Cryptostegia madagascariensis **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Gentianales	Asclepiadaceae

Common name zong makak (English, Saint Lucia), Madagascar rubber vine (English), rubber vine (English), palay rubber vine (English), purple allamanda (English), Indian rubber vine (English), lèt makak (English, Saint Lucia)

Synonym *Cryptostegia madagascariensis* , var. *madagascariensis*
Cryptostegia madagascariensis , var. *glaberrima*
Cryptostegia madagascariensis , var. *septentrionalis*

Similar species

Summary *Cryptostegia madagascariensis* a native of Madagascar, is found in tropical climates world-wide where it is has naturalized. It has been dispersed widely largely due to its popularity as an ornamental; and for extraction of its latex content for rubber manufacture. Despite not being as invasive as its drier counterpart, *Cryptostegia grandiflora*, *C. madagascariensis* is considered highly invasive in Hawaii, Australia and Brazil. Due to its close similarities to *C. grandiflora*, many of the management techniques are able to be used on *C. madagascariensis*.

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Species Description
As described by Klackenberg (2001): \"Branches glabrous to hairy, usually with few conspicuous lenticels. Leaf blade usually oblong or elliptic to ovate, sometimes broadly ovate to rarely obovate or almost orbicular, 2-11 × 1.5-5.5 cm, almost truncate to usually tapering at base, usually acuminate at apex, glabrous to hairy below or on both sides or along veins only; petiole 3-10 mm long, glabrous to hairy. Internodes of cymes 5-15 mm long; pedicels 3-7 mm long, usually hairy; bracts 2-7 mm long. Calyx lobes narrowly ovate to elliptic, 5.7-12.8 × 2.7-5.4 mm, with non-reflexed margins. Corolla tube (9-)15-25 mm long; lobes (20-)25-44 × (8-)14-26 mm. Corona lobes 6-9 mm high, entire. Staminal cone 3.2-5.2 mm high; anthers 2.7- 4.5 mm. Translator spathe ovate, 1.3-1.8 mm long, acute at the apex. Style 1.3-3.4 mm long; style including style head 4.8-6.8 mm long. Follicles (5-)7-9 × 1-3 cm, glabrous to finely pubescent. Seeds 5-8 mm long; hairs 2-3 cm long.\"
C. madagascariensis occurs naturally along the western coast of Madagascar, but prefers the Northern, wetter part of the coast. *C. grandiflora* on the other hand prefers a drier climate. Where the two species overlap, *C. madagascariensis* is thought to outcompete *C. grandiflora* due to its preference of a wetter climate (Kriticos *et al*, 2003).

Uses
The latex from *Cryptostegia* species has been used for the production of rubber in both India and Madagascar, however the hybridization of the two species (*Cryptostegia grandiflora* and *C. madagascariensis*) doubles the latex content (Polhamus *et al*, 1934; as seen in Klackenberg, 2001). In Madagascar the fibres have been used for making threads and ropes for the manufacture of nets and fishing line (Jumelle, 1907; as seen in Klackenberg, 2001). Its poisonous properties have been used in committing suicide for religious purposes (Choux, 1931; as seen in Klackenberg, 2001) and for medicinal practices (Jumelle, 1907, Boiteau, 1986; as seen in Klackenberg, 2001). It is however usually cultivated as an ornamental and for rubber production (Starr *et al*, 2003).

Habitat Description
Cryptostegia madagascariensis is distributed along the whole western part of Madagascar. It is found from sea level up to 700m altitude. It grows in dry forest, savannah, tsingy, disturbed grazed grassland and on lateritic soil and sand, often on river beds, and usually in full sunlight (Klackenberg, 2001). *C. madagascariensis* is found from Tulear in the south west to Diego Suarez in the extreme north, in areas receiving 400-2,400 mm (16-94 in) annually (McFadyen and Harvey, 1991; as seen in Starr *et al*, 2003).

Reproduction
Cryptostegia madagascariensis flowers in Madagascar from July to May (Klackenberg, 2001). In Australia, flowering occurs from Decemeber to February (Northern Territory Government, 2010), although in Brazil flowering of *C. madagascariensis* occurs mainly in November and December. Flowers open during the day and last about 24 hours. They are self-compatible, however self-pollination does not occur. Once pollinated, two fruit result per flower. Bees should be the main pollinators. Fruit is exhibited all year round, but more frequently in January and February. The fruit take four months to reach the maximum size (average of 6.44 cm length, 2.45 cm height and 3.4 cm width), and 210 days for opening. Each fruit averages around 96.5 seeds. Seeds from closed fruit showed 93% germination under those conditions (Vieira *et al*, 2004).

