

Taxon: <i>Epidendrum nocturnum</i> Jacq.	Family: Orchidaceae
Common Name(s): night fragrant epidendrum night scented orchid night-smelling epidendrum	Synonym(s): <i>Amphiglottis nocturna</i> (Jacq.) Britton <i>Auliza nocturna</i> (Jacq.) Small <i>Epidendrum bahiense</i> Rchb.f. <i>Epidendrum carolinianum</i> Lam. <i>Epidendrum discolor</i> A.Rich. & <i>Epidendrum leucarachne</i> Schltr.

Assessor: Chuck Chimera	Status: Assessor Approved	End Date: 31 Aug 2018
WRA Score: 4.0	Designation: L	Rating: Low Risk

Keywords: Epiphytic, Naturalized, Fragrant, Self-fertile, Wind-Dispersed

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
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	?
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed	n=0, y = 1*multiplier (see Appendix 2)	n
303	Agricultural/forestry/horticultural weed	n=0, y = 2*multiplier (see Appendix 2)	n
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	n
305	Congeneric weed		
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals		
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens		

Qsn #	Question	Answer Option	Answer
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)		
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	y
603	Hybridizes naturally		
604	Self-compatible or apomictic	y=1, n=-1	y
605	Requires specialist pollinators	y=-1, n=0	n
606	Reproduction by vegetative fragmentation		
607	Minimum generative time (years)		
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		
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	y
802	Evidence that a persistent propagule bank is formed (>1 yr)		
803	Well controlled by herbicides		
804	Tolerates, or benefits from, mutilation, cultivation, or fire		
805	Effective natural enemies present locally (e.g. introduced biocontrol agents)		

Supporting Data:

Qsn #	Question	Answer
101	Is the species highly domesticated?	n
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	[No evidence of domestication] "Epidendrum nocturnum is widespread and common throughout the tropical regions of the Western Hemisphere."

102	Has the species become naturalized where grown?	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	NA

103	Does the species have weedy races?	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	NA

201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 28 Aug 2018]	"Native Northern America SOUTHEASTERN U.S.A.: United States [Florida (s.)] NORTHERN MEXICO: Mexico [San Luis Potosi] SOUTHERN MEXICO: Mexico [Campeche, Chiapas, Tabasco] Southern America CARIBBEAN: Bahamas, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Jamaica, Martinique, Puerto Rico, St. Vincent and Grenadines CENTRAL AMERICA: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama NORTHERN SOUTH AMERICA: French Guiana, Guyana, Suriname, Venezuela BRAZIL: Brazil WESTERN SOUTH AMERICA: Bolivia, Colombia, Ecuador, Peru"

202	Quality of climate match data	High
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 28 Aug 2018]	

Qsn #	Question	Answer
203	Broad climate suitability (environmental versatility)	n
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	"Epiphytic on trees and palms in forests, hammocks, and swamps; 0 --30 m"
	Dave's Garden. (2018). Species Orchid, Night-scented Orchid, Lady of the Night Orchid - <i>Epidendrum nocturnum</i> . https://davesgarden.com/guides/pf/go/67788/ . [Accessed 29 Aug 2018]	"Hardiness: USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11: above 4.5 °C (40 °F)"
	Tropicos.org. 2018. Missouri Botanical Garden. http://www.tropicos.org/ . [Accessed 29 Aug 2018]	Collected over an elevation range >1000 m, but only collected from >30-800 m at latitudes comparable to the Hawaiian Islands (ca. 18° to 22°)

