UF IFAS UNIVERSITY of FLORIDA

Assessment of Non-native Plants in Florida's Natural Areas

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Assessment date 2 April 2015

| | ***Aristolochia littoralis* Auct. *(Aristolochia elegans* Mast.*)* All Zones** | **Answer** | **Score** |
|---|---|---|---|
| 1.01 | Is the species highly domesticated? | n | 0 |
| 1.02 | Has the species become naturalised where grown? | | |
| 1.03 | Does the species have weedy races? | | |
| 2.01 | Species suited to Florida's USDA climate zones (0-low; 1-intermediate; 2-high)<br>North Zone: suited to Zones 8, 9<br>Central Zone: suited to Zones 9, 10<br>South Zone: suited to Zone 10 | 2 | |
| 2.02 | Quality of climate match data (0-low; 1-intermediate; 2-high) | 2 | |
| 2.03 | Broad climate suitability (environmental versatility) | y | 1 |
| 2.04 | Native or naturalized in habitats with periodic inundation<br>North Zone: mean annual precipitation 50-70 inches<br>Central Zone: mean annual precipitation 40-60 inches<br>South Zone: mean annual precipitation 40-60 inches | y | 1 |
| 2.05 | Does the species have a history of repeated introductions outside its natural range? | y | |
| 3.01 | Naturalized beyond native range | y | 2 |
| 3.02 | Garden/amenity/disturbance weed | y | 2 |
| 3.03 | Weed of agriculture | | |
| 3.04 | Environmental weed | y | 4 |
| 3.05 | Congeneric weed | y | 2 |
| 4.01 | Produces spines, thorns or burrs | n | 0 |
| 4.02 | Allelopathic | | |
| 4.03 | Parasitic | n | 0 |
| 4.04 | Unpalatable to grazing animals | | |
| 4.05 | Toxic to animals | y | 1 |
| 4.06 | Host for recognised pests and pathogens | n | 0 |
| 4.07 | Causes allergies or is otherwise toxic to humans | y | 1 |
| 4.08 | Creates a fire hazard in natural ecosystems | n | 0 |
| 4.09 | Is a shade tolerant plant at some stage of its life cycle | n | 0 |
| 4.10 | Grows on infertile soils (oligotrophic, limerock, or excessively draining soils). North & Central Zones: infertile soils; South Zone: shallow limerock or Histisols. | y | 1 |
| 4.11 | Climbing or smothering growth habit | y | 1 |
| 4.12 | Forms dense thickets | unk | 0 |
| 5.01 | Aquatic | n | 0 |
| 5.02 | Grass | n | 0 |
| 5.03 | Nitrogen fixing woody plant | n | 0 |
| 5.04 | Geophyte | n | 0 |
| 6.01 | Evidence of substantial reproductive failure in native habitat | n | 0 |
| 6.02 | Produces viable seed | y | 1 |

| | | | |
|---|---|---|---|
| 6.03 | Hybridizes naturally | n | -1 |
| 6.04 | Self-compatible or apomictic | y | 1 |
| 6.05 | Requires specialist pollinators | n | 0 |
| 6.06 | Reproduction by vegetative propagation | unk | -1 |
| 6.07 | Minimum generative time (years) | | |
| 7.01 | Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas) | y | 1 |
| 7.02 | Propagules dispersed intentionally by people | y | 1 |
| 7.03 | Propagules likely to disperse as a produce contaminant | n | -1 |
| 7.04 | Propagules adapted to wind dispersal | y | 1 |
| 7.05 | Propagules water dispersed | y | 1 |
| 7.06 | Propagules bird dispersed | n | -1 |
| 7.07 | Propagules dispersed by other animals (externally) | n | -1 |
| 7.08 | Propagules dispersed by other animals (internally) | | |
| 8.01 | Prolific seed production | | |
| 8.02 | Evidence that a persistent propagule bank is formed (>1 yr) | n | -1 |
| 8.03 | Well controlled by herbicides | y | -1 |
| 8.04 | Tolerates, or benefits from, mutilation or cultivation | | |
| 8.05 | | | |
| | **Total Score** | **15** | |
| | **Implemented Pacific Second Screening** | **no** | |
| | **Risk Assessment Results** | **High** | |

