richardson et al. 2000) on La Réunion" [list includes Begonia cucullata]
305	2009. Center for Aquatic and Invasive Plants. Wax begonia - Begonia cucullata. University of Florida, http://plants.ifas.ufl.edu/node/65	[Congeneric weed? Yes] "Wax begonia has been found in Florida, particularly from the northern and central peninsula west to central panhandle and also in Georgia. Begonias will invade disturbed areas such as roadsides, harvested forests, old fields, overgrazed pastures, and waste places. Because begonias are such prolific seed producers, seeds are thought to be the primary mechanism of dispersal. Begonias can also root very easily, but this mechanism of reproduction may not play a major role under natural conditions."

401	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Produces spines, thorns or burrs? No] "Succulent herb to 9 m. high. Stem scandent, rooting at the nodes, glabrous. Leaves nearly symmetrical, broadly ovate, 4-15 cm. long, short-acuminate, rounded or barely cordate at base, sparsely serrate and ciliate to entire, often undulate, glabrous, petioles 1-8 cm. long, stipules persistent, ovate-oblong, mucronate, entire, 10-24 mm. long, membranaceous, red-brown"
402	2013. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Parasitic? No] Begoniaceae
404	2013. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]
405	2008. Wagstaff, D.J.. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	[Toxic to animals? No] No evidence
406	2013. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2008. Ramírez-Amezcua Y.. Flora del Bajío y Regiones Adyacentes Fascículo 159 Begoniaceae. http://www1.inecol.edu.mx/publicaciones/resumeness/FLOBA/Flora159.pdf	[Causes allergies or is otherwise toxic to humans? No evidence] "USOS tiene uso ornamental y en algunas regiones son comestibles la parte que se consume son las hojas que sustituyen al tomate en las salsas, también se puede comer crudo los tallos en ensaladas." [Translation: "USES. It has ornamental use and in some regions the edible portions that are consumed are the leaves that replace tomato sauces; also stems can be eaten raw in salads.]
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	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Creates a fire hazard in natural ecosystems? No] "Succulent herb to 9 m. High" [Unlikely that a succulent herb would burn or increase fire risk]
408	2002. Iremonger, S.. A guide to plants in the Blue Mountains of Jamaica. University of the West Indies Press, Kingston, Jamaica	[Creates a fire hazard in natural ecosystems? No] "Damp shade woodland, on trees and rocks, 300 to 1,400 m (1,000 to 4,600 ft.)." [Unlikely given damp habitat]
408	2008. Gargiullo, M.B./Magnuson, B.L/Kimball, L.D.. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	[Creates a fire hazard in natural ecosystems? No] "Succulent epiphytic vine to 4 m or more…" … "Habitat: Wet and very wet forests." [Unlikely given growth form and wet habitat]
409	2002. Iremonger, S.. A guide to plants in the Blue Mountains of Jamaica. University of the West Indies Press, Kingston, Jamaica	[Is a shade tolerant plant at some stage of its life cycle? Yes] "Damp shade woodland, on trees and rocks, 300 to 1,400 m (1,000 to 4,600 ft.). Native, also in Continental America and other Caribbean islands."
410	2013. Learn 2 Grow. Begonia glabra. http://www.learn2grow.com/plants/begonia-glabra/ [Accessed 26 June 2013]	[Tolerates a wide range of soil conditions? Yes] "Soil pH - Acidic, Neutral, Alkaline Soil type - Clay, Loam, Sand"
411	1931. Standley, P.C./Dahlgren, B.E.. Flora of the Lancetilla Valley, Honduras. Fieldiana. Botany Series. 10: 1-418.	[Climbing or smothering growth habit? Yes] "It is in such swamps as these that one comes upon Begonia glabra, a widespread species, but always interesting because of its vine habit, the succulent stems adhering tightly to tree trunks by their myriads of rootlets."
411	1985. Kelly, D.L.. Epiphytes and Climbers of a Jamaican Rain Forest: Vertical Distribution, Life Forms and Life Histories. Journal of Biogeography. 12(3): 223-241.	[Climbing or smothering growth habit? Yes] "Appendix 2" … "Begonia glabra … Life form: R = root- climbing form" [Can grow epiphytically]
411	2002. Iremonger, S.. A guide to plants in the Blue Mountains of Jamaica. University of the West Indies Press, Kingston, Jamaica	[Climbing or smothering growth habit? Yes] "Shrubby climber, rooting at nodes."
412	1937. Standley, P.C./Dahlgren, B.E.. Flora of Costa Rica - Vol. 18 - Part II. Fieldiana. 18: 1-780.	[Forms dense thickets? No] "Frequent in forests of the Atlantic tierra caliente" … "Plants scandent, the stems adherent by roots to tree trunks,…"
412	2002. Iremonger, S.. A guide to plants in the Blue Mountains of Jamaica. University of the West Indies Press, Kingston, Jamaica	[Forms dense thickets? No] "Shrubby climber, rooting at nodes." [No evidence. A climber]
501	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Aquatic? No] Terrestrial