204	Native or naturalized in regions with tropical or subtropical climates	y
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	"Fla.; Mexico; West Indies; Central America; South America."
	Frohlich, D. & Lau, A. 2012. New plant records for the Hawaiian islands. Bishop Museum Occasional Papers 113: 27–54	"This species is native to Florida, the West Indies, and Central and South America. one listed common name is Night-smelling epidendrum, which refers to its flowers which are fragrant at night. <i>E. nocturnum</i> is known to have cleistogamous flowers (Hágsater 2002). This ability to self pollinate may aid in its ability to spread outside its native range. This species was found very sparingly naturalized in the Waialeale Mountain range near Pu'u Kaua, perhaps an escape from cultivation somewhere on island. it can be distinguished from other species of <i>Epidendrum</i> by its cespitose habit; relatively short (3 cm) inflorescence rachis; long (6 cm), linear-lanceolate, yellowish sepals and petals; and ellipsoid, 3 cm long capsules. A full description of the species can be found in the Flora of North America, which is currently available online (Flora of North America website 2011). Material examined. O'AHU: 'Ēkahanui, near Pu'u Kaua, ca 3000 ft elevation. epiphyte, 1 Nov 2009, K. Kawelo US Army 172."

205	Does the species have a history of repeated introductions outside its natural range?	?
	Source(s)	Notes
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	" <i>Epidendrum nocturnum</i> ... Throughout most tropical regions of the Western Hemisphere; also in Sierra Leone, Africa." [Not reported to be native to Africa, so presumably an introduction or possible naturalization. No other evidence from Africa found]
	Frohlich, D. & Lau, A. 2012. New plant records for the Hawaiian islands. Bishop Museum Occasional Papers 113: 27–54	"This species was found very sparingly naturalized in the Waialeale Mountain range near Pu'u Kaua, perhaps an escape from cultivation somewhere on island."

Qsn #	Question	Answer
	WRA Specialist. 2018. Personal Communication	An orchid with a fairly large native range, cultivated as an ornamental. Unclear how often this orchid is cultivated outdoors in regions with a tropical or subtropical climate.
	Imada, C.T., Staples, G.W. & Herbst, D.R. 2005. Annotated Checklist of Cultivated Plants of Hawai'i. http://www2.bishopmuseum.org/HBS/botany/cultivatedplants/ . [Accessed 29 Aug 2018]	Locations: Waimea Arboretum & Botanical Garden

301	Naturalized beyond native range	y
	Source(s)	Notes
	Frohlich, D. & Lau, A. 2012. New plant records for the Hawaiian islands. Bishop Museum Occasional Papers 113: 27–54	"This species is native to Florida, the West Indies, and Central and South America. one listed common name is Night-smelling epidendrum, which refers to its flowers which are fragrant at night. <i>E. nocturnum</i> is known to have cleistogamous flowers (Hágsater 2002). This ability to self pollinate may aid in its ability to spread outside its native range. This species was found very sparingly naturalized in the Wai'anae Mountain range near Pu'u Kaua, perhaps an escape from cultivation somewhere on island. it can be distinguished from other species of <i>Epidendrum</i> by its cespitose habit; relatively short (3 cm) inflorescence rachis; long (6 cm), linear-lanceolate, yellowish sepals and petals; and ellipsoid, 3 cm long capsules. A full description of the species can be found in the Flora of North America, which is currently available online (Flora of North America website 2011). Material examined. O'AHU: 'Ēkahanui, near Pu'u Kaua, ca 3000 ft elevation. epiphyte, 1 Nov 2009, K. Kawelo US Army 172."

302	Garden/amenity/disturbance weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

303	Agricultural/forestry/horticultural weed	n
	Source(s)	Notes
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

304	Environmental weed	n
	Source(s)	Notes
	Frohlich, D. & Lau, A. 2012. New plant records for the Hawaiian islands. Bishop Museum Occasional Papers 113: 27–54	[No evidence of impacts at this time] "This species was found very sparingly naturalized in the Wai'anae Mountain range near Pu'u Kaua, perhaps an escape from cultivation somewhere on island."
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	No evidence

305	Congeneric weed	

Qsn #	Question	Answer
	Source(s)	Notes
	Ackerman, J. D. 2007. Invasive orchids: weeds we hate to love. Lankesteriana, 7(1-2): 19-21	[No evidence of detrimental impacts described in this paper] "TABLE 1. Orchid species naturalized in Puerto Rico. ... <i>Epidendrum radicans</i> ... Habitat - Open disturbed"
	Randall, R.P. (2017). A Global Compendium of Weeds. 3rd Edition. Perth, Western Australia. R.P. Randall	<i>Epidendrum carpophorum</i> , <i>Epidendrum ibaguense</i> , <i>Epidendrum macrocarpum</i> , <i>Epidendrum x obrienianum</i> , <i>Epidendrum obrienianum</i> , <i>Epidendrum radicans</i> , <i>Epidendrum schomburgkii</i> & several hybrids listed as naturalized and/or weeds, but impacts are unspecified or unclear at this time.