| **section** | **# questions answered** | **satisfy minimum?** |
|---|---|---|
| A | 10 | yes |
| B | 9 | yes |
| C | 18 | yes |
| total | 37 | yes |

| | Reference | Source data |
|---|---|---|
| 1.01 | | cultivated, but no evidence of selection for reduced weediness |
| 1.02 | | |
| 1.03 | | |
| 2.01 | 1. PERAL NAPPFAST Global Plant Hardiness (http://www.nappfast.org/Plant_hardiness/NAPPFAST%20Global%20zones/10-year%20climate/PLANT_HARDINESS_10YR%20lgnd.tif). 2. USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?409896 (00 Month 0000). | No computer analysis was performed. 1. Global hardiness zone: 9, 10, 11, 12, 13. ; equivalent to USDA Hardiness zones:USDA Zone 9a: to -6.6 °C (20 °F) USDA Zone 9b: to -3.8 °C (25 °F) USDA Zone 10a: to -1.1 °C (30 °F) USDA Zone 10b: to 1.7 °C (35 °F) USDA Zone 11a: to USDA Zone (40 °F) USDA Zone 11b: to (45 °F) USDA Zone 12a: to (50 °F) USDA Zone 12b: to (55 °F). . 2. Native to SOUTHERN AMERICA Brazil: Brazil - Ceara, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Parana, Rio de Janeiro, Rondonia, Santa Catarina, Sao Paulo Western South America: Bolivia; Colombia; Ecuador - Loja; Peru Southern South America: Argentina - Corrientes, Entre Rios, Jujuy, Misiones, Santa Fe; Paraguay - Amambay, Central, Concepcion, Cordillera, Paraguari, San Pedro |
| 2.02 | | |
| 2.03 | 1. Köppen-Geiger climate map (http://www.hydrol-earth-syst-sci.net/11/1633/2007/hess-11-1633-2007.pdf). 2. Global Biodiversity Information Facility (www.GBIF.org [accessed 4/2/2015]) | 1. Distribution in the native/cultivated range occurs in Cfa, Cfb, Am, Aw, Af, As |
| 2.04 | 1. World Bank http://sdwebx.worldbank.org/climateportal/index.cfm?page=country_historical_climate&ThisRegion=Latin%20America&ThisCCode=BRA (3-27-2015) 2. Global Biodiversity Information Facility (www.GBIF.org [accessed 4/2/2015]) | Rainfall in this species' native areas falls within these levels. |
| 2.05 | 1. The University of Queensland. Special edition of Environmental Weeds of Australia for Biosecurity Queensland http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Aristolochia_elegans.htm (3-27-2015) 2. Foxcroft LC, Richardson DM, Wilson JRU (2008) Ornamental plants as invasive aliens: problems and solutions in the Kruger National Park, South Africa. Environ Manage 41:32–51 3. Pacific Island Ecosystems at Risk (PIER) (2006), Arisolochia littoralis Parodi, Aristolochiaceae, www.hear.org/pier/species/aristolochia_littoralis.htm (3-27-2015) | 1. Widely naturalised in the tropical regions of the world (e.g. Zimbabwe, South Africa, Hawaii, French Polynesia, New Caledonia, Fiji, the Cook Islands and south-eastern USA). 2. Introduced to South Africa 3. Introduced to the Cook Islands |
| 3.01 | 1. Missouri Botanical Garden http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c783 (3-27-2015) 2. The State of Queensland, Department of Agriculture, Fisheries and Forestry, 2012 FACTSHEET http://www.invasives.org.za/resources/downloadable-resources/finish/38-invasive-plants-fact-sheets/232-aristolochia-elegans.html (3-27-2015) 3. Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. Manual of the Flowering Plants of Hawai'i. 2 vols. Bishop Museum Special Publication 83, University of Hawai'i and Bishop Museum Press, Honolulu, Hawai'i. | 1. It is native to South America, but has naturalized in certain tropical areas around the world as well as in Central America and the southern U. S. 2. Dutchman’s pipe is a popular novelty in gardens and suburban backyards and has naturalised in several areas of Queensland and northern New South Wales. 3. In Hawai'i, Aristolochia littoralis is cultivated occasionally and is sparingly naturalized on Kaua'i, O'ahu, Maui |