Management Info
Preventative measures: A Risk Assessment of *Cryptostegia madagascariensis* for Hawaii and other Pacific islands was prepared by Dr. Curtis Daehler (UH Botany) with funding from the Kaulunani Urban Forestry Program and US Forest Service. The alien plant screening system is derived from Pheloung *et al*. (1999) with minor modifications for use in Pacific islands (Daehler *et al.* 2004). The result is a score of 13 and a recommendation of: \"Likely to cause significant ecological or economic harm in Hawaii and on other Pacific Islands as determined by a high WRA score, which is based on published sources describing species biology and behavior in Hawaii and/or other parts of the world.\"
Physical control: Starr *et al* (2003) suggest that small plants can be pulled by hand or dug out with the fruits bagged and disposed of properly, however the milky sap should be avoided. da Silva *et al* (2008) however do not recommend mechanical removal due to it being uneconomical for larger specimen, and that the sap is toxic.
Chemical control: Starr *et al* (2003) note that there are several chemical listed in Australia for *Cryptostegia* spp. control. Grazon DS, Banvel, Brushoff, Tordon, Velpar, Graslan, and 2, 4-D are all used, however as *Cryptostegia grandiflora* is the species causing most concern it is not known how effective these might be on *C. madagascariensis*. In Hawai'i, Garlon has be used in cut stump treatments as well as mechanical removal. Foliar spraying has been shown to be most effective on smaller plants. Basal bark spraying is not effective on multi-stemmed plants, however with singular-stemmed plants, the spray should be completely around the base. Root application has also been used in Australia, however this method is a non-selective method. It has however been found to useful by farmers that were far off in the bush and needed a lightweight method for controlling individual outliers (Starr *et al*, 2003).
Biological: There seems to be a few biological agents that can be used against *C. madagascariensis*. A new *Schizomyia* species was described by Gagne & Marohasy (2007) that causes galls on rubber vines. Although originally sort after as a bio-control agent for *Cryptostegia grandiflora* in Australia, galls caused by the species were also seen on *C. madagascariensis*, and thus could be used in management efforts. Huwer & McFadyen (1999) investigated the use of the hawk moth (*Nephele densoi*) as a potential bio-control agent in Australia against *C. grandiflora* and the possible effectiveness of the its Australian counterpart *N. subvaria*. They showed that *N. densoi* is capable of establishing on both *Cryptostegia* species, however the specificity of *N. subvaria* meant that it could not establish on either species. *N. densoi* however could be a potential bio-agent. The rubber vine rust *Maravalia cryptostegiae* and the rubber vine moth *Euclasta whalleyi* have proven to be the best methods to be used in Australia. These however do not out-right kill individuals, but cause adnormal defoliation, creating an energy sink which leads to reduced seed production (Starr *et al*, 2003).

Pathway
Cryptostegia madagascariensis is originally dispersed by people for rubber production (Starr *et al*, 2003).*Cryptostegia madagascariensis* is originally dispersed by people for ornamental purposes (Starr *et al*, 2003).

Principal source:

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Review: Under expert review

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ALIEN RANGE

[1] ANGUILLA
[1] BRAZIL
[1] INDIA
[3] AUSTRALIA
[4] COOK ISLANDS
[1] KENYA

[1] MONTSERRAT
[1] PUERTO RICO
[5] UNITED STATES
[1] WEST INDIES
[2] PALAU
[1] SAINT LUCIA
[1] VIRGIN ISLANDS, BRITISH

Red List assessed species 4: CR = 3; NT = 1;

Acacia anegadensis **CR**
Metastelma anegadense **CR**
Cordia rupicola **CR**
Neochmia ruficauda **NT**

BIBLIOGRAPHY

30 references found for **Cryptostegia madagascariensis**

Managment information

Christoph Kueffer, Christoph; Curtis C.Daehler; ChristianW.Torres-Santana; Christophe Lavergne; Jean-Yves Meyer; Rudiger Otto; and Luis Silva, 2009. A global comparison of plant invasions on oceanic islands. Perspectives in Plant Ecology, Evolution and Systematics
Summary: Available from: http://www.li-an.fr/jyves/Kuffer_et_al_2009_PPEES_Invasive_plants_oceanic_islands.pdf [Accessed June 29 2010]

Connor, Rhon A., 2008. Anguilla Invasive Species strategy (2008) draft
Summary: Available from: http://www.gov.ai/documents/Anguilla%20Invasive%20Species%20Strategy%202008%20(2).pdf [Accessed June 29 2010]