401	Produces spines, thorns or burrs	n
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	[No evidence] "Plant caespitose, to 100 cm. Roots basal, 1–2.5 mm diam. Stems unbranched, straight, terete proximally, compressed distally, to 90 cm. Leaves 4–10, evenly distributed on distal 1/2 of stem; petiole to 46 mm; blade elliptic, 2-lobed, 6–15 × 0.5–3 cm, leathery. Inflorescences nearly corymbose; peduncle zigzag, branching with time, greater than 5 mm, producing flowers over several years. Flowers resupinate, produced in succession, 1–2 at a time; sepals yellowish, narrowly linear-lanceolate, to 60 × 6 mm, apex acute; petals yellowish, narrowly linear-lanceolate, to 58 × 2 mm; lip white, deeply 3-lobed, middle lobe narrowly linear acuminate, overall to 24 × 40 mm, lateral lobes obliquely semiovate; callus yellow; column 18 mm; clinandrium hood surpassing anther, erose; anther ovoid; ovary 45–50 mm. Capsules ellipsoid; pedicel 7–14 mm; body 25–32 × 10–15 mm; beak 16 mm."

402	Allelopathic	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown. No evidence found

403	Parasitic	n
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	"Plant caespitose, to 100 cm." ... " Epiphytic on trees and palms in forests, hammocks, and swamps; 0–30 m" [Orchidaceae. No evidence]

404	Unpalatable to grazing animals	
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	[Unknown, but as an epiphyte, unlikely to be browsed or grazed by ungulates] "Epiphytic on trees and palms in forests, hammocks, and swamps"

405	Toxic to animals	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	NIH U.S. National Library of Medicine. 2018. TOXNET Toxicology Data Network. https://toxnet.nlm.nih.gov/ . [Accessed 29 Aug 2018]	No evidence
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence in genus

406	Host for recognized pests and pathogens	
	Source(s)	Notes
	Zettler, J. A., Zettler, L. W., & Richardson, L. W. (2012). Pestiferous scale insects on native epiphytic orchids in South Florida: a new threat posed by introduced species. <i>Southeastern Naturalist</i> , 11(1), 127-134	"Diaspis boisduvalii Signoret (Boisduval Scale) is considered the most important pest of cultivated orchids in Florida (Dekle 1965), probably arriving there on infected plants imported from tropical America, where it is native (Balachowsky 1954)." ... "Of 49 orchids surveyed at Cochran Lake, three types of scales were discovered on 26 plants. Boisduval Scale was found on four orchid species (<i>E. amphistomum</i> , <i>E. nocturnum</i> , <i>E. rigidum</i> , and <i>P cochleata</i>)"
	Gutting, A., Zettler, J. A., Zettler, L. W., & Richardson, L. W. (2015). An update on mealybugs and scale insects (Hemiptera) on native epiphytic orchids in South Florida, including a new record for <i>Pseudococcus microcirculus</i> (Pseudococcidae). <i>Florida Entomologist</i> , 98(2): 401-404	"Table 1. A compilation of Boisduval scale (<i>Diaspis boisduvalii</i>) and orchid mealybugs (<i>Pseudococcus microcirculus</i>) found on six orchid taxa at four sites surveyed in June 2013 in the Florida Panther National Wildlife Refuge (Collier, Co. Florida). The numbers in parentheses represent the percentage of individual plants infested." [Both pests found on <i>Epidendrum nocturnum</i> at one site]

