

Derris elliptica

Poison vine

Fabaceae

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OVERVIEW

Derris elliptica is a large climber that is mainly cultivated in the tropics for its roots, a source of the insecticide Rotenone. It is known to be invasive in Fiji and western Polynesia (PIER 2000). In Hawai'i, it forms a dense canopy and smothers vegetation, fences, forest, pastures, and farm land. There are few locations of this aggressive invader on Maui. The full potential range is not known and it is uncertain whether this species will invade the rain forest or be restricted to the lowlands. Island wide eradication of this species is still possible and will probably only become harder with time.

TAXONOMY

Family: Fabaceae (pea family) (GRIN 2002).

Latin name: *Derris elliptica* (Wallich) Benth. (Bailey and Bailey 1976).

Synonyms: *Deguelia elliptica* (Roxb.) Taub., *Galedupa elliptica* Roxb., *Pongamia elliptica* Wall. [basionym] (GRIN 2002).

Common names: Derris, tuba root (Bailey and Bailey 1976, GRIN 2002), poison vine.

Taxonomic notes: The genus *Derris* is made up of about 70-80 species of woody vines and trees, native to the Old World (Bailey and Bailey 1976).

Nomenclature: Unknown.

Related species in Hawai'i: There are no other species of *Derris* known from Hawai'i. PIER (2000) reports that *D. elliptica* is often confused with *D. malaccensis*, New Guinea Creeper, which is also widely cultivated and sometimes naturalized in the Pacific (PIER 2000).

DESCRIPTION

"Large climber. Branches densely brown-pubescent; leaflets in 4-6 pairs, obovate-oblong, to 6 in. long, brown-silky beneath; racemes to 1 ft. long, petals bright red, standard 5/8 in. across; fruit to 3 in. long, narrow-winged along one margin." (Bailey and Bailey 1976).

"Scandent shrub or liane 5-12 m long, velvety pubescent; shoot apex often leafless for several meters. Leaves pinnate, 15-30 cm long, mostly with 11-15 leaflets; leaflets narrowly somewhat glabrescent, glaucous beneath; petiole 3-7 mm long. Flowers usually in stalked clusters of 3, combined into pseudorachemes 15-25 cm long, rusty pubescent. Calyx 6-8 mm long, shallowly toothed. Petals pink; standard 13-17 mm diam., with 2 auricles at base, softly ferruginous-hairy outside; wings and keel with interlocking

longitudinal folds. Fruit elliptic to oblong-elliptic, 3.5-7 cm long, flat, leathery, narrowly winged. Seeds 1-3, reniform, flat." (Du Puy 1993).

BIOLOGY & ECOLOGY

Cultivation: *Derris* is cultivated in the tropics for the insecticide Rotenone which is derived from the roots of the plant (Bailey and Bailey 1976). It has also been used as a fish poison (GRIN 2002).

Invasiveness: *Derris* is an aggressive vine that strangles vegetation and anything else that gets in its way as it spreads. It is capable of aggressive growth and reproduces by both seeds and vegetatively.

Pollination: Unknown.

Propagation: *D. elliptica* is propagated by seeds, or the commercially important kinds are propagated by cuttings (Bailey and Bailey 1976).

Dispersal: *Derris* is initially spread long distances by humans who grow the plant for the commercial use of the roots to make the insecticide Rotenone. To a lesser extent, it may be spread by use in landscaping as a groundcover or climbing vine. From the initial planting *Derris* spreads vegetatively twining up other vegetation eventually blanketing and converting areas. Parts of the plant can grow and it could be spread from one area to another in green waste. Spread by seed is possible but further documentation in Hawai'i is needed to determine viability and vectors.

Pests and diseases: Unknown, probably not many if it is used as an insecticide.

DISTRIBUTION

Native range: *D. elliptica* is native from India to Indonesia (Bailey and Bailey 1976).

Global distribution: *D. elliptica* is cultivated and naturalized to 400 m (1,312 ft) in Fiji (Smith 1985). According to PIER (2000), *D. elliptica* is observed climbing over small trees and shrubs on Rota, and is also known from Micronesia, American Samoa, Hawai'i, and Christmas Island.

State of Hawai'i distribution: Though known from Kaua'i, O'ahu, Maui and Hawai'i, *D. elliptica* remains unpublished as naturalized in the state of Hawai'i. *Derris* was first collected on O'ahu in 1950 by G. Pearsall (446481). It was first collected on Maui in 1974 by Fosberg (see Maui info. below). On the island of Hawai'i, we collected this species from the side of the road in Kealakekua, where it is sparingly naturalized. *Derris* has also been collected at Hilo (Herbst 9716) on Hawai'i, at Nanakuli (Pearsall 446481) and Kailua (Staples 1158) on O'ahu, and in the Waiheea Game Reserve (Howard 20222) on Kaua'i.

Island of Maui distribution: This rampant vine was first collected on Maui by Fosberg (55438) in 1974 in the wet lowlands of the Nahiku area of East Maui, and was collected

again in presumably the same spot by us in 1998. In 2000, it was also collected in the Honopou area of East Maui near Twin Falls, and we have since observed *Derris* near Ha'iku reservoir and at the top of W. Kuiaha Rd, Ha'iku. Currently, the largest patch is in Nahiku and covers over 10 acres. Recently, other locations have been observed along the Hana Hwy. These sites are all lowland, disturbed areas, with average annual rainfall ranging from 60-160 in (152-406 cm) (Juvik and Juvik 1998).

CONTROL METHODS

Physical control: Hand pulling the vine off objects works, but the tangle of large stems makes finding the main root difficult. It may be possible to grub out the vine using machinery.

Chemical control: No information on chemical control was found, but the vine did die back where it had been sprayed by the road crew in Nahiku.

Biological control: No information on biocontrol was found, but we did notice brown spots on the leaves.

Cultural control: The public could be informed not to plant or spread *Derris elliptica*.

Noxious weed acts: *D. elliptica* is currently not listed on the Hawai'i state noxious weed list.

MANAGEMENT RECOMMENDATIONS

Derris elliptica is an aggressive vine that smothers vegetation as it spreads. On Maui, there are only a few known locations, mostly of small size, with the exception of one large infestation in Nahiku. Control of large infestations would be difficult and time consuming, however, *D. elliptica* will likely spread more if given time, becoming even harder to control in the future. It is uncertain what natural areas are threatened by *D. elliptica*. Perhaps it will remain restricted to the lowlands and urban areas. Or, perhaps it may readily invade the rain forest just upslope of the current infestations. Predicting the potential range would help in deciding on what course of action to take. Putting this plant on the Hawai'i state noxious weed list may help prevent its spread throughout the state.

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