502	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Grass? No] Begoniaceae
503	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Nitrogen fixing woody plant? No] Begoniaceae
504	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] "Succulent herb to 9 m. high. Stem scandent, rooting at the nodes, glabrous. Leaves nearly symmetrical, broadly ovate, 4-15 cm. long, short-acuminate, rounded or barely cordate at base, sparsely serrate and ciliate to entire, often undulate, glabrous, petioles 1-8 cm. long, stipules persistent, ovate-oblong, mucronate, entire, 10-24 mm. long, membranaceous, red-brown"
601	1985. Kelly, D.L.. Epiphytes and Climbers of a Jamaican Rain Forest: Vertical Distribution, Life Forms and Life Histories. Journal of Biogeography. 12(3): 223-241.	[Evidence of substantial reproductive failure in native habitat? No] No evidence
601	2008. Gargiullo, M.B./Magnuson, B.L/Kimball, L.D.. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	[Evidence of substantial reproductive failure in native habitat? No] No evidence
602	1985. Kelly, D.L.. Epiphytes and Climbers of a Jamaican Rain Forest: Vertical Distribution, Life Forms and Life Histories. Journal of Biogeography. 12(3): 223-241.	[Produces viable seed? Yes] "Appendix 2" … "Diaspore type: 1 = diaspore dust-like, adapted for wind dispersal"
602	2008. Gargiullo, M.B./Magnuson, B.L/Kimball, L.D.. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	[Produces viable seed? Yes] "seeds tiny, numerous"
602	2013. Dave's Garden. PlantFiles: Trailing Begonia, Begonia glabra. http://davesgarden.com/guides/pf/go/169829/ [Accessed 26 June 2013]	[Produces viable seed? Yes] "Seed Collecting: Allow seedheads to dry on plants; remove and collect seeds"
603	2000. Peng, C.I./Sue, C.Y.. Begonia xtaipeiensis (Begoniaceae), a new natural hybrid in Taiwan. Botanical Bulletin of Academia Sinica. 41: 151-158.	[Hybridizes naturally? Unknown. Natural hybridization documented within genus] "Abstract. A new natural hybrid of Begonia, B. ×taipeiensis, from northern Taiwan is described and illustrated. It grows on moist, rocky slopes on forest margins at 200-500 m elevation. Based on a comparison of morphology, geographical distribution, pollen stainability, seed set, cytological observations, and experimental crosses, we conclude that B. ×taipeiensis represents F1 progeny from natural hybridization between B. formosana (Hayata) Masam. [sect. Platycentrum (Klotzsch) A. DC.] and B. aptera Blume [sect. Sphenanthera (Hassk.) Warb.]."
604	1994. Zomlefer, W.B.. Guide to Flowering Plant Families. The University of North Carolina Press, Chapel Hill & London	[Self-compatible or apomictic? Unknown] "Cross-pollination is reinforced by the earlier development of the staminate flowers in the cyme" [Family characteristics. Self-compatibility in Begonia glabra unknown]
605	2010. Thomas, D.C.. Phylogenetics and historical biogeography of Southeast Asian Begonia L. (Begoniaceae). PhD Diss. University of Glasgow, Glasgow, Scotland	[Requires specialist pollinators? No. Insect or wind-pollinated] "Most Begonias seem to be zoophilous and pollinated by generalist insect pollinators. Stingless bees (Trigona species), honey bees (Apis cerana) and bumble bees (Bombus ephippiatus) have been reported as flower visitors and likely pollinators in Begonia (Ågren and Schemske, 1991; Burt-Utley, 1985; Hughes and Hollingsworth, 2008; Kiew, 2005; Schemske et al., 1996)." … "Moreover, Hughes (2002) suggested that some species which grow in wind exposed habitats and exhibit large inflorescences which produce copious amounts of pollen may be wind pollinated (e.g. Begonia glabra Aubl.)."
606	1985. Kelly, D.L.. Epiphytes and Climbers of a Jamaican Rain Forest: Vertical Distribution, Life Forms and Life Histories. Journal of Biogeography. 12(3): 223-241.	[Reproduction by vegetative fragmentation? Unknown] "Shrubby climber, rooting at nodes." [Ability to root at nodes suggests plant fragments could be spread vegetatively]
607	2013. Georgia Vines. Begonia glabra, Begonia scandens, 15 seeds. http://www.georgiavines.com/cart/index.php?main_page=product_info&cPath=9_21&products_id=1779 [Accessed 26 June 2013]	[Minimum generative time (years)? 1+] "Seeds of Begonia glabra Trailing begonia. From the Amazon, a pendant species with 2 inch glossy green leaves growing 12 to 24 inches. A tropical variety hardy in zones 10 to 11. Grow as an annual in other zones." [Ability to grow as an annual suggests plants will flower in under one year]
701	2008. Gargiullo, M.B./Magnuson, B.L/Kimball, L.D.. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] "seeds tiny, numerous." [No evidence of unintentional dispersal, and no apparent means of external attachment, although small seed size could make inadvertent transport possible]

