GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Psidium cattleianum***

Psidium cattleianum 简体中文 正體中文 **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Myrtales	Myrtaceae

Common name Erdbeer-Guave (German), strawberry guava (English), cattley guava (English), purple strawberry guava (English), cherry guava (English), Chinese guava (English), goyave de Chine (French), kuahpa (English, Pohnpei), waiawi (English, Hawai'i), ngguava (English, Fiji), tuava tinito (English, French Polynesia)

Synonym *Psidium littorale* , Raddi
Psidium cattleianum , var. *littorale* (O. Berg) Fosb.

Similar species

Summary Psidium cattleianum is native to Brazil, but has been naturalised in Florida, Hawai'i, tropical Polynesia, Norfolk Island and Mauritius for its edible fruit. It forms thickets and shades out native \nvegetation in tropical forests and woodlands. It has had a devastating effect on native habitats in Mauritius and is considered the worst plant pest in Hawai'i, where it has invaded a variety of natural areas. It benefits from feral pigs (Sus scrofa) which, by feeding on its fruit, serve as a dispersal agent for its seeds. In turn, the guava provides favourable conditions for feral pigs, facilitating further habitat degradation.

view this species on IUCN Red List

Species Description
Evergreen shrub or small tree up to 8m tall. Mature branches are gray to reddish-brown with peeling bark and young branches are round and pubescent. Leaves are opposite, simple, entire, glabrous, elliptic to oblong, to 8cm (3 in) long. Flowers to 2.5cm (1.2 in) wide, born singly at leaf axils, with white petals and numerous white and yellow stamens. Fruit is a globose berry, 3-6cm (1.2-2.4 in) long, purple-red, with whitish flesh, usually sweet-tasting when ripe; seeds are numerous.

Uses
The strawberry guava is a shrub naturalised in several subtropical areas. It produces sweet and aromatic fruit, which are appreciated by the inhabitants of La Réunion Island. Processing industries are supplied by fruit gathered from the wild. As strawberry guava thrives in humid areas where the farming potential is low, its cultivation could be a means of providing additional income to farmers, while also establishing a steady supply of fruit to industry and to markets (Normand 2002).

Habitat Description
Psidium cattleianum is found on various Polynesian and Micronesian islands where it occurs as an introduced species on both disturbed land and in native ecosystems. Habitats it is found in include: sub-montane rainforest, montane cloud forest, montane rainforest, moist tropical montane forest, tropical ravine/riperian forest, tropical evergreen forest, deciduous woodland (oak), tropical montane savanna, lowland sub-tropical rainforest, scrub land, grass land, degraded forest, cultivation and agro-forestry (Mauremootoo Dr. J.).

Reproduction
Regeneration of strawberry guava is by seed and by root sprouts, which allow it to undergo expansive vegetative reproduction. Strawberry guava produces an abundance of fruits, the seeds of which are dispersed by birds and mammals.
Strawberry guava is a prolific fruiter, with up to 70 seeds per fruit, though most fruits contain a lower number of seeds. Fruiting is more abundant for stems on the edge of the thickets.

General Impacts
P. cattleianum is a habitat-altering weed that poses a major threat to endemic flora by competing for light and soil nutrients. Today the most serious threat to Seychelles forests is the low regeneration of native trees caused by the invasion of alien plant species such as *P. cattleianum* (Fleischmann, 1997, 1999, in Fleischmann *et al*. 2006).