Daltry, J.C. 2009. Biodiversity Assessment of Saint Lucia's Forests, With Management Recommendations. Technical Report No. 10 to the National Forest Demarcation and Bio-Physical Resource Inventory Project, FCG International Ltd, Helsinki, Finland
Summary: Available from: http://www.bananatrustslu.com/doccentre/National_Forest_Demarcation/Biodiversity%20Assessment%20-%2027%20November%20-%20extract.pdf [Accessed June 29 2010]

da Silva, Janaina L., Robert W. Barreto and Olinto L. Pereira, 2008. *Pseudocercospora cryptostegiae-madagascariensis* sp. *nov*. on *Cryptostegia madagascariensis*, an Exotic Vine Involved in Major Biological Invasions in Northeast Brazil. Mycopathologia (2008) 166:87-91

Department of Agriculture and Food, Government of Western Australia, n.d. Rubber vine (*Cryptostegia madagascariensis*)
Summary: Available from: http://agspsrv95.agric.wa.gov.au/dps/version02/01_plantview.asp?page=7&contentID=101& [Accessed June 29 2010]

Evans, Harry C., 1993. Studies on the rust *Maravalia cryptostegiae*, a potential biological control agent of rubber-vine weed (*Cryptostegia grandiflora*, Asclepiadaceae: Periplocoideae) in Australia, I: Life-cycle. Mycopathologia 124: 163-174, 1993.

Gagne, J. Raymond & Jennifer Marohasy, 2007. A New Species of *Schizomyia* Kieffer (Diptera: Cecidomyiidae) on Rubber Vine and Other Asclepiadaceae in Madagascar. Australian Journal of Entomology, 1997, 36: 15-18

Huwer, R. K. and McFadyen, R. E. 1999. Biology and Host Range of the Hawk Moth *Nephele densoi* Keferstein (Lep.: Sphingidae), a Potential Agent for the Biological Control of Rubbervine *Cryptostegia grandiflora* R. Br. (Asclepiadaceae) , Biocontrol Science and Technology, 9: 1, 79 – 88

IUCN/SSC Invasive Species Specialist Group (ISSG)., 2010. A Compilation of Information Sources for Conservation Managers.
Summary: This compilation of information sources can be sorted on keywords for example: Baits & Lures, Non Target Species, Eradication, Monitoring, Risk Assessment, Weeds, Herbicides etc. This compilation is at present in Excel format, this will be web-enabled as a searchable database shortly. This version of the database has been developed by the IUCN SSC ISSG as part of an Overseas Territories Environmental Programme funded project XOT603 in partnership with the Cayman Islands Government - Department of Environment. The compilation is a work under progress, the ISSG will manage, maintain and enhance the database with current and newly published information, reports, journal articles etc.

Klackenberg, Jens, 2001. Revision of the genus *Cryptostegia* R. Br. (Apocynaceae, Periplocoideae). Adansonia, sér. 3, 2001, 23 (2) : 205-218
Summary: Available from: http://www.mnhn.fr/publication/adanson/a01n2a3.pdf [Accessed June 29 2010]

Kraus, Fred & David C.Duffy, 2010. A successful model from Hawaii for rapid response to invasives pecies. Journal for Nature Conservation, 18 (2010)135–141

Kriticos, D.J.; R.W. Sutherst; J.R. Brown; S.W. Adkins and G.F. Maywald, 2003. Climate change and biotic invasions: a case history of a tropical woody vine. Biological Invasions 5: 145–165, 2003.

Mackey , A. P (ed.) n.d. Rubber vine (*Cryptostegia grandiflora*) in Queensland. Rubber Vine Pest Status Review.
Summary: Available from: http://www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-RubberVine-PSA.pdf [Accessed June 29 2010]

McGowan A., A.C.Broderick, C.Clubbe, S.Gore, B.J.Godley, M.Hamilton, B.Lettsome, J.Smith-Abbott, N.K.Woodfield. 2006. Darwin Initiative Action Plan for the Coastal Biodiversity of Anegada, British Virgin Islands. 13 pp.
Summary: Available from: http://www.seaturtle.org/mtrg/projects/anegada/Anegada%20BAP.pdf [Accessed June 29 2010]

Mo, Jianhua; Mariano Trevi–o and William A Palmer, 2000. Establishment and distribution of the rubber vine moth, *Euclasta whalleyi* Popescu-Gorj and Constantinescu (Lepidoptera: Pyralidae), following its release in Australia. Australian Journal of Entomology (2000) 39, 344–350

