

*Pittosporum undulatum* [简体中文](#) [正體中文](#)

**System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Rosales	Pittosporaceae

**Common name** mock orange (English), Australian cheesewood (English), wild coffee (English, Jamaica), Victorian laurel (English), native daphne (English), Victorian box (English), orange pittosporum (English), sweet pittosporum (English)

### Synonym

**Similar species** *Pittosporum viridiflorum*

### Summary

*Pittosporum undulatum* is an evergreen tree that is often used as an ornamental plant, due to its attractive fragrant flowers. It is native to south-eastern Australia but has now spread to a number of islands in the Pacific and Caribbean, as well as islands in the Atlantic and to South Africa. It is also invasive in Australia outside its native range. Research is being carried out in Jamaica to determine the most effective methods of control for this species.



[view this species on IUCN Red List](#)

### Species Description

A slender-branched shrub or tree, can grow to 12m tall in its natural habitat, with smooth, gray bark. It has a straight bole, regular whorls of branches, and a dense crown. Leaves alternate, often crowded at ends of slender, light brown branches, 6-15cm long, 1.5-4cm wide, lanceolate, pointed at both ends, shiny, with prominently wavy margins. Flowers almost white, few, fragrant, borne on the youngest branches in terminal clusters about 2-3cm long; petals 5, abruptly bent downward at end. Fruit globe-shaped, compressed, usually 16mm long, leathery, about 25-seeded. Seeds angular, 3mm long and 1mm thick, dark brown, smooth (Haselwood, 1966 in PIER, 2003). In Jamaica this species has a maximum recorded height of 22m (also a Diameter Breast Height (DBH) of 65.6cm and a wood density of 0.8-1.0 g cm<sup>-3</sup>) (McDonald and Healey, pers. Comm, 2003)

### Notes

*Pittosporum undulatum* is on the French Polynesia exclusion list (PIER, 2003).

Seedling densities can reach 5000 m<sup>2</sup> in areas with high light intensity (Binggeli and Goodland, 1997).

Chemicals known as saponins are found in this plant. These are toxic to humans but are poorly absorbed by the body, therefore causing few problems. Other organisms, such as fish, are much more affected. Plants containing saponins have been used traditionally as a method of killing or stunning fish by adding quantities of them to waterways (Plants For a Future, 2003).

*P. undulatum* has been known to hybridise with *P. bicolor* and maybe *P. revolutum* in Australia (Binggeli and Goodland, 1997).

### Lifecycle Stages

Germination of seeds takes place in late autumn to spring (Bushcare, 2003).

## Uses

Can be grown as a windbreak hedge. The wood may be used in the manufacture of golf clubs (Plants For A Future, 2003). It also makes good firewood, can be used to produce charcoal, and may be utilised for timber. It is popular as an ornamental tree and its high rate of nectar production makes it good source of food for honeybees (Binggeli and Goodland, 1997).

## Habitat Description

*Pittosporum undulatum* is native to the coastal belt and mountains of south-eastern Australia (Binggeli and Goodland, 1997). Prefers moist to wet areas in rainforest gullies and sclerophyll forest (ASGAP, 2002). Can grow to 1200m in elevation (Wagner et. Al. 1999 in PIER, 2003). Takes advantage of disturbance, as shown in Jamaica, where it was able to dramatically increase its range after Hurricane Gilbert struck in 1988 (Goodland and Healey, 1996). In Jamaica it has been recorded to 1740m altitude (McDonald and Healey, pers. Comm, 2003). Appears to adapt to high nutrient soils better than other plant species, allowing it to outcompete them in human-modified habitats (ASGAP, 2002)s. Able to tolerate maritime exposure (Plants For a Future, 2003). *P. undulatum* exhibits great versatility: as a coloniser of open/disturbed habitats, as well as being very shade tolerant, casting a dense shade. It supports a dense seedling bank and soil seedbank and has a good capacity to resprout after cutting (McDonald and Healey, pers. Comm, 2003)

## Reproduction

Flowers are usually unisexual and are insect-pollinated. Seeds are bird-dispersed, with blackbirds (*Turdus merula*) being important vectors in Australia. Seedlings coppice (form thickets) if the shoot is removed, and blown-down trees have the ability to sprout along the trunk. (Binggeli and Goodland, 1997). Flowering starts at around 5 years of age and fruit takes about 6 months to mature. Fruit capsules contain 20-40 sticky orange seeds (Binggeli and Goodland, 1997). A single tree can produce more than 37,500 seeds (Goodland and Healey, 1997a).

## General Impacts

The leaves contain toxins that can inhibit the growth of other plants (Bushcare, 2003). Invades native forest areas and can shade out native plants (ASGAP, 2002).

## Management Info

Preventative measures: A [Risk Assessment of \*Pittosporum undulatum\*](#) 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 7 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."

**Physical:** Research on management options for *P. undulatum* has been undertaken in Jamaica, where it is a serious problem. Uprooting seedlings by hand is successful, but they must be disposed of properly, as they will reshoot if left lying on the ground. Bark stripping is effective in preventing sprouts, but only if all bark, from 0.3m down to soil level, is removed.