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|---|---|---|
| 3.02 | 1. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) 2. Save Our Waterways Now Inc. http://www.saveourwaterwaysnow.com.au/01_cms/details_pop.asp?ID=771 (3-31-2015) | 1. In an assessment of invasive naturalised plants of south-east Queensland, A. elegans was identified as 'generally invasive' (escaping from cultivation and spreading to natural areas) to 'highly invasive' (forms monocultures) (Batianoff and Butler, 2002). Aristolochia elegans was reported as 'common' in Araucaria cunninghamii plantations in Brooyar State Forest, indicating a potential to spread and intensify infestations, displacing native understorey species 2. Dutchman's Pipe is particularly troublesome in suburban Brisbane where it has escaped from gardens to take over tracts of riparian bushland. |
| 3.03 | | no evidence |
| 3.04 | 1. The State of Queensland, Department of Agriculture, Fisheries and Forestry, 2012 FACTSHEET http://www.invasives.org.za/resources/downloadable-resources/finish/38-invasive-plants-fact-sheets/232-aristolochia-elegans.html (3-27-2015) 2. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) 3. The University of Queensland. Special edition of Environmental Weeds of Australia for Biosecurity Queensland http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Aristolochia_elegans.htm (3-27-2015) | 1a. Dutchman's pipe is an environmental weed 1b. Dutchman's pipe however is a deadly alternative, tricking butterflies into laying their eggs on its leaves, and then poisoning the larvae when they hatch and begin to feed. 2a. An aggressive and vigorous climber, A. elegans scrambles over small shrubs and trees, smothering vegetation. It is commonly associated with other weed infestations and disturbance. Like other exotic vines, A. elegans can weigh down native vegetation and result in collapse under the weight of biomass it produces and provide an opportunity for other invasive plants to establish. 2b. In an assessment of invasive naturalised plants of south-east Queensland, A. elegans was identified as 'generally invasive' (escaping from cultivation and spreading to natural areas) to 'highly invasive' (forms monocultures). Aristolochia elegans was reported as 'common' in Araucaria cunninghamii plantations in Brooyar State Forest, indicating a potential to spread and intensify infestations, displacing native understorey species 3. It is also regarded as a potentially serious environmental weed in north-eastern New South Wales. Like many other species of exotic vines, Dutchman's pipe (Aristolochia elegans) competes with and replaces native plants via its smothering growth. It readily invades dry rainforests, lowland rainforests and riparian vegetation, replacing native vines and preventing the growth and regeneration of other native plants. |
| 3.05 | Holm, LeRoy G. A Geographical Atlas of World Weeds. Malabar, FL: Krieger Pub., 1991. Print. | Aristolochia bracteolata is a principle weed in Sudan, Aristolochia clematitisn is principle weed in Yugoslavia, and Aristolochia maurorum is a principle weed in Jordan. |
| 4.01 | 1. Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. Manual of the Flowering Plants of Hawai'i. 2 vols. Bishop Museum Special Publication 83, University of Hawai'i and Bishop Museum Press, Honolulu, Hawai'i. | 1. These features are not in the species description. |
| 4.02 | | no evidence |
| 4.03 | | no evidence |
| 4.04 | | no evidence |
| 4.05 | 1. Australian Weeds Committee http://www.weeds.org.au/cgi-bin/weedident.cgi?tpl=plant.tpl&state=wa&s=&region=ck&card=V14 (3-27-2015) 2. SFGATE http://homeguides.sfgate.com/care-aristolochia-littoralis-plant-22243.html (3-27-2015) | 1. Suspected of poisoning livestock. 2. Do not eat the calico flower or use it in any preparations meant for human or animal consumption, as the plant contains dangerous toxins. |
| 4.06 | | no evidence, often noted for being free of pests and pathogens. |