Morton, Julia, F., 1976. Pestiferous spread of many ornamentals and fruit species in South Florida. Proc. Fla. State Hort. Soc. 89:348-353. 1976.
Summary: Available from: http://www.fshs.org/Proceedings/Password%20Protected/1976%20Vol.%2089/348-353%20(MORTON).pdf [Accessed June 29 2010]

Northern Territory Government, 2010. Rubber vine, Ornamental (*Cryptostegia madagascariensis*)
Summary: Available from: http://www.nt.gov.au/nreta/natres/weeds/find/pdf/rubber_vine_madagas_id.pdf [Accessed June 29 2010]

Pacific Island Ecosystems at Risk (PIER), 2005. Risk Assessment. *Cryptostegia madagascariensis* Bojer ex decne., Asclepiadaceae
Summary: Available from: http://www.hear.org/pier/wra/pacific/cryptostegia_madagascariensis_htmlwra.htm [Accessed June 29 2010]

Pacific Island Ecosystems at Risk (PIER), 2010. *Cryptostegia madagascariensis* Bojer ex decne., Asclepiadaceae
Summary: Available from: http://www.hear.org/pier/species/cryptostegia_madagascariensis.htm [Accessed June 29 2010]
Starr, Forest and Kim Starr, 2010. Plants of Hawaii: *Cryptostegia madagascariensis* (rubber vine)
Summary: Available from: http://www.hear.org/starr/images/species/?q=cryptostegia+madagascariensis&o=plants [Accessed June 29 2010]
Starr, Forest; Kim Starr, and Lloyd Loope 2003. *Cryptostegia* spp. Rubber vine Asclepiadaceae. United States Geological Survey--Biological Resources Division Haleakala Field Station, Maui, Hawai i
Summary: Available from: http://www.hear.org/Pier/pdf/pohreports/cryptostegia_spp.pdf [Accessed June 29 2010]
Tomley, A. J.and H. C. Evans, 2004. Establishment of, and preliminary impact studies on, the rust, *Maravalia cryptostegiae*, of the invasive alien weed, *Cryptostegia grandiflora* in Queensland, Australia Plant Pathology (2004) 53, 475–484
Vieira, Milene Faria; De Oliveira Leite, Mauro Sergio; Saraiva Grossi, Jose Antonio; Alvarenga, Eveline Mantovani, 2004. Reproductive biology of *Cryptostegia madagascariensis* Bojer ex Decne. (Periplocoideae, Apocynaceae), an ornamental and exotic species of Brazil. Bragantia. 63(3). SEP-DEC 2004. 325-334.
Young, R. P. (ed.) 2008. A biodiversity assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph No. 1. Durrell Wildlife Conservation Trust, Jersey, Channel Islands.
Summary: Available from: http://www.durrell.org/library/Document/Durrell_Cons_Monograph_1_Full_Report.pdf [Accessed June 29 2010]

General information

Integrated Taxonomic Information System (ITIS), 2010. *Cryptostegia madagascariensis* Bojer ex Dcne.
Summary: Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=501834 [Accessed June 29 2010]
Lampe, F. Kenneth, n.d. Dermatitis-Producing Plants of South Florida and Hawaii. Clinics in Dermatology
Marohasy, Jennifer and Paul I. Forster, 1991. A Taxonomic Revision of *Cryptostegia* R. Br. (Asclepiadaceae: Periplocoideae). Aust. Syst. Bot., 4, 571-7 1981
Space, James C., Barbara Waterhouse; Julie S. Denslow and Duane Nelson, 2000. Invasive Plant Species on Rota, Commonwealth of the Northern Mariana Islands. U.S.D.A. Forest Service Pacific Southwest Research Station Institute of Pacific Islands Forestry Honolulu, Hawai i, USA
Summary: Available from: http://sprep.org/att/IRC/eCOPIES/INVASIVE%20SPECIES/CMI_rota.pdf [Accessed June 29 2010]
USDA-ARS, 2010. Taxon: *Cryptostegia madagascariensis* Bojer ex Decne. National Genetic Resources Program. Germplasm Resources Information Network - (GRIN) [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland
Summary: Available from: http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?12532 [Accessed June 29 2010]
USDA-NRCS, 2010. *Cryptostegia madagascariensis* Bojer ex Decne. Madagascar rubbervine. The PLANTS Database. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.
Summary: Available from: http://plants.usda.gov/java/profile?symbol=CRMA10 [Accessed June 29 2010]