

Family: *Cactaceae*

Taxon: *Epiphyllum oxypetalum*

Synonym: *Cereus oxypetalus* DC. (*basionym*)

Common Name: Dutchman's-pipe cactus

Questionnaire : current 20090513
Status: Assessor Approved

Assessor: Patti Clifford
Data Entry Person: Patti Clifford

Designation: L(Hawai'i)

WRA Score 2

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)	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)	n
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	n
411	Climbing or smothering growth habit	y=1, n=0	y

412	Forms dense thickets	y=1, n=0	
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	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/m ²)	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: L(Hawai'i)

WRA Score 2

Supporting Data:

101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive traits.
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2 - high] Native distribution: Mexico - Chiapas, Veracruz; Costa Rica; El Salvador; Guatemala; Honduras, Nicaragua.
202	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Quality of climate match data? 2 - high] Native distribution: Mexico - Chiapas, Veracruz; Costa Rica; El Salvador; Guatemala; Honduras, Nicaragua.
203	2012. Dave's Garden. PlantFiles - Dutchman's Pipe Cactus, Night blooming Cereus <i>Epiphyllum oxypetalum</i> . http://davesgarden.com/guides/pf/go/2443/	[Broad climate suitability (environmental versatility)? No] USDA Hardiness Zone 11: above 4.5 °C (40 °F).
203	2012. www.gardenguides.com . How to grow <i>Epiphyllum oxypetalum</i> . http://www.gardenguides.com/80625-grow-epiphyllum-oxypetalum.html	[Broad climate suitability (environmental versatility)? No] USDA hardiness zones: 10-12.
204	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution: Mexico - Chiapas, Veracruz; Costa Rica; El Salvador; Guatemala; Honduras, Nicaragua.
205	2005. Hu, Shiu-ying. Food plants of China. Chinese University Press, Hong Kong	[Does the species have a history of repeated introductions outside its natural range? Yes] Cultivated as a food plant in China.
205	2012. Dave's Garden. PlantFiles - Dutchman's Pipe Cactus, Night blooming Cereus <i>Epiphyllum oxypetalum</i> . http://davesgarden.com/guides/pf/go/2443/	[Does the species have a history of repeated introductions outside its natural range? Yes] According to Dave's Garden, eight vendors have this plant for sale and 133 members want or have this plant for sale.
301	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Naturalized beyond native range? Yes] This species was first introduced to China in 1645, and the naturalized plant was first recorded in Jinghong, Yunnan, in 1936. The mucilaginous flower is often eaten in a vegetable soup.
302	2007. Randall, R.. Global Compendium of Weeds - <i>Epiphyllum oxypetalum</i> (Cactaceae). http://www.hear.org/gcw/species/epiphyllum_oxypetalum/	[Garden/amenity/disturbance weed? No] No evidence.
303	2007. Randall, R.. Global Compendium of Weeds - <i>Epiphyllum oxypetalum</i> (Cactaceae). http://www.hear.org/gcw/species/epiphyllum_oxypetalum/	[Agricultural/forestry/horticultural weed? No] No evidence.
304	2007. Randall, R.. Global Compendium of Weeds - <i>Epiphyllum oxypetalum</i> (Cactaceae). http://www.hear.org/gcw/species/epiphyllum_oxypetalum/	[Environmental weed? No] No evidence.
305	2007. Randall, R.P.. The introduced flora of Australia & its weed status. CRC for Australian Weed Management, Glen Osmond, Australia	[Congeneric weed? No] <i>Epiphyllum hookeri</i> is a weed of the natural environment in Australia. [impacts and control efforts not documented]
401	2005. Hu, Shiu-ying. Food plants of China. Chinese University Press, Hong Kong	[Produces spines, thorns or burrs? No] Spineless, succulent cactus; 1-3 m high.
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Parasitic? No] Cactaceae.
404	2012. WRA Specialist. Personal Communication.	[Unpalatable to grazing animals? Unknown]

405	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Toxic to animals? No] No evidence.
405	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Toxic to animals? No] No evidence.
406	2012. WRA Specialist. Personal Communication.	[Host for recognized pests and pathogens? Unknown]
407	2005. Hu, Shiu-ying. Food plants of China. Chinese University Press, Hong Kong	[Causes allergies or is otherwise toxic to humans?] Cultivated as a food plant in China.
407	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Causes allergies or is otherwise toxic to humans? No] No evidence of toxicity.
407	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Causes allergies or is otherwise toxic to humans? No] No evidence of toxicity.
408	2012. Lemke, C.. Epiphyllum oxypetalum - Dutchman's-pipe cactus. http://www.plantoftheweek.org/week417.shtml	[Creates a fire hazard in natural ecosystems? No] Epiphyllum is a succulent.
409	2012. Dave's Garden. PlantFiles - Dutchman's Pipe Cactus, Night blooming Cereus Epiphyllum oxypetalum. http://davesgarden.com/guides/pf/go/2443/	[Is a shade tolerant plant at some stage of its life cycle? Yes] Sun to partial shade; light shade.
409	2012. Lemke, C.. Epiphyllum oxypetalum - Dutchman's-pipe cactus. http://www.plantoftheweek.org/week417.shtml	[Is a shade tolerant plant at some stage of its life cycle? Yes] Full sun to partial shade.
410	2012. Dave's Garden. PlantFiles - Dutchman's Pipe Cactus, Night blooming Cereus Epiphyllum oxypetalum. http://davesgarden.com/guides/pf/go/2443/	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? No] Soil pH requirements: 5.1 to 5.5 (strongly acidic) 5.6 to 6.0 (acidic) 6.1 to 6.5 (mildly acidic)
410	2012. Lemke, C.. Epiphyllum oxypetalum - Dutchman's-pipe cactus. http://www.plantoftheweek.org/week417.shtml	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? No] "Epiphyllum oxypetalum need full sun to partial shade with a moist, well-drained soil mix. In the greenhouse, we a soil mix consisting of 2 parts peat moss to 1 part coarse sand to 1 part small pine bark added to ensure good drainage. The plants are watered on a daily basis and the soil mix is never allowed to dry out thoroughly. We fertilize the plants on a monthly basis with a balanced fertilizer diluted to 1/2 the strength recommended on the label. As the soil mix breaks down, the roots of the plant can suffer from too much water and lack of air around the root mass. It is a very good idea to repot the plants every 2 years to keep the plants healthy. During the winter months in the greenhouse, water is somewhat restricted, but the soil mix is never allowed to dry completely. Fertilizer is withheld during this period."
411	1889. Watson, W.. Cactus culture for amateurs: being descriptions of the various cactuses grown in this country, with full and practical instructions for their successful cultivation. L.U. Gill, http://books.google.com/books?id=7MQ_AAAAYA&printsec=fron	[Climbing or smothering growth habit? Yes] Epiphyllum's habit in the wild is to grow up the trunks of trees.
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? Unknown]
501	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Aquatic? No] Cactaceae.
502	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Grass? No] Cactaceae.