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| 4.07 | 1. Dave's Garden http://davesgarden.com/guides/pf/go/942/#ixzz3VbUwCz5P (3-27-2015) 2. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) 3. SFGATE http://homeguides.sfgate.com/care-aristolochia-littoralis-plant-22243.html (3-27-2015) | 1. All parts of plant are poisonous if ingested 2. Many Aristolochias contain the alkaloid aristolochic acid and other components. Plants and herbal preparations containing aristolochic acids are associated with severe kidney damage and urinary tract cancer and ingestion of plants or these derivatives are to be avoided 3. Do not eat the calico flower or use it in any preparations meant for human or animal consumption, as the plant contains dangerous toxins. |
| 4.08 | | no evidence |
| 4.09 | 1. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) 2. The Royal Horticultural Society https://www.rhs.org.uk/Plants/1580/i-Aristolochia-littoralis-i/Details (3-27-2015) 3. Missouri Botanical Garden http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c783 (3-27-2015) | 1. grows in full sun to part shaded areas 2. Full sun to partial shade 3. Sun: Full sun to part shade |
| 4.10 | 1. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) 2. SFGATE http://homeguides.sfgate.com/care-aristolochia-littoralis-plant-22243.html (3-27-2015) 3. USDA Natural Resource Conservation Service Soils, Global Soil Regions Map http://www.nrcs.usda.gov/Internet/FSE_MEDIA/nrcs142p2_050722.jpg (3-25-2015) | 1. A. elegans grows in sandy, alluvial soils, bassalt-derived soils, black or red clay loams, and in stoney dark brown loams and lithosols 2. well-drained, averagely fertile soil 3. Species native to areas with soil types congruent to Florida. |
| 4.11 | 1. The Royal Horticultural Society https://www.rhs.org.uk/Plants/1580/i-Aristolochia-littoralis-i/Details (3-27-2015) 2. The State of Queensland, Department of Agriculture, Fisheries and Forestry, 2012 FACTSHEET http://www.invasives.org.za/resources/downloadable-resources/finish/38-invasive-plants-fact-sheets/232-aristolochia-elegans.html (3-27-2015) 3. Starr, F, Starr, K and Loope, LL (2003), Aristolochia littoralis, United States Geological Survey—Biological Resources Division, Haleakala Field Station, Maui, Hawai'i www.hear.org/starr/hiplants/reports/pdf/aristolochia_littoralis.pdf | 1. A. littoralis is an evergreen climber with twining stems 2. The woody stems are slender and twine tightly in coils around any supporting structure. 3. aggressive woody climber |
| 4.12 | 1. The State of Queensland, Department of Agriculture, Fisheries and Forestry, 2012 FACTSHEET http://www.invasives.org.za/resources/downloadable-resources/finish/38-invasive-plants-fact-sheets/232-aristolochia-elegans.html (3-27-2015) | 1. Leaves are up to 75 mm long, glossy green and heart-shaped, growing closely to form a dense mat of foliage. |
| 5.01 | | Family: Aristolochiaceae |
| 5.02 | | Family: Aristolochiaceae |
| 5.03 | | no evidence |

