

Macaranga mappa

Bingabing
Euphorbiaceae

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OVERVIEW

Macaranga mappa is a large leaved plant native to the Philippines that is cultivated in Hawai'i and elsewhere as a tropical ornamental and as a forestry tree (Skolmen 1960, Neal 1965). *M. mappa* was supposedly aerially seeded by plane after a large fire swept through Hilo, Hawai'i. *M. mappa* now forms large dense stands in this area and is naturalized in low elevation moist to mesic areas of lowlands, 0-220 m (722 ft), on O'ahu and Hawai'i (Wagner et al. 1999). On Maui, *M. mappa* is known from a single plant in cultivation. It is currently being considered as a potential target species for eradication by the Maui Invasive Species Committee (MISC). Control of this specimen now may prevent larger infestations in the future. Future efforts should also include monitoring to locate any other *M. mappa* on Maui. In addition, placing this species on the Hawai'i state noxious weed list would provide legal authority to help prevent further sale and transport.

TAXONOMY

Family: Euphorbiaceae (spurge family) (Wagner et al. 1999).

Latin name: *Macaranga mappa* (L.) Mull. Arg. (Wagner et al. 1999).

Synonyms: *Ricinis mappa* L., *Croton grandifolius* Blanco, *Macaranga grandifolia* (Blanco) Merr. (Wagner et al. 1999).

Common names: Bingabing, *Macaranga* (Neal 1965, Wagner et al. 1999)

Taxonomic notes: The genus, *Macaranga*, is made up of 250-280 species from tropical Africa, Madagascar, and Malesia to Australia and some parts of the Pacific, though none are native to Hawai'i (Wagner et al. 1999).

Nomenclature: The name refers to the native Madagascar name for these plants (Wagner et al. 1999).

Related species in Hawai'i: The only other species currently known from Hawai'i is *Macaranga tanarius* (L.) Mull. Arg. which is distinguished by having smaller leaves (8-30 cm long), and bracts and calyx pale green to yellowish green (Wagner et al. 1999).

DESCRIPTION

"Trees 5-10 m tall. Leaves very large, peltate, orbicular-ovate to broadly ovate, 60-100 cm long, petioles 30-60 cm long, stipules 6-15 cm long. Staminate flowers in panicles 15-20 cm long, bracts and calyx pink, stamens \pm 10, anthers tetrathecal; pistillate flowers in dense, bracteate clusters, ovary 2-celled, styles ca. 10 mm long, connate at base. Capsules 2-3 celled, 8-10 mm long, glabrous, each valve armed with 2 spine-like processes." (Wagner et al. 1999).

BIOLOGY & ECOLOGY

Cultivation: *M. mapp*a is a tropical ornamental with large showy leaves and tree like habit. It is cultivated in Hawai'i and other tropical regions of the world for ornament and in reforestation projects.

Invasiveness: On the island of Hawai'i, *M. mapp*a was seeded from airplanes along with many other weedy forestry species near Hilo after a fire. The area is warm and moist and many species, including *M. mapp*a, thrived. Today, *M. mapp*a lines roadsides, gulches, and disturbed forests in the vicinity. This large leaved tree has dense growth that can crowd and shade out other vegetation. *M. mapp*a is listed as a weed in Western Australia's global compendium of weeds (Randall 2002).

Pollination: Unknown. The related species, *M. tanarius*, is wind pollinated (World Agroforestry Centre 2002), and it is likely that *M. mapp*a is as well.

Propagation: *M. mapp*a is propagated by seeds.

Dispersal: Long distance dispersal of *M. mapp*a is achieved primarily through humans who use the plant in ornamental landscaping or reforestation.

Pests and Diseases: Unknown. Plants in Hilo, Hawai'i did not appear to have any obvious insect damage or predation.

DISTRIBUTION

Native range: *M. mapp*a is native to the Philippines (Wagner et al. 1999).

Global distribution: *M. mapp*a is cultivated in tropical regions throughout the world.

State of Hawai'i distribution: In Hawai'i, *M. mapp*a is known to be naturalized on the islands of O'ahu and Hawai'i in low elevation mesic to wet areas and disturbed mesic valleys, 0-220 m (0-721 ft) (Wagner et al. 1999). Apparently, the abundance of *M. mapp*a in the Hilo, Hawai'i vicinity is a result of seeds that were sown from aircraft after a large fire. The area is wet receiving annual rainfall amounts of approximately 120 in (305 cm). In this area, *M. mapp*a is abundant and healthy and seems to thrive in the moist warm climate. Forestry records list several plantings (as *M. grandifolia*) on O'ahu, including 20 trees planted in the Honouliuli Forest Reserve in 1927 and 107 trees planted in Honolulu in 1928 (Skolmen 1960). On Kaua'i, a total of 81 *M. mapp*a were planted in the Lihue-Koloa Forest Reserve in 1927 (Skolmen 1960). There are currently no reports of this species being naturalized on the island of Kaua'i and the current status of this early forestry planting is uncertain. It is also possible that *M. mapp*a exists on other islands but it has not been reported as so yet.

Island of Maui distribution: During island wide surveys in 2000, a single *M. mapp*a tree was found being cultivated as an ornamental plant in Olinda, Maui. The plant is located at a residence along Olinda Rd., approximately 2,000 ft (610 m) elevation and the climate is cool with average annual rainfall averaging about 40 in (102 cm). There is

currently no sign of spread there yet, perhaps due to the arid climate, the lack of numerous trees for reproduction to occur, or lack of time to naturalize.

CONTROL METHODS

Control methodology for *M. mappa* has yet to be refined for Hawai'i. It is uncertain whether cutting at the base would completely control this tree or if application of herbicides are necessary. Further testing is necessary to be sure.

Physical control: Most likely, seedlings and small plants can be dug up. In ornamental situations if the stand is reasonable size, digging the plant up may be the preferred method.

Chemical control: In large wild stands, perhaps a cut stump or basal bark herbicide method would be effective. Foliar spray may be costly due to the large size of the leaves and biomass. Foliar spray would also not be advised in areas where non-target plants were present.

Biological control: None known.

Cultural control: The public could be discouraged from planting *M. mappa*, especially near natural or wet areas.

Noxious weed acts: None known.

MANAGEMENT RECOMMENDATIONS

M. mappa is cultivated in Hawai'i and is naturalized in low wet areas of O'ahu and Hawai'i (Wagner et al. 1999). This large leaved tree forms dense thickets in the Hilo area, crowding out other plants and forming deep shade areas. On Maui, there is a single known plant that is currently being considered for eradication by MISC. Eradication of this weedy species now may save time, money, and resources in the future. The Kaua'i forestry planting's status is unknown and should be updated and removed if deemed appropriate. Other islands free of *M. mappa* should be advised of the potential for *M. mappa* to spread and form dense thickets in moist areas.

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