407	Causes allergies or is otherwise toxic to humans	n
	Source(s)	Notes
	Quattrocchi, U. 2012. CRC World Dictionary of Medicinal and Poisonous Plants: Common Names, Scientific Names, Eponyms, Synonyms, and Etymology. CRC Press, Boca Raton, FL	No evidence
	Wagstaff, D.J. 2008. International poisonous plants checklist: an evidence-based reference. CRC Press, Boca Raton, FL	No evidence
	NIH U.S. National Library of Medicine. 2018. TOXNET Toxicology Data Network. https://toxnet.nlm.nih.gov/ . [Accessed 29 Aug 2018]	No evidence

Qsn #	Question	Answer
408	Creates a fire hazard in natural ecosystems	n
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	"Epiphytic on trees and palms in forests, hammocks, and swamps" [No evidence. An herbaceous plant unlikely to contribute significantly to fuel load or increase fire risk]

409	Is a shade tolerant plant at some stage of its life cycle	y
	Source(s)	Notes
	Backyard Gardener. (2018). <i>Epidendrum nocturnum</i> . https://www.backyardgardener.com/plantname/epidendrum-nocturnum-epidendrum-orchid/ . [Accessed 29 Aug 2018]	"Light Range: Part Shade to Full Sun"
	Dave's Garden. (2018). Species Orchid, Night-scented Orchid, Lady of the Night Orchid - <i>Epidendrum nocturnum</i> . https://davesgarden.com/guides/pf/go/67788/ . [Accessed 31 Aug 2018]	"Sun Exposure: Full Sun Sun to Partial Shade"

410	Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)	
	Source(s)	Notes
	Backyard Gardener. (2018). <i>Epidendrum nocturnum</i> . https://www.backyardgardener.com/plantname/epidendrum-nocturnum-epidendrum-orchid/ . [Accessed 29 Aug 2018]	"pH Range: 5.5 to 6.5 Soil Range: Bark to Bark"
	Dave's Garden. (2018). Species Orchid, Night-scented Orchid, Lady of the Night Orchid - <i>Epidendrum nocturnum</i> . https://davesgarden.com/guides/pf/go/67788/ . [Accessed 31 Aug 2018]	"Soil pH requirements: 6.1 to 6.5 (mildly acidic) 6.6 to 7.5 (neutral)"
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	[Epiphytic. Soil tolerance may be irrelevant. Unknown if specialized epiphytic substrates are required] "Epiphytic on trees and palms in forests, hammocks, and swamps"

411	Climbing or smothering growth habit	n
	Source(s)	Notes
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	[Epiphytic, but not truly climbing or smothering] "Caespitose epiphyte, 20-60 (100) cm tall; pseudobulbs lacking; stem canelike, unbranched, often covered with leaf sheaths or becoming naked ... Frequent in the forest trees and on branches along the shore."

412	Forms dense thickets	n
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Qsn #	Question	Answer
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	"Epiphytic on trees and palms in forests, hammocks, and swamps"
	Frohlich, D. & Lau, A. 2012. New plant records for the Hawaiian islands. Bishop Museum Occasional Papers 113: 27-54	[Primarily epiphytic. No evidence to date of dense epiphytic cover] "This species was found very sparingly naturalized in the Waïanae Mountain range near Pu'u Kua, perhaps an escape from cultivation somewhere on island."

501	Aquatic	n
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. Flora of North America: North of Mexico, Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	" Epiphytic on trees and palms in forests, hammocks, and swamps; 0 --30 m"

502	Grass	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 28 Aug 2018]	Family: Orchidaceae Subfamily: Epidendroideae Tribe: Epidendreae

503	Nitrogen fixing woody plant	n
	Source(s)	Notes
	USDA, ARS, Germplasm Resources Information Network. 2018. National Plant Germplasm System [Online Database]. http://www.ars-grin.gov/npgs/index.html . [Accessed 28 Aug 2018]	Family: Orchidaceae Subfamily: Epidendroideae Tribe: Epidendreae

504	Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)	n
	Source(s)	Notes
	Croat, T.B. 1978. Flora of Barro Colorado Island. Stanford University Press, Stanford, CA	"Caespitose epiphyte, 20-60 (100) cm tall; pseudobulbs lacking; stem canelike, unbranched, often covered with leaf sheaths or becoming naked."