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|---|---|---|
| 5.04 | Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. Manual of the Flowering Plants of Hawai'i. 2 vols. Bishop Museum Special Publication 83, University of Hawai'i and Bishop Museum Press, Honolulu, Hawai'i. | No evidence of these features |
| 6.01 | | no evidence |
| 6.02 | 1. The Royal Horticultural Society https://www.rhs.org.uk/Plants/1580/i-Aristolochia-littoralis-i/Details (3-27-2015) 2. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) 3. The University of Queensland. Special edition of Environmental Weeds of Australia for Biosecurity Queensland http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Aristolochia_elegans.htm (3-27-2015) | 1. Propagates by seed. 2. Average germination rate of seeds is estimated to be more than 50 per cent 3. This plant reproduces mostly by seeds. |
| 6.03 | | no evidence |
| 6.04 | 1. Bliss, B. J., Wanke, S., Barakat, A., Ayyampalayam, S., Wickett, N., Wall, P. K., … dePamphilis, C. W. (2013). Characterization of the basal angiosperm Aristolochia fimbriata: a potential experimental system for genetic studies. BMC Plant Biology, 13, 13. doi:10.1186/1471-2229-13-13 2. Gisela C. Stotz & Ernesto Gianoli (2013): Pollination biology and floral longevity of Aristolochia chilensis in an arid ecosystem, Plant Ecology & Diversity, 6:2, 181-186 | 1. We demonstrated self-compatibility for Aristolochia elegans and A. fimbriata 2. There is evi- dence of self-compatibility for some Aristolochia species |
| 6.05 | 1. Dave's Garden http://davesgarden.com/guides/pf/go/942/#ixzz3VbUwCz5P (3-27-2015) 2. Missouri Botanical Garden http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c783 (3-27-2015) | 1. This plant is attractive to bees, butterflies and/or birds 2. Flowers are pollinated by flies. |
| 6.06 | 1. Pacific Island Ecosystems at Risk (PIER) (2006), Arisolochia littoralis Parodi, Aristolochiaceae, www.hear.org/pier/species/aristolochia_littoralis.htm (3-27-2015) 2. Starr, F, Starr, K and Loope, LL (2003), Aristolochia littoralis, United States Geological Survey—Biological Resources Division, Haleakala Field Station, Maui, Hawai'i www.hear.org/starr/hiplants/reports/pdf/aristolochia_littoralis.pdf 3. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) | Not sufficient evidence to say yes, however: 1. Propagated by seeds and cuttings. 2. Aristolochia can be propagated from woody cuttings, layering, and seeds 3. Aristolochia elegans is a rapidly growing vine that can be cultivated by seed or from cuttings |
| 6.07 | | no evidence |

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|---|---|---|
| 7.01 | 1. Starr, F, Starr, K and Loope, LL (2003), Aristolochia littoralis, United States Geological Survey—Biological Resources Division, Haleakala Field Station, Maui, Hawai'i www.hear.org/starr/hiplants/reports/pdf/aristolochia_littoralis.pdf 2. The University of Queensland. Special edition of Environmental Weeds of Australia for Biosecurity Queensland http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Aristolochia_elegans.htm (3-27-2015) 3. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) | 1. At another site, near Kipahulu, the plant appeared to be sparingly naturalized and was coming up along the road and on nearby walls. Another site in Lahaina was recently observed with numerous seedlings coming up around a building and in cracks in the concrete. Most sites with Aristolochia were near sea level in both moist and dry lowland urban and disturbed areas. 2a. Primarily a weed of rainforests, closed forests, urban bushland, disturbed sites, roadsides, waste areas, waterways and forest margins in tropical and sub-tropical regions 2b. Seeds may be spread when in dumped garden waste. 3. Globally, Aristolochia elegans has been recorded as a naturalised escapee in tropical and subtropical regions along forest edges and in riverine fringes, particularly in disturbed areas. In Australia, A. elegans has been recorded growing around the edges or in disturbed gaps of rainforest remnants, and along creeks or moist gullies. |
| 7.02 | 1. The State of Queensland, Department of Agriculture, Fisheries and Forestry, 2012 FACTSHEET http://www.invasives.org.za/resources/downloadable-resources/finish/38-invasive-plants-fact-sheets/232-aristolochia-elegans.html (3-27-2015) 2. The University of Queensland. Special edition of Environmental Weeds of Australia for Biosecurity Queensland http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Aristolochia_elegans.htm (3-27-2015) 3. NSW North Coast Weeds Advisory Committee – NCWAC. http://www.northcoastweeds.org.au/dutchmans-pipe/ (3-27-2015) | 1. Dutchman's pipe is a popular novelty in gardens and suburban backyards 2. Dutchman's pipe (Aristolochia elegans) has been widely cultivated as a garden ornamental 2. Mostly spread by humans, also by wind, water and gravity. |
| 7.03 | | no evidence |
| 7.04 | 1. Starr, F, Starr, K and Loope, LL (2003), Aristolochia littoralis, United States Geological Survey—Biological Resources Division, Haleakala Field Station, Maui, Hawai'i www.hear.org/starr/hiplants/reports/pdf/aristolochia_littoralis.pdf 2. The University of Queensland. Special edition of Environmental Weeds of Australia for Biosecurity Queensland http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Aristolochia_elegans.htm (3-27-2015) 3. NSW North Coast Weeds Advisory Committee – NCWAC. http://www.northcoastweeds.org.au/dutchmans-pipe/ (3-27-2015) | 1. The seed pod of A. littoralis is a dehiscent capsule with numerous winged seeds that are dispersed by the wind 2. These relatively light seeds are usually released from a significant height, hence dispersal is often wind-assisted. 3. Mostly spread by humans, also by wind, water and gravity. |
| 7.05 | 1. The University of Queensland. Special edition of Environmental Weeds of Australia for Biosecurity Queensland http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Aristolochia_elegans.htm (3-27-2015) 2. NSW North Coast Weeds Advisory Committee – NCWAC. http://www.northcoastweeds.org.au/dutchmans-pipe/ (3-27-2015) 3. Environmental weeds of the Gold Coast http://gcparks.com.au/userfiles/file/5237%20BFNS%20Environmental%20web%208.pdf (3-27-2015) | 1. Seeds may also be spread by water (if plants are growing along waterways) 2. Mostly spread by humans, also by wind, water and gravity. 3. Seeds spread by water. |
| 7.06 | | no evidence |

