

Polynesia's green cancer

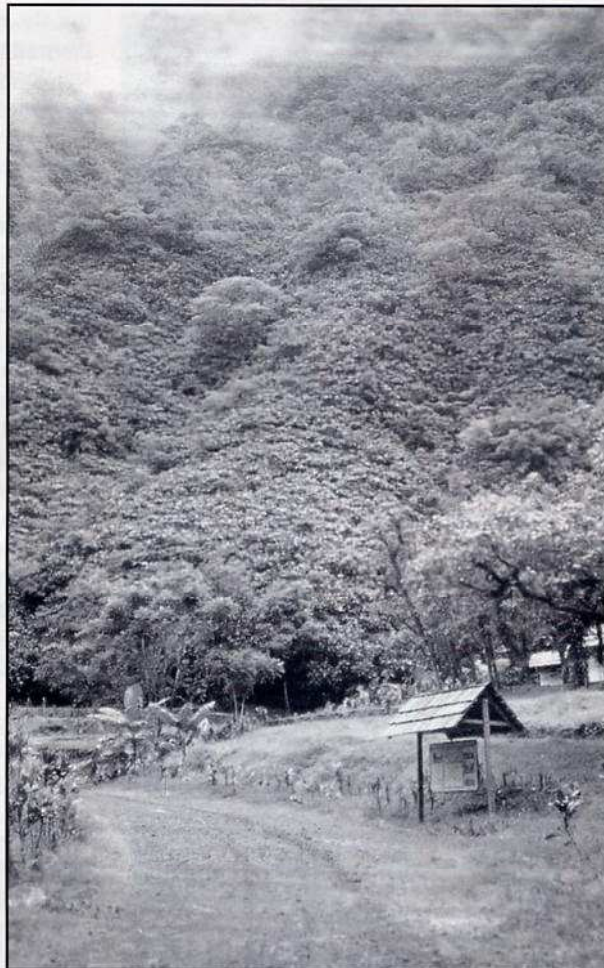
By Jean-Yves Meyer

Miconia calvescens represents one of the most dramatic and devastating cases of a documented plant invasion into island ecosystems.* Its extensive proliferation on several high volcanic islands in French Polynesia poses a major threat to the native forests and the terrestrial biodiversity of those islands.

A tree which grows to 15m tall, *Miconia calvescens* (Family Melastomataceae) is native to tropical rainforests of Central and South America where it is an understory species in dense forests and a colonizer of small forest gaps. It was introduced to Tahiti in 1937 as an ornamental plant for its attractive large dark-green leaves with striking purple undersides. But in less than 50 years the plant has aggressively spread on the island of Tahiti (Society archipelago), overwhelming native forests and forming dense monotypic stands. It is now present in over 70% of Tahiti, proliferating at elevations from 10m to 1300 m in a wide range of mesic and wet habitats from low-elevation secondary forests to mid-elevation rainforests to montane cloudforests.

Unlike most exotic invasive species, seedlings can establish themselves in moderate or dense shade and the plant does not need natural or human disturbance to become established. Rapid vegetative growth (up to 1.5m per year), early age of reproduction (4-5 years), self-pollination and independence of specific pollinators, prolific fruit and seed production, active dispersal of the fleshy berries by introduced frugivorous birds, and a large and persistent soil seed bank (up to 50,000 seeds per square metre with seed viability over four years) make this species a particularly aggressive colonizer and competitor with native insular species.

By preventing the regeneration of native plants located in the forest understory, *Miconia calvescens* constitutes a major



***Miconia calvescens*-dominated canopy in Tahiti, near the centre of the island.** Jean-Yves Meyer

threat to more than 40 of the 107 plant species endemic to Tahiti that belong to the most threatened categories recently defined by IUCN (CR, EN, VU). This alien plant pest not only alters the structure and composition of the native vegetation, it also dramatically changes other ecosystem processes (light and water regimes, soil nutrient cycling, etc.). By suppressing native groundcover species, it is suspected of increasing erosion and inducing landslides on steep slopes.

The situation on Tahiti is dramatic and alarming, but unfortunately the story does not end there. *Miconia calvescens* has

spread to the neighbouring islands of Moorea (ca. 1200 ha infested), Raiatea (ca. 240 ha) and Tahaa (ca. 2 ha). Public informational campaigns and intensive control efforts contributed to the removal of over 700,000 plants on Raiatea and Tahaa between 1992 and 1997 and checked the spread of the species on those islands. Unfortunately, seedlings have been found recently in remote islands of the Marquesas archipelago (Nuku Hiva, Fatu Hiva) and the Australs (Rurutu). The tiny seeds are accidentally introduced in soil originating from Tahiti in potted plants, on the tracks of earthmoving vehicles, and among the cleats of work boots.

In Hawaii, where it was introduced in the 1960s through the horticultural industry, it is currently found on four of the main islands: O'ahu, Maui, Hawai'i, and Kaua'i. *M. calvescens* was declared a noxious plant species in French Polynesia in 1990 and, in Hawaii, it was listed as a 'Noxious Weed' in 1992. The plant is now considered to be a major potential threat to the tropical area of north Queensland, Australia, where it has escaped from botanical gardens and become locally naturalized.

A serious alarm signal is now sounding in the Society and Hawaiian Islands about the destructive nature of *Miconia calvescens*. Resources must be mobilized in these two archipelagoes to stop this devastating invader. All Pacific island archipelagoes need to be vigilant in preventing the possible accidental or intentional introduction of *Miconia calvescens*, one of the most damaging invaders of native island rainforests in the tropical Pacific.

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* For more on invasive species, see the special double issue of World Conservation (4/97-1/98).