Management Info
Preventative measures: A Risk Assessment of *Psidium cattleianum* for Hawai‘i 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 18 and a recommendation of: \"Likely to cause significant ecological or economic harm in Hawai‘i and on other Pacific Islands as determined by a high WRA score, which is based on published sources describing species biology and behaviour in Hawai‘i and/or other parts of the world.\"
\r\nPhysical: Because of the huge quantities of seed that are dispersed by feral pigs, and other exotic invasive species, feral species management is a practical and necessary first step in strawberry guava management. Manual and mechanical control measures work reasonably well and are recommended where practical. Seedlings and saplings originating from seed can be uprooted. Uprooted plants may resprout or re-root in areas with greater than 2000mm of rain/year or drier areas after prolonged rain, especially if the plants are set on the ground. Manual and mechanical methods are less effective on root sprouts.
\r\nChemical: A number of effective chemical control measures have been developed. Strawberry guava is sensitive to picloram, dicamba, glyphosate, and triclopyr. It has been shown that undiluted picloram (Tordon 22K) is highly effective on strawberry guava as a cut stump treatment. Tordon 22K was used at Hawai‘i Volcanoes but discontinued because of unfavourable effects on non-target plants. It was replaced by Tordon RTU, which was nearly as effective, but less harmful to surrounding vegetation. Undiluted dicamba (Banvel) proved to be highly effective in a cut surface treatment. Additionally, undiluted glyphosate (Roundup) has proven to be effective using a \"\"hack and squirt\"\" method. Resource Managers in Hawai‘i found undiluted triclopyr ester (Garlon 4) to be effective as a cut-stump treatment, with 80% of plants dead and 90% of treated plants without resprouts after 21 months. A frill application of undiluted triclopyr amine (Garlon 3A) was somewhat less effective, with 11 of 20 stems dead and all trees defoliated after 21 months. Fifty percent Garlon 4 and 3A were about 50% effective. A major drawback of cut-stump treatment methods in very wet areas (>5000mm rainfall/yr) was resprouting of slash from cut stump and wood fragments from felling larger trees. Garlon is recommended because of its lack of mobility and relatively short half-life, 4-6 weeks. In addition, the research is more thorough and definitive on control methods for Garlon than other herbicides.
\r\nBiological: Biological control is the only feasible long-term management strategy for strawberry guava. However, until recently, biological control has been perceived as unfeasible because common guava, grown commercially in Hawai‘i, is a congener of strawberry guava. Biological control is being reexamined. Several insects defoliate strawberry guava in its natural range, it is possible that insect biological control agents could be found that do not attack common guava. Memoranda of agreement has been concluded between the University of Hawai‘i and two Brazilian Universities to locate species attacking strawberry guava and not common guava. It is thought that highly specific insect pests can be found because common guava and strawberry guava are sympatric in their natural range.

Pathway
Introduced by acclimatisation societies.

Principal source: Pacific Islands Ecosystems at Risk, (PIER, 2002)

Compiler: Dr. John Mauremootoo (Plant Conservation Manager) & Mr. Joseph Rodriguez (Research Assistant on Alien Plant Management). Mauritian Wildlife Foundation & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Dr. John Mauremootoo (Plant Conservation Manager) & Mr. Joseph Rodriguez (Research Assistant on Alien Plant Management). Mauritian Wildlife Foundation.

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ALIEN RANGE

[1] AUSTRALIA
[1] COOK ISLANDS
[1] FRENCH POLYNESIA
[1] MAURITIUS
[1] MICRONESIA, FEDERATED STATES OF
[1] NORFOLK ISLAND
[2] PITCAIRN
[2] SEYCHELLES
[2] UNITED STATES
[1] BERMUDA
[1] FIJI
[1] KIRIBATI
[1] MAYOTTE
[3] NEW ZEALAND
[1] PALAU
[1] REUNION
[1] SWAZILAND

Red List assessed species 14: CR = 7; EN = 3; VU = 4;

Chassalia capitata **CR**
Hemignathus lucidus **CR**
Hypsipetes olivaceus **VU**
Otus pauliani **CR**
Pseudonestor xanthophrys **CR**
Pterodroma sandwichensis **VU**
Zosterops chloronothus **CR**
Coracina typica **VU**
Humblotia flavirostris **EN**
Meryta brachypoda **CR**
Palmeria dolei **CR**
Psittacula eques **EN**
Puffinus newelli **EN**
Zosterops mouroniensis **VU**

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34 references found for **Psidium cattleianum**