**Chemical:** In South Africa a mixture of 2,4,5-T and diesel has proved effective when applied to stumps cut above ground level. Applying concentrated Roundup® (glyphosate) to cut stumps has also worked in Australia, as has injecting glyphosate into holes drilled in plant stems. Glyphosate is recommended as a herbicide because of its effectiveness and low risk to human and environmental health.

When managing *P. undulatum* in heavily infested areas consideration must be given to the effects of its removal. The eradication of a large number of trees may facilitate an invasion by undesirable non-woody plant species that thrive in disturbed areas (Goodland and Healey, 1997a).



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Pittosporum undulatum*

## Pathway

This plant has become a problem in Jamaica after escaping from the Cinchona Botanic Garden, where it was first introduced in 1883 (Goodland and Healey, 1996). The attractive flowers of *P. undulatum* mean that it is often used as an ornamental tree (Binggeli and Goodland, 1997).

**Principal source:** Pacific Islands Ecosystems At Risk (PIER), 2003. *Pittosporum undulatum* Vent., Pittosporaceae

[Binggeli, P and Goodland, T. 1997. \*Pittosporum undulatum\*. \*Woody Plant Ecology\*.](#)

**Compiler:** IUCN/SSC Invasive Species Specialist Group (ISSG)

**Review:** Dr. Morag McDonald and Dr John Healey, School of Agricultural and Forest Sciences University of Wales, Bangor. Wales.

**Publication date:** 2005-12-30

## ALIEN RANGE

[7] AUSTRALIA

[1] BOLIVIA

[1] CHILE

[1] COLOMBIA

[1] FRANCE

[1] INDIA

[1] JAMAICA

[1] NEW ZEALAND

[1] PORTUGAL

[1] SOUTH AFRICA

[1] UNITED KINGDOM

[1] BERMUDA

[1] BRITISH ISLES

[1] CHINA

[1] CUBA

[1] GUAM

[1] ISRAEL

[1] MAURITIUS

[1] NORFOLK ISLAND

[3] SAINT HELENA

[1] SPAIN

[7] UNITED STATES

**Red List assessed species 2: EN = 1; VU = 1;**

[Juniperus brevifolia](#) **VU**

[Pyrrhula murina](#) **EN**

## BIBLIOGRAPHY

**31** references found for ***Pittosporum undulatum***

### Management 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. Gleadow, Roslyn M.; Narayan, Indira, 2007. Temperature thresholds for germination and survival of *Pittosporum undulatum*: implications for management by fire. Acta Oecologica. 31(2). MAR-APR 2007. 151-157.

[Goodland, T. & Healey, J. R. 1996. The invasion of Jamaican montane rainforests by the Australian tree \*Pittosporum undulatum\*. School of Agricultural and Forest Sciences, University of Wales, Bangor.](#)

**Summary:** Available from: <http://www.bangor.ac.uk/~afs101/iwpt/pittorep.pdf> [Accessed 19 December 2002]

[Goodland, T. & Healey, J. R. 1997a. The control of the Australian tree \*Pittosporum undulatum\* in the Blue Mountains of Jamaica. School of Agricultural and Forest Sciences, University of Wales, Bangor.](#)

**Summary:** Available from: <http://www.bangor.ac.uk/~afs101/iwpt/control.pdf> [Accessed 19 December 2002]

[Goodland, T. & Healey, J. R. 1997b. The effect of \*Pittosporum undulatum\* on the native vegetation of the Blue Mountains of Jamaica. School of Agricultural and Forest Sciences, University of Wales, Bangor.](#)

**Summary:** A report detailing the effects of *P. undulatum* on Jamaica's native vegetation using experimental plots. In-depth coverage. This report provides the most up to date recommendations for the control and management of *Pittosporum* in Jamaica.

Available from: <http://www.bangor.ac.uk/~afs101/iwpt/effects.pdf> [Accessed 19 December 2002]

Hortal, Joaquin; Borges, Paulo A. V.; Jimenez-Valverde, Alberto; de Azevedo, Eduardo B.; Silva, Luis, 2010. Assessing the areas under risk of invasion within islands through potential distribution modelling: The case of *Pittosporum undulatum* in Sao Miguel, Azores. Journal for Nature Conservation (Jena). 18(4). DEC 2010. 247-257.



# GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Pittosporum undulatum*

Howell, Jocelyn., 2003. *Pittosporum undulatum* as a case study for native species that change range: How to avoid inappropriate responses? *Cunninghamia*. 8(1). 2003. 153-155.

[PIER \(Pacific Island Ecosystems at Risk\), 2003. \*Pittosporum undulatum\*](#)

**Summary:** Ecology, synonyms, common names, distributions (Pacific as well as global), management and impact information.

Available from: [http://www.hear.org/pier/species/pittosporum\\_undulatum.htm](http://www.hear.org/pier/species/pittosporum_undulatum.htm) [Accessed 1 July, 2003]

Rose, Stefan, 1998. Integrating management of *Pittosporum undulatum* with other environmental weeds in Sydney s urban bushland. *Pacific Conservation Biology*. 3(4). Jan., 1998. 350-365.

