Acacia mangium

Mangium wattle
Fabaceae

Forest Starr, Kim Starr, and Lloyd Loope
United States Geological Survey--Biological Resources Division
Haleakala Field Station, Maui, Hawai'i

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OVERVIEW

Mangium (*Acacia mangium*) is a tree native to Queensland, Australia, Molluccan Islands, Papua New Guinea, and Indonesia (PIER 2003). *Acacia mangium* is sparingly planted on Maui, and possibly other Hawaiian Islands. This species has been cultivated in various places as a forestry tree and has escaped from plantings (PIER 2003). With a history of weediness elsewhere and limited distribution on Maui, this species is a good candidate for eradication and control. Further island wide surveys are needed to locate any other sites where *Acacia mangium* grows. It is likely planted on other Hawaiian Islands and surveys there for this species could also be conducted.

TAXONOMY

Family: Fabaceae (Pea family) (Wagner et al. 1999).
Latin name: *Acacia mangium* Willd. (PIER 2003).
Synonyms: None known.
Common names: Mangium, Mangium wattle, mange, forest mangrove (Duke 1983, PIER 2003).
Taxonomic notes: The genus *Acacia* is made up of about 1,200 species that are widespread but with a large number in Australia (Wagner et al. 1999). *Acacia mangium* hybridizes naturally with *Acacia auriculiformis,* producing hybrids which grow faster than either parent, but tend to retain the poor form of *A. auriculiformis* (Duke 1983).
Nomenclature: The genus name is derived from *akakia,* the Greek name for *Acacia arabica* (Lam.) Willd., which is derived from *akis,* a Greek word meaning sharp point, in reference to the thorns of the plant (Wagner et al. 1999).
Related species in Hawai'i: Numerous *Acacia* species are known from Hawai'i, including native species such as *A. koa* and *A. koaia*, and naturalized non-native species such as *A. farnesiana, A. confusa, A. mearnsii,* and *A. melanoxylon*. Several non-native *Acacia* species have recently been found on Maui that are also potentially invasive including *A. auriculiformis, A. retinodes,* and *A. podalyriifolia*.

DESCRIPTION

"Medium to tall, spreading tree; branches glabrous; phyllodes 10-20 cm x 5-10 cm, lanceolate or ovate, conspicuously veined, light or dark green; flower-heads rod-like, 6-10 cm long, white, sparse, on hairy peduncles about 1 cm long; pods long, slender, coiled or twisted and contorted." (Elliot and Jones 1982).

"Tree to 30 m tall, bole often straight, to over half the total tree height. Branchlets, phyllodes and petioles glabrous or slightly scurfy. Phyllodes 5-10 cm broad, 2-4 times as long as broad, dark green, chartaceous when dry. The phyllodes have (3-)4 longitudinal main nerves which join on the dorsal margin at the base of the phyllode, secondary nerves fine and inconspicuous. Flowers in loose spikes to 10 cm long, solitary or paired in the upper axils. Flowers pentamerous, the calyx 0.6-0.8 mm long, with short obtuse lobes, the corolla twice as long as the calyx. Pods linear, glabrous, 3-5 mm broad, ca 7.5 cm long when green, woody, coiled and brackish-brown when mature, depressed between the seeds. Seeds lustrous, black, ellipsoid, ovate or oblong, 3.5-2.5 mm, the orangish funicle forming a fleshy aril beneath the seed." (Duke 1983).

BIOLOGY & ECOLOGY

Cultivation: *Acacia mangium* is a commonly planted forestry tree. This tree is widely cultivated for firewood and for furniture making (Duke 1983).

Invasiveness: According to PIER (2003), *Acacia mangium* can become naturalized where planted and is known to spread on Saipan, Pohnpei, Yap, Sabah, Africa, Melville Island, and northern Australia. *A. mangium* is a very fast growing tree that produces numerous seeds. This species apparently outperforms other weedy trees such as *Falcataria moloccana* and *Gmelina arborea* on degraded volcanic soils (Duke 1983).