601	Evidence of substantial reproductive failure in native habitat	n
	Source(s)	Notes

Qsn #	Question	Answer
	Stewart, S. L. (2008). Orchid reintroduction in the United States: a mini-review. <i>North American Native Orchid Journal</i> , 14(1), 54-59	[Endangered in Florida, but not reported to be suffering from substantial reproductive failure] " <i>Epidendrum nocturnum</i> is a commercially appealing and endangered orchid found in south Florida, as well as the West Indies, Mexico, Central America, and northern South America (Brown and Folsom, 2005). In Florida, the species reaches its greatest abundance in the Big Cypress Basin area of southwestern Florida, particularly in the greater Fakahatchee swamp and slough system. While quite common in the area, <i>E. nocturnum</i> populations are under increasing extinction pressures from urbanization, changing habitat structure, and man-made hydroperiod changes. These factors, combined with an ever decreasing range in Florida and habitat fragmentation caused by urbanization, have prompted a great deal of interest in the propagation, reintroduction, and conservation of <i>E. nocturnum</i> , as well as other south Florida orchid species."
	Flora of North America Editorial Committee. 2002. <i>Flora of North America: North of Mexico</i> , Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	[No evidence] " <i>Epidendrum nocturnum</i> is widespread and common throughout the tropical regions of the Western Hemisphere."

602	Produces viable seed	y
	Source(s)	Notes
	Zettler, L. W., Poulter, S. B., McDonald, K. I., & Stewart, S. L. (2007). Conservation-driven propagation of an epiphytic orchid (<i>Epidendrum nocturnum</i>) with a mycorrhizal fungus. <i>HortScience</i> , 42(1), 135-139	"Seeds of an endangered epiphytic orchid from Florida (<i>Epidendrum nocturnum</i> Jacquin) germinated in vitro with a mycorrhizal fungus [<i>Epulorhiza repens</i> (Bernard) Moore] using a technique normally applied to terrestrial orchids (symbiotic seed germination)."
	Stort, M. N. S., & dos Santos Pavanelli, E. A. (1986). Crossing systems in <i>Epidendrum nocturnum</i> Jacq. (Orchidaceae). <i>Revista de Biología Tropical</i> , 34(1), 59-62	"Under greenhouse conditions <i>Epidendrum nocturnum</i> (Orchidaceae) produced many fruits by self-pollination and cleistogamy. These processes must be optional for the group, since intra- and interspecific pollinations also lead to the formation of fruit having seeds with embryos. The seeds produced by different crossing systems were either without embryos or had 1 to 4. Extra embryos appear more frequently in fruits formed without artificial pollination. On the average, the seeds obtained by artificial cross-pollination germinated more than those removed from naturally formed fruits."

603	Hybridizes naturally	
	Source(s)	Notes
	Pinheiro, F., & Cozzolino, S. (2013). <i>Epidendrum</i> (Orchidaceae) as a model system for ecological and evolutionary studies in the Neotropics. <i>Taxon</i> , 62(1), 77-88	[Possibly] "Despite morphological evidence for widespread hybridization in the genus, genetic confirmation of hybridization and an assessment of what types of hybrids are formed (F1, F2, backcrosses, etc.) is still limited. In this regard, the isolation and characterisation of specific molecular markers for <i>Epidendrum</i> may encourage research on topics such as hybridization and speciation (Pinheiro & al., 2008a, b, 2009a, c)."

Qsn #	Question	Answer
	Dressler, R. L. (1984). The delineation of genera in the <i>Epidendrum</i> complex. <i>Orquídea</i> (Mexico City) 9(2), 277-298	{Natural hybrid reported. No other evidence provided or found in other literature} "Auliza Salisb. ex Small, 1913, based on <i>E. ciliare</i> . The type of this genus has pseudobulbs, but is closely related to <i>E. nocturnum</i> . (a natural hybrid between them is known). Most other species with pseudobulbs are not closely related to <i>E. ciliare</i> , and the genus is very artificial as used by Brieger."