[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.

Available from: <http://www.jncc.gov.uk/page-3660> [Accessed 10 November 2009]

Wade, Max., 2005. Priorities for the control and management of alien invasive plants on islands . *Biology & Environment*. 105B(3, Sp. Iss. SI). NOV 2005. 167-171.

## General information

Bellingham P. J., Tanner E. V. J., Healey J. R., 2005. Hurricane disturbance accelerates invasion by the alien tree *Pittosporum undulatum* in Jamaican montane rain forests. *J Veg Sci* 16:675-684

[Binggeli, P and Goodland, T. 1997. \*Pittosporum undulatum\*. \*Woody Plant Ecology\*.](#)

**Summary:** Good overview of general information on *P. undulatum*. Useful as a quick summary.

Available from: <http://members.lycos.co.uk/WoodyPlantEcology/docs/web-sp15.htm> [Accessed 19 December 2002].

Carr, G. W., 2001. Australian plants as weeds in Victoria. *Plant Protection Quarterly*. 16(3). 2001. 124-125.

Gaspar, C., P.A.V. Borges & K.J. Gaston 2008. Diversity and distribution of arthropods in native forests of the Azores archipelago. *Arquipélago. Life and Marine Sciences* 25: 01-30.

Gleadow R. M., 1982. Invasion by *Pittosporum undulatum* of the forests of Central Victoria Australia 2. Dispersal Germination and Establishment. *Australian Journal of Botany*. 30(2). 1982. 185-198.

Gleadow R. M., Ashton D. H., 1981. Invasion by *Pittosporum undulatum* of the forests of Central Victoria Australia 2 Invasion patterns and Plant Morphology. *Australian Journal of Botany*. 29(6). 1981. 705-720.

Gleadow R. M; Rowan K. S., 1982. Invasion by *Pittosporum undulatum* of the forests of Central Victoria Australia 3. Effects of temperature and light on growth and drought resistance. *Australian Journal of Botany*. 30(3). 1982. 347-358.

Gleadow R. M; Rowan K. S; Ashton D. H., 1983. Invasion by *Pittosporum undulatum* of the forests of Central Victoria Australia 4. Shade tolerance. *Australian Journal of Botany*. 31(2). 1983. 151-160.

Heleno, Ruben H.; Ceia, Ricardo S.; Ramos, Jaime A.; Memmott, Jane, 2009. Effects of Alien Plants on Insect Abundance and Biomass: a Food-Web Approach. *Conservation Biology*. 23(2). APR 2009. 410-419.

Howell, J. *Pittosporum undulatum* - traitor or survivor? University of Wollongong.

[ITIS \(Integrated Taxonomic Information System\), 2005. Online Database \*Pittosporum undulatum\*](#)

**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=Pittosporum+undulatum&p\\_format=&p\\_ifx=plgt&p\\_lang=](http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Pittosporum+undulatum&p_format=&p_ifx=plgt&p_lang=) [Accessed March 2005]

Machado, A. Luisa; Goncalves, David; Ferrand, Yves; Silveira, Antonio M.; Silveira, M., 2002. First data on Woodcock *Scolopax rusticola* breeding in Pico Island, Azores. *AIRO*. 12 2002. 35-44.

McDonald, M. A.; Healey, J. R., 2000. Nutrient cycling in secondary forests in the Blue Mountains of Jamaica. *Forest Ecology & Management*. 139(1-3). 20 December, 2000. 257-278.

Mullet, Trude; Simmons, Dianne., 1995. Ecological impacts of the environmental weed sweet pittosporum (*Pittosporum undulatum* Vent.) in dry sclerophyll forest communities, Victoria. *Plant Protection Quarterly*. 10(4). 1995. 131-138.

Mullett, Trudi L., 2001. Effects of the native environmental weed *Pittosporum undulatum* Vent. (sweet pittosporum) on plant biodiversity. *Plant Protection Quarterly*. 16(3). 2001. 117-121.

Mullett, Trudi L., 2002. The biology of Australian weeds 41. *Pittosporum undulatum* Vent. *Plant Protection Quarterly*. 17(4). 2002. 130-139.

Ramos, Jaime A., 1996. Introduction of exotic tree species as a threat to the Azores bullfinch population. *Journal of Applied Ecology*. 33(4). 1996. 710-722.

Rose, Stefan, 1997. Influence of suburban edges on invasion of *Pittosporum undulatum* into the bushland of northern Sydney, Australia. *Australian Journal of Ecology*. 22(1). 1997. 89-99.

Rose, Stefan; Fairweather, Peter G., 1997. Changes in floristic composition of urban bushland invaded by *Pittosporum undulatum* in northern Sydney, Australia. *Australian Journal of Botany*. 45(1). 1997. 123-149.

Tunbridge, Amanda; Simmons, Dianne; Adams, Robyn, 2000. Allelopathic effects of sweet Pittosporum *Pittosporum undulatum* Vent. on the germination of selected native plant species. *Victorian Naturalist (Blackburn)*. 117(2). April, 2000. 44-50.