

# *Passiflora laurifolia*

Water lemon  
Passifloraceae

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## OVERVIEW

Native to the West Indies, Guianas, and South America, *Passiflora laurifolia* (water lemon) is only occasionally cultivated on Maui, and doesn't yet cover vast acreage, but is found in many widely scattered patches in remote, virtually inaccessible moist areas of East and West Maui. At this time, it would be difficult to locate and control all the individuals of this species on Maui.

## TAXONOMY

**Family:** Passifloraceae (Passion flower family) (Wagner et al. 1999).

**Latin name:** *Passiflora laurifolia* L. (Wagner et al. 1999).

**Synonyms:** None found.

**Common names:** Water lemon, yellow granadilla, yellow water lemon, bell apple (Neal 1965, Wagner et al. 1999).

**Taxonomic notes:** The genus, *Passiflora*, is made up of about 430 species mainly from tropical America (Wagner et al. 1999).

**Nomenclature:** "The name *Passiflora*, or passion flower, is derived from the floral morphology that, to the early Spanish explorers, bore signs of the passion of Christ." (Wagner et al. 1999).

**Related species in Hawai'i:** *Passiflora* is represented in Hawai'i by 25 or so species, of which 12 are naturalized (Neal 1965, Wagner et al. 1999). The naturalized species are *P. x caerulea*, *P. edulis*, *P. foetida*, *P. ligularis*, *P. manicata*, *P. mollissima*, *P. pulchella*, *P. quadrangularis*, *P. suberosa*, *P. subpeltata*, and *P. vitifolia* (Wagner et al. 1999).

## DESCRIPTION

"Lianas. Leaves coriaceous, blades oblong, 6.5-14 cm long, 4.5-6.5 cm wide, glabrous, margins entire, petioles with 2 rounded, sessile nectaries ca. 1 mm long at apex, stipules linear-lanceolate, up to ca. 10 mm long, deciduous. Flowers pendent, campanulate, 6-8 cm in diameter, peduncles solitary, bracts obovate to elliptic, 3.5-4.3 cm long, 2-2.8 cm wide; hypanthium 0.4-0.8 cm long; sepals and petals white or splotched with purple; corona purple-banded, filamentous, ca. 2 cm long. Berries yellow, ovate to globose, 5-6.3 cm long, 3-4.5 cm in diameter, aril white, edible." (Wagner et al. 1999).

Distinguished from other naturalized *Passiflora* in Hawai'i by entire, oblong, coriaceous leaves; flowers 6-8 cm in diameter; 5 petals ; berries more than 3 cm in diameter. (Wagner et al. 1999).

## **BIOLOGY & ECOLOGY**

**Cultivation:** In the lowlands of Malaysia, *P. laurifolia* "is very vigorous but does not flower freely enough to be a good ornamental plant. However, the flowers are large and attractive with a good scent and the plant will make a good screen when grown on a fence. If fruit is needed, two or more plants must be grown so that cross-pollination can occur." (Holtum and Enoch 1991).

**Invasiveness:** *P. laurifolia* is listed by Randall (2002) as a weed.

**Pollination:** "The water lemon flowers open only in the afternoon, and apparently are not self-pollinated, or only slightly so. Cross-pollination is required for good crops. If carpenter bees are not present at the right time, the pollen must be transferred by hand." (Morton 1987).

**Propagation:** "The water lemon grows readily from seeds or cuttings." (Morton 1987).

**Dispersal:** Jacobi and Warshauer (1992) note the primary dispersal agents of a related species, *P. mollissima*, are "believed to be several species of birds, rodents, feral pigs (*Sus scrofa*), and humans." *P. laurifolia* is likely dispersed by similar agents.

**Pests and diseases:** "Trials have shown that the vine is fairly resistant to rootknot nematodes in Florida." (Morton 1987). In Hawai'i, a passion vine butterfly, *Agrius vanillae*, spends its larval stage on many *Passiflora* species (HDOA 2002).

## **DISTRIBUTION**

**Native range:** Native to the West Indies, Guianas, and South America from Venezuela to eastern Brazil, where it is widely cultivated (Wagner et al. 1999).

**Global distribution:** "The vine is cultivated and naturalized from Trinidad and Barbados to Jamaica, Puerto Rico, Hispaniola and Cuba. In Bermuda, it is only occasionally grown. It was introduced into Malaya in the 18th Century; is commonly cultivated in the lowlands and naturalized in Singapore and Penang. According to Petelot, the water lemon is grown in Thailand and throughout the southern half of Vietnam. In India, Ceylon and Hawai'i, the vine is grown as an ornamental but rarely fruits except in hot, dry situations where the pollen is dry enough to be naturally transmitted. There are only a few specimens in Florida." (Morton 1987).

**State of Hawai'i distribution:** "In Hawai'i naturalized in mesic to wet, disturbed areas, climbing over vegetation, 0-280 m, on Kaua'i, O'ahu, Moloka'i, and Hawai'i. Cultivated prior to 1871." (Wagner et al. 1999). It is also known from Maui (Meidell et al. 1998, Starr et al. 1999).

**Island of Maui distribution:** Scattered in moist sites on East and West Maui.

## **CONTROL METHODS**

**Physical control:** Young plants can be hand pulled.

**Chemical control:** None found.

**Biological control:** There have been many attempts at bio-control of the related *P. mollissima*. We found no information on bio-control for *P. laurifolia*.

**Cultural control:** *P. laurifolia* could be discouraged in plantings near natural areas.

**Noxious weed acts:** *P. mollissima* and *P. pulchella* are listed as State Noxious Weeds in Hawai'i, *P. laurifolia* is not. (HDOA 1992).

### MANAGEMENT RECOMMENDATIONS

*P. laurifolia* is well established on Maui. It is only occasionally cultivated, and doesn't yet cover vast acreage, but is found in many widely scattered patches in remote, virtually inaccessible areas. At this time, it would be difficult to locate and control all the individuals of this species on Maui. Perhaps it could be put on a list of plants known to escape from gardens.

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