604	Self-compatible or apomictic	y
	Source(s)	Notes
	Dutra, D. (2008) Reproductive biology and asymbiotic seed germination of <i>Cyrtopodium punctatum</i> : an endangered Florida native orchid. Masters Thesis, University of Florida, Gainesville, FL	"For example, both <i>Epidendrum nocturnum</i> and <i>Secoila lanceolata</i> produce seed by agamospermy in Florida, but utilize animal cross-pollination in the more southern part of their range (Catling, 1987; Brown 2002)."
	Zettler, L. W., Poulter, S. B., McDonald, K. I., & Stewart, S. L. (2007). Conservation-driven propagation of an epiphytic orchid (<i>Epidendrum nocturnum</i>) with a mycorrhizal fungus. <i>HortScience</i> , 42(1), 135-139	"In Florida, <i>E. nocturnum</i> is thought to be capable of self-pollination because flowers do not always open (S. Stewart, personal observation)."
	North American Orchid Conservation Center. (2018). <i>Epidendrum nocturnum</i> Jacq. Night Fragrant <i>Epidendrum</i> . https://goorchids.northamericanorchidcenter.org . [Accessed 31 Aug 2018]	"The petals and sepals are yellowish in color with a long and slender shape and the lip is white with 3 lobes. Most flowers are self-fertilized before they open." ... "The white flowers of this orchid are fragrant at night but often do not open. This orchid is capable of self-pollination and does not need an insect pollinator for reproduction."
	Stort, M. N. S., & dos Santos Pavanelli, E. A. (1986). Crossing systems in <i>Epidendrum nocturnum</i> Jacq. (Orchidaceae). <i>Revista de Biología Tropical</i> , 34(1), 59-62	"Under greenhouse conditions <i>Epidendrum nocturnum</i> (Orchidaceae) produced many fruits by self-pollination and cleistogamy. These processes must be optional for the group, since intra- and interspecific pollinations also lead to the formation of fruit having seeds with embryos. The seeds produced by different crossing systems were either without embryos or had 1 to 4. Extra embryos appear more frequently in fruits formed without artificial pollination. On the average, the seeds obtained by artificial cross-pollination germinated more than those removed from naturally formed fruits."

605	Requires specialist pollinators	n
	Source(s)	Notes
	Pinheiro, F., & Cozzolino, S. (2013). <i>Epidendrum</i> (Orchidaceae) as a model system for ecological and evolutionary studies in the Neotropics. <i>Taxon</i> , 62(1), 77-88	"A diverse array of animals act as pollinators of <i>Epidendrum</i> species, but moth and butterfly syndromes are observed in almost all <i>Epidendrum</i> species." ... "Bright yellow and orange flowers are observed in butterfly-pollinated species, whereas white and pale green, strongly scented flowers are observed in moth-pollinated species (Van der Pijl & Dodson, 1966)." [<i>E. nocturnum</i> has greenish-white flowers & may be moth pollinated]

Qsn #	Question	Answer
	Stpiczyńska, M., Kamińska, M., Davies, K. L., & Pansarin, E. R. (2018). Nectar-secreting and nectarless <i>Epidendrum</i> : structure of the inner floral spur. <i>Frontiers in Plant Science</i> , 9. doi: 10.3389/fpls.2018.00840	" <i>Epidendrum</i> L. is the largest genus of tribe Epidendreae, subtribe ... Although its flowers are visited by a wide range of pollinators, moths and butterflies are the most frequently recorded, and according to Pinheiro and Cozzolino (2013), this kind of specialization (together with certain novel vegetative characters) may represent key innovations that led to the enormous degree of speciation found in this genus." ... "In <i>Epidendrum nocturnum</i> , the flowers are greenish-white and fragrant. The cuniculus was 46 mm long and contained copious nectar"
	North American Orchid Conservation Center. (2018). <i>Epidendrum nocturnum</i> Jacq. Night Fragrant <i>Epidendrum</i> . https://goorchids.northamericanorchidcenter.org . [Accessed 31 Aug 2018]	"The white flowers of this orchid are fragrant at night but often do not open. This orchid is capable of self-pollination and does not need an insect pollinator for reproduction."