Pollination: Not known.

Propagation: *A. mangium* flowers and fruits profusely (NAS 1979) and plants are propagated from seeds. Seeds are sometimes sown directly in the soil (NAS 1979).

Dispersal: *A. mangium* may be spread by birds.

Pests and diseases: Duke (1983) reports the following pests of *A. mangium*. "There are problems with leaf insects. Mangium has symbioses with the bacterium *Rhizobium* and the fungus *Thelephora*. Specimens (ca 12%) in Sabah suffer from a heart rot and a pink disease (*Corticium salmonicolor*). Seedlings in Hawaiian nurseries are attacked by a powdery mildew (*Oidium* sp.). Three pinhole borers attack the tree in Sabah, especially on poorer sites. Carpenter ants (*Camponotus* sp.) form galleries in the heartwood of young trees. Wood borers of the genus *Xystrocera* may be a problem. Seedlings may be defoliated by *Hypomeces squamosus*. Scale insects and mealy bugs may also be problematic with young plants (NAS 1983)."

DISTRIBUTION

Native range: *Acacia mangium* is native to Queensland, Australia, Molluccan Islands, Papua New Guinea, and Indonesia (Irian Jaya) (PIER 2003).

Global distribution: *Acacia mangium* has been introduced to Bangladesh, Cameroon, Costa Rica, Hawai'i, Indonesia, Malaysia, Nepal, Papua, and the Philippines (NAS 1983). Duke (1983) report the following. "Often in grasslands and on margins of lowland primary forests at altitudes of 10-50 m (33-164 ft). Probably capable of ranging from

tropical very dry to moist through subtropical dry to wet forest life zones. Mangium withstands annual precipitation of 10 to 45 dm (40 to 180 in) or more and mean maximum temperature of 31-34 C (88-93 F) in summer and 12-25 C (54-77 F) in winter." PIER (2003) reports the following. "A small amount of planting on Saipan. One isolated individual naturalized seedling was noted on disturbed soil. On Pohnpei, a patch of naturalized seedlings without a local seed source was noted. Should be monitored for naturalization and spread. Spreading from an old species trial on Yap. Reported as invasive in Sabah and Africa. Reported to be invasive on Melville Island, Australia."

State of Hawai'i distribution: *Acacia mangium* is sparingly cultivated on Maui. It is likely present on other Hawaiian Islands.

Island of Maui distribution: *Acacia mangium* is sparingly cultivated in groves at two agriculture experiment stations. These stations apparently introduced and planted numerous species in Hawai'i to evaluate their potential for cultivation. The first location is in Paia, approximately 300 ft (91 m) elevation, in warm moist lowlands surrounded by agriculture (sugar cane). The site is an abandoned school that has also been used as an agriculture experiment station. The site is about to become County property. The second location is also at an agricultural experiment station in Pi'iholo, approximately 1,700 ft (518 m) elevation, in disturbed moist area bounded by agriculture (pineapple) below, residential Pi'iholo above, and Makawao Forest Reserve to the east. Both plantings are limited to small areas where trees were planted in groves. There may be other places on Maui where this species is cultivated.

CONTROL METHODS

Physical control: Girdle, pull seedlings (PIER 2003).

Chemical control: Triclopyr herbicide mixed with an oil.

Biological control: None known.

Cultural control: This species could be discontinued in plantings in Hawai'i.

Noxious weed acts: None known.

MANAGEMENT RECOMMENDATIONS

Acacia mangium is widely planted in the Pacific and elsewhere as a forestry tree and for other purposes. It grows rapidly, produces numerous seeds, and spreads in areas where it is planted. It tolerates degraded areas and seems to prefer moist to wet sites. In Hawai'i, it is sparingly cultivated on Maui. Other forestry areas and agriculture stations on Maui should be surveyed to find new locations. Other Hawaiian Islands may want to survey for this species in similar areas. Removal of this tree now may help to avoid its eventual invasion.

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