702	2013. Georgia Vines. Begonia glabra, Begonia scandens, 15 seeds. http://www.georgiavines.com/cart/index.php?main_page=product_info&cPath=9_21&products_id=1779 [Accessed 26 June 2013]	[Propagules dispersed intentionally by people? Yes] [Sold and distributed as an ornamental
703	2008. Gargiullo, M.B./Magnuson, B.L/Kimball, L.D.. A Field Guide to Plants of Costa Rica. Oxford University Press US, New York, NY	[Propagules likely to disperse as a produce contaminant? No] "seeds tiny, numerous." [small-seeded, but no evidence that these are grown with produce]
704	1985. Kelly, D.L.. Epiphytes and Climbers of a Jamaican Rain Forest: Vertical Distribution, Life Forms and Life Histories. Journal of Biogeography. 12(3): 223-241.	[Propagules adapted to wind dispersal? Yes] "Appendix 2" … "Diaspore type: 1 = diaspore dust-like, adapted for wind dispersal"
705	1940. Yuncker, T. G.. Flora of the Aguan valley and the coastal regions near La Ceiba, Honduras. Fieldiana. Botany. 9(4): 1-346.	[Propagules water dispersed? Possibly] "In deep forest along the Danto River on the slopes of Mt. Cangrejal, at 360 meters." [Distribution along river suggests possible movement by water]
706	1958. Anonymous. Flora of Panama. Part VII. Fascicle I. Annals of the Missouri Botanical Garden. 45(1): 1-91.	[Propagules bird dispersed? No] "Capsule 6-9 mm. long, largest wing oblong to triangular, 10-14 mm. wide, the other two marginiform, very narrow." [No evidence, and not fleshy fruited]
706	1985. Kelly, D.L.. Epiphytes and Climbers of a Jamaican Rain Forest: Vertical Distribution, Life Forms and Life Histories. Journal of Biogeography. 12(3): 223-241.	[Propagules bird dispersed? No] "Appendix 2" … "Diaspore type: 1 = diaspore dust-like, adapted for wind dispersal"
707	1999. de Lange, A./Bournan, E.. Seed Micromorphology of Neotropical Begonias. Smithsonian Contributions to Botany. 90: .	[Propagules dispersed by other animals (externally)? No] "Seed dispersal of the Neotropical begonias, and most probably that of the Asian ones, distinctly differs from seed dispersal in African begonias. In the Neotropical begonias wind dispersal is predominant, and alternative types of dispersal are restricted to a limited number of sections. In Africa only about one fifth of the Begonia species are wind dispersed, almost two fifths are animal-dispersed, and over two-fifths are dispersed by a combination of rain-wash and epizoochory (de Lange and Bouman, 1992)." [No apparent means of animal dispersal or external attachment in Begonia glabra, a neotropical species]
708	2013. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	1985. Young, K.R.. Deeply Buried Seeds in a Tropical Wet Forest in Costa Rica. Biotropica. 17(4): 336-338.	[Prolific seed production (>1000/m2)? No evidence from this study] "TABLE 1. Seeds in the soil of the Florencia Norte forest near Turrialba, Costa Rica, in August 1982. Density is mean number of seeds/m2 (SE) and is based on six pooled samples, Frequency is the number of samples out of six that contained seed of the taxa." [Begonia glabra = 15 seeds/m2]
802	1985. Young, K.R.. Deeply Buried Seeds in a Tropical Wet Forest in Costa Rica. Biotropica. 17(4): 336-338.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown] No information found on seed bank longevity
803	2013. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown] No information on herbicide efficacy or chemical control of this species
804	1941. Macbride, J.F.. Flora of Peru, Part IV. No. 1. Fieldiana. Botany Series. 13: 1-566.	[Tolerates, or benefits from, mutilation, cultivation, or fire? Possibly] "Stem scandent, rooting at the nodes, glabrous" [May be able to tolerate mutilation, or cutting into pieces, if able to root at nodes]
805	2013. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

High Risk / Undesirable Traits

- Thrives in tropical climates
- Elevational distribution exceeds 1000 m within native range
- Other Begonia species have become invasive
- Climbing habit
- Shade tolerant
- Tiny wind-dispersed seeds
- Roots at nodes & may be able to spread vegetatively

Low Risk / Desirable Traits

- No reports of naturalization or invasiveness to date
- Unarmed (no spines, thorns or burrs)
- Non-toxic
- Ornamental value