| | | |
|---|---|---|
| 7.07 | Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1999. Manual of the Flowering Plants of Hawai'i. 2 vols. Bishop Museum Special Publication 83, University of Hawai'i and Bishop Museum Press, Honolulu, Hawai'i. | no evidence of adaptions for attachment |
| 7.08 | | no evidence |
| 8.01 | Austrailian Tropical Rainforest Plants http://keys.trin.org.au/key-server/data/0e0f0504-0103-430d-8004-060d07080d04/media/Html/taxon/Aristolochia_elegans.htm (4-1-2015) | Fruits pendulous on fine threads about 5.5-6.5 cm long, each fruit about 5-6 x 1.5 cm at maturity before dehiscing to release the seeds. Cotyledons about 3.5-5 x 3-4 mm, elliptic to ovate, petiole about 2 mm long. [Unlikley given seed size] |
| 8.02 | | no evidence |
| 8.03 | 1. Skoien, P. and Csurhes, S. 2009. Weed risk assessment for Queensland Primary Industries: Fisheries Dutchman's pipe (Aristolochia elegans) https://www.daff.qld.gov.au/__data/assets/pdf_file/0007/69703/IPA-Dutchmans-Pipe-Risk-Assessment.pdf (3-27-2015) 2. Save Our Waterways Now Inc. http://www.saveourwaterwaysnow.com.au/01_cms/details_pop.asp?ID=771 (3-31-2015) 3. The University of Queensland. Special edition of Environmental Weeds of Australia for Biosecurity Queensland http://keyserver.lucidcentral.org/weeds/data/03030800-0b07-490a-8d04-0605030c0f01/media/Html/Aristolochia_elegans.htm | 1. Once established, numerous above and below ground stems and roots require multiple herbicide applications (Langeland et al., 2004). Existing plants should be removed before seeds are produced if possible. Plants should be basal barked (without cutting the vine) and applied with herbicide at the base of vines, as close to the root. Repeat applications of herbicide may be required to control regrowth or plants missed on initial application. 2. Cut near the base and paint with neat herbicide. 3. The plant can be controlled with a herbicide. |
| 8.04 | | no evidence |
| 8.05 | | no evidence |