606	Reproduction by vegetative fragmentation	
	Source(s)	Notes
	Flora of North America Editorial Committee. 2002. <i>Flora of North America: North of Mexico</i> , Volume 26. Magnoliophyta: Liliidae: Liliales and Orchidales. Oxford University Press, Oxford, UK	"Plant caespitose, to 100 cm. Roots basal, 1–2.5 mm diam. Stems unbranched" [Unknown. Growing in unbranched clumps; suggesting lack of vegetative spread]
	Dave's Garden. (2018). <i>Species Orchid</i> , Night-scented Orchid, Lady of the Night Orchid - <i>Epidendrum nocturnum</i> . https://davesgarden.com/guides/pf/go/67788/ . [Accessed 31 Aug 2018]	"Propagation Methods: By dividing rhizomes, tubers, corms or bulbs (including offsets) From seed; germinate in vitro in gelatin, agar or other medium" [Able to be propagated vegetatively by artificial means. Unknown if natural vegetative spread occurs]

607	Minimum generative time (years)	
	Source(s)	Notes
	North American Orchid Conservation Center. (2018). <i>Epidendrum nocturnum</i> Jacq. Night Fragrant <i>Epidendrum</i> . https://goorchids.northamericanorchidcenter.org . [Accessed 31 Aug 2018]	"The flowering period for this orchid is July-January but it can flower any time of the year." [Time to first flowering unknown]

701	Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)	n
	Source(s)	Notes
	La Croix, I. F. 2008. <i>The New Encyclopedia of Orchids: 1500 Species in Cultivation</i> . Timber Press, Portland, OR	"Epiphytic in rain forest and plantations, sometimes lithophytic or terrestrial" [Small seed size may aid in attachment & dispersal, but primarily an epiphytic species & unlikely to be dispersed successfully to an appropriate establishment site]

Qsn #	Question	Answer
702	Propagules dispersed intentionally by people	y
	Source(s)	Notes
	Odom's Orchids. (2018). <i>Epidendrum nocturnum</i> . http://www.odoms.com/epidendrum-nocturnum/ . [Accessed 31 Aug 2018]	Sold as an ornamental by this & other commercial sites

703	Propagules likely to disperse as a produce contaminant	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Small, dust-like seeds may allow for contamination of other plants or potting medium, but direct evidence is lacking at this time

704	Propagules adapted to wind dispersal	y
	Source(s)	Notes
	Zotz, G., Weichgrebe, T., Happatz, H., & Einzmann, H. J. (2016). Measuring the terminal velocity of tiny diaspores. <i>Seed Science Research</i> , 26(3), 222-230	"We used a custom-built device to determine the terminal velocity (V _{term}) of falling seeds, a parameter that has been shown to have high predictive power for the wind dispersal potential of diaspores under natural conditions." ... "Table 1. Seed characteristics of 45 orchid species. ... <i>Epidendrum nocturnum</i> - Length (mm) = 0.54; Width (mm) = 0.06]
	Barthlott, W., Große-Veldmann, B., & Korotkova, N. (2014). Orchid seed diversity: A scanning electron microscopy survey. <i>Englera</i> , 32: 1-245	[Small size & epiphytic habit suggest wind dispersal] "Orchids typically have tiny wind-dispersed seeds, often called "dust-seeds". Most orchids are wind-dispersed, but there are exceptions and the dispersal mechanisms of orchids are more diverse than assumed earlier."