503	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Nitrogen fixing woody plant? No] Shrubs epiphytic, freely branched, 2-6 m tall, with aerial roots; Cactaceae.
504	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Shrubs epiphytic, freely branched, 2-6 m tall, with aerial roots.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	2012. Lemke, C.. Epiphyllum oxypetalum - Dutchman's-pipe cactus. http://www.plantoftheweek.org/week417.shtml	[Produces viable seed? Yes] Propagate from stem cuttings, division of larger plants, and seed.
603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2012. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]
605	2012. Dalhousie University. The biology of cacti. http://cactus.biology.dal.ca/biology.html	[Requires specialist pollinators? No] "Epiphyllum oxypetalum (Dutchman's pipe) is specialized to suit certain nocturnal hawk moths. This cactus has a floral tube that is exactly 30 cm long, with nectar at its base and it flowers only at night. Attracted by the flower's scent, the hawk moth hovers close to the flower, unrolls its proboscis that is also 30cm long and inserts it into the tube."
606	2012. Dave's Garden. PlantFiles - Dutchman's Pipe Cactus, Night blooming Cereus Epiphyllum oxypetalum. http://davesgarden.com/guides/pf/go/2443/	[Reproduction by vegetative fragmentation? Yes] Propagation Methods: By dividing rhizomes, tubers, corms or bulbs (including offsets) From leaf cuttings From herbaceous stem cuttings
606	2012. Lemke, C.. Epiphyllum oxypetalum - Dutchman's-pipe cactus. http://www.plantoftheweek.org/week417.shtml	[Reproduction by vegetative fragmentation?] Propagated by stem cutting, division of larger plants and rarely seed.
607	2012. WRA Specialist. Personal Communication.	[Minimum generative time (years)? Unknown]
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas? No] No evidence
702	2005. Hu, Shiu-ying. Food plants of China. Chinese University Press, Hong Kong	[Propagules dispersed intentionally by people? Yes] Cultivated as a food plant in China.
702	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Propagules dispersed intentionally by people? Yes] Escaped from cultivation in tropical areas; 1000-1200 m. S Yunnan (Jinghong) [native to Mexico and Guatemala; widely introduced elsewhere as an ornamental].
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Propagules adapted to wind dispersal? No] "Fruit rare, purplish red, oblong, ca. 16 x 5.7 cm. Seed 2-2.5 x ca. 1.5 mm."
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown]
706	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Propagules bird dispersed? No] "Fruit rare, purplish red, oblong, ca. 16 x 5.7 cm. Seed 2-2.5 x ca. 1.5 mm." [fruits greater than 3-4 cm in diameter
707	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Propagules dispersed by other animals (externally)? No] "Fruit rare, purplish red, oblong, ca. 16 x 5.7 cm. Seed 2-2.5 x ca. 1.5 mm." [no means of external attachment]
708	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Propagules survive passage through the gut? Unknown]
801	2012. Li, Z./Taylor, N.P.. Flora of China Vol. 13 - Cactaceae. eFloras.org, http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=200014503	[Prolific seed production (>1000/m2)? No] "Fruit rare, purplish red, oblong, ca. 16 x 5.7 cm. Seed 2-2.5 x ca 1.5 mm."

802	2012. WRA Specialist. Personal Communication.	[Evidence that a persistent propagule bank is formed (>1 yr)? Unknown]
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2012. Dave's Garden. PlantFiles - Dutchman's Pipe Cactus, Night blooming Cereus Epiphyllum oxypetalum. http://davesgarden.com/guides/pf/go/2443/	[Tolerates, or benefits from, mutilation, cultivation, or fire? Unknown]
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Summary of Risk Traits

Low Risk:

Low environmental tolerance for range in temperatures

No evidence of invasiveness in other regions

Not toxic to humans or animals

Not tolerant to a wide range of soil types

Limited dispersal mechanisms

High Risk:

Native to tropical regions

Naturalized in China

Shade tolerant

Vegetative reproduction

Viable seeds (when produced)