Managment information
Daehler, C.C; Denslow, J.S; Ansari, S and Huang-Chi, K., 2004. A Risk-Assessment System for Screening Out Invasive Pest Plants from Hawaii and Other Pacific Islands. Conservation Biology Volume 18 Issue 2 Page 360.
Summary: A study on the use of a screening system to assess proposed plant introductions to Hawaii or other Pacific Islands and to identify high-risk species used in horticulture and forestry which would greatly reduce future pest-plant problems and allow entry of most nonpests.
Fleischmann, K., Edwards, P.J., Ramseier, D. and Kollmann, J. 2005. Stand structure, species diversity and regeneration of an endemic palm forest on the Seychelles, *African Journal of Ecology 43*(4).
Hivert, J. 2003. Plantes exotiques envahissantes - Etat des m�thodes de lutte mise en oeuvre par l Office National des For�ts & La R�union. ONF R�union.
Summary: Synth�se des m�thodes de lutte employ�es par l ONF & la R�union contre une vingtaine de plantes exotiques envahissantes.
Huenneke, L.F., Vitousek, P.M. 1990. Seedling and clonal recruitment of the invasive tree *Psidium cattleianum*: Implications for management of native Hawaiian forests, *Biological Conservation 53*(3): 199-211.
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.
Joshi, C., de Leeuwa, J., van Durena, I.C. 2004. Remote Sensing and GIS Applications for Mapping and Spatial Modelling of Invasive Species.
Summary: Available from: http://www.itc.nl/library/Papers_2004/peer_conf/joshi.pdf [Accessed 10th February 2006]
Kueffer, C. and Mauremootoo, J., 2004. Case Studies on the Status of Invasive Woody Plant Species in the Western Indian Ocean. 3. Mauritius (Islands of Mauritius and Rodrigues). Forest Health & Biosecurity Working Papers FBS/4-3E. Forestry Department, Food and Agriculture Organization of the United Nations, Rome, Italy.

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Summary: Uses *Clidemia hirta* in Hawaii as an eradication case study. *Clidemia* is in the Melastomataceae and somewhat similar ecologically to miconia.
Eradication case study in Turning the tide: the eradication of invasive species.
Mauremootoo, J. R. unpublished. CBD case study - guava in Mauritius.
Summary: This article reviews the status of Psidium in Mauritius, its impact on native biodiversity, the efforts being made to control the species and possible future avenues for management.
Motooka, P. 2000. Summaries of herbicide trials for pasture, range, and non-cropland weed control-1999. College of Tropical Agriculture and Human Resources of the University of Hawaii at Manoa.
Summary: Data published to assist applicators experimenting with herbicides for weed control.
Normand, F. 2002. The Strawberry Guava: a new Fruit Species for Humid Areas in Reunion Island,*ISHS Acta Horticulturae 575*.
PIER (Pacific Island Ecosystems at Risk), 2002. *Psidium cattleianum*
Summary: Ecology, synonyms, common names, distributions (Pacific as well as global), management and impact information.
Available from: http://www.hear.org/pier/species/psidium_cattleianum.htm [Accessed 5 February 2003].
Stone, C. P., Smith, C. W. and Tunison, J. T. 1992. Alien Plant Invasions in Native Ecosystems of Hawaii. Management and Research. University of Hawaii Cooperative Park Studies Unit: 1-887.
Summary: This large and comprehensive volume covers general features of invasive species biology, case studies of invasive species management in the US, the pest status & autecology of some of the major invasives in Hawaii, methods used for the control.
Strahm, W. A. 1999. Invasive species in Mauritius: examining the past and charting the future. In Invasive Species and Biodiversity Management. Kluwer Academic Publishers: 325-347.
Summary: This article reviews the history of introduced animals and plant in Mauritius and their effects on the indigenous flora & fauna. Management measures are reviewed & illustrated with case studies. Future prospects for invasive species management are discuss
Swaziland s Alien Plants Database., Undated. *Psidium cattleianum*
Summary: A database of Swaziland s alien plant species.
Tunison, T. 1991. The Nature Conservancy Element Stewardship abstract for *Psidium cattleianum*.
Summary: Strawberry guava is a very serious habitat-disruptive pest in many parks and preserves in Hawaii because of its tendency to form mono-specific stands. Prolific fruiting, shade tolerance, clonal, regenerative strategy, tolerance of heavy litter fall.
Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report 372. Peterborough: United Kingdom.
Summary: This database compiles information on alien species from British Overseas Territories.
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Summary: Eradication case study in Turning the tide: the eradication of invasive species.