705	Propagules water dispersed	n
	Source(s)	Notes
	La Croix, I. F. 2008. <i>The New Encyclopedia of Orchids: 1500 Species in Cultivation</i> . Timber Press, Portland, OR	"Epiphytic in rain forest and plantations, sometimes lithophytic or terrestrial" [Small seed size may aid in movement by water, but primarily an epiphytic species & unlikely to be dispersed successfully to an appropriate establishment site]

706	Propagules bird dispersed	n
	Source(s)	Notes
	Barthlott, W., Große-Veldmann, B., & Korotkova, N. (2014). Orchid seed diversity: A scanning electron microscopy survey. <i>Englera</i> , 32: 1-245	"Orchids typically have tiny wind-dispersed seeds, often called "dust-seeds"."
	Zotz, G., Weichgrebe, T., Happatz, H., & Einzmann, H. J. (2016). Measuring the terminal velocity of tiny diaspores. <i>Seed Science Research</i> , 26(3), 222-230	[No evidence of bird dispersal] "Table 1. Seed characteristics of 45 orchid species. ... <i>Epidendrum nocturnum</i> - Length (mm) = 0.54; Width (mm) = 0.06]

707	Propagules dispersed by other animals (externally)	n
	Source(s)	Notes

Qsn #	Question	Answer
	La Croix, I. F. 2008. The New Encyclopedia of Orchids: 1500 Species in Cultivation. Timber Press, Portland, OR	"Epiphytic in rain forest and plantations, sometimes lithophytic or terrestrial" [Small seed size may aid in attachment & dispersal, but primarily an epiphytic species & unlikely to be dispersed successfully to an appropriate establishment site]

708	Propagules survive passage through the gut	n
	Source(s)	Notes
	Zotz, G., Weichgrebe, T., Happatz, H., & Einzmann, H. J. (2016). Measuring the terminal velocity of tiny diaspores. <i>Seed Science Research</i> , 26(3), 222-230	[Adapted for wind dispersal] "Table 1. Seed characteristics of 45 orchid species. ... <i>Epidendrum nocturnum</i> - Length (mm) = 0.54; Width (mm) = 0.06]

801	Prolific seed production (>1000/m2)	y
	Source(s)	Notes
	Barthlott, W., Große-Veldmann, B., & Korotkova, N. (2014). Orchid seed diversity: A scanning electron microscopy survey. <i>Englera</i> , 32: 1-245	[Presumably yes] "Orchids typically have tiny wind-dispersed seeds, often called "dust-seeds"."

802	Evidence that a persistent propagule bank is formed (>1 yr)	
	Source(s)	Notes
	Royal Botanic Gardens Kew. (2018) Seed Information Database (SID). Version 7.1. Available from: http://data.kew.org/sid/ . [Accessed 31 Aug 2018]	[Longevity in field conditions unknown] "Storage Behaviour: Intermediate? Storage Conditions: <50% germination after 6 months hermetic storage at -10°C (Bowling & Thompson, 1972; cited by Pritchard & Seaton, 1993)"

803	Well controlled by herbicides	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown. No information on herbicide efficacy or chemical control of this species

804	Tolerates, or benefits from, mutilation, cultivation, or fire	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown

805	Effective natural enemies present locally (e.g. introduced biocontrol agents)	
	Source(s)	Notes
	WRA Specialist. 2018. Personal Communication	Unknown

Summary of Risk Traits:

High Risk / Undesirable Traits

- Thrives in tropical climates (climate in Hawaiian Islands conducive to establishment)
- Naturalized on Oahu, Hawaiian Islands
- Other *Epidendrum* species may be naturalized or weedy
- Shade tolerant
- Reproduces by seeds
- Seeds dispersed by wind & intentionally by people
- Prolific seed production
- Gaps in biological & ecological information may limit accuracy of assessment

Low Risk Traits

- No reports of negative impacts where naturalized
- Unarmed (no spines, thorns, or burrs)
- Non-toxic
- Ornamental value

Second Screening Results for Herbs or Low Stature Shrubby Life Forms

(A) Reported as a weed of cultivated lands? No

Outcome = Accept (Low Risk)