General information

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Conservatoire Botanique National De Mascarin (BOULLET V. coord.) 2007. - *Psidium cattleianum* Index de la flore vasculaire de la R�union (Trach�ophytes) : statuts, menaces et protections. - Version 2007.1
Summary: Base de donn�es sur la flore de la R�union. De nombreuses informations tr�s utiles.
Available from: http://flore.cbnm.org/index2.php?page=taxon&num=6157966f9b9e2f35d2266675bad8b7f8 [Accessed 9 April 2008]
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ITIS (Integrated Taxonomic Information System), 2005. Online Database *Psidium cattleianum*
Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
Available from:
http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Psidium+cattleianum&p_format=&p_ifx=plglt&p_lang= [Accessed March 2005]
Langeland, K.A. and Burks, K. C (Eds) 1998. Identification and Biology of Non-Native Plants in Florida s Natural Areas, University of Florida. *Psidium cattleianum*
Summary: Information on plants that pose threats to natural resource areas in Florida.
Available from: http://www.fleppc.org/ID_book/psidium%20cattleianum.pdf [Accessed 30 December 2004]
Lorence, D. and Sussman, R. W. 1986. Exotic species invasion into Mauritius wet forest remnants. Journal of Tropical Ecology 2: 147-162.
Summary: Two areas of wet forest were sampled to determine the extent of invasion by weed species. In both cases the canopy was dominated by native species but the seedling layer by introduced species, notably Psidium and Ligustrum.
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Summary: Cet article est le premier � proposer une hi�rarchisation des plantes les plus envahissantes de La R�union. 33 plantes ont �t� ainsi class�es en utilisant une m�thode d�velopp�e en Afrique du Sud. Les bases d une strat�gie de lutte contre les plantes exotiques envahissantes sont �galement formul�es.

Mandon-Dalger, I., Clergeau, P., Tassin, J., Riviere, J., and Gatti, S. 2004. Relationships between alien plants and an alien bird species on Reunion Island. Journal of Tropical Ecology. Vol. 20: 635-642.
Summary: Article focusing on the interaction between alien birds and plants describing many examples and the ecological feedback that takes placce between an introduced bird and plants it unknowingly introduces as food.
Meyer, Jean-Yves & Loope, Lloyd & Sheppard, A. & Munzinger, Jérôme & Jaffré, Tanguy. (2006). Les plantes envahissantes et potentiellement envahissantes dans l'archipel néo-calédonien : première évaluation et recommandantions de gestion.
Meyer, J.-Y. 2000. Invasive plants in the Pacific Islands. In: The Invasive Species in the Pacific: A Technical Review and Draft Regional Strategy. Sherley, G. (tech. ed). Published in June 2000 by the South Pacific Regional Environment Programme (SPREP).
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Morton, J. F. 1987. Fruits of Warm Climates.
Summary: *Psidium cattleianum* is cultivated to a limited extent in other areas of South America and Central America and in the West Indies, Bermuda, the Bahamas, southern and central Florida and southern California. It is grown occasionally in subtropical Africa
Motley, T.J. 2005. Tetraplasandra lydgatei (Araliaceae): Taxonomic Recognition of a Rare, Endemic Species from O�ahu, Hawaiian Islands, *Pacific Science 59*(1):105�110.
Summary: Available from: http://muse.jhu.edu/journals/pacific_science/v059/59.1motley.pdf [Accessed 10th February 2006]
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Summary: L inventaire de 318 esp�ces de plantes ligneuses introduites la R�union, permet d en identifier 132 comme naturalis�es dans les �cosyst�mes naturels. 26 de ces esp�ces choisies parmi les plus envahissantes ont �t� class�es en fonction de leur impact biologique sur les �cosyst�mes indig�nes.