Melochia umbellata

Melochia
Sterculiaceae

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OVERVIEW

Melochia umbellata is a small tree native from India east to New Guinea that is cultivated in warm regions of the world as a shade tree for coffee plants and young forestry trees. With rapid growth and an ability to quickly colonize disturbed areas, *M. umbellata* has become a weed in the Hilo area on the island of Hawai'i where several thousand were planted during the 1920's in reforestation efforts. Today, thickets of *M. umbellata* can be observed on roadsides and scrub areas of the Hilo and Puna, mostly lowland disturbed moist sites. On Maui, *M. umbellata* is reported from the Waikapu Reservoir area, 1,500 ft (457 m) elevation, Waikapu Valley, West Maui, where several hundred trees occur over double digit acres (Fern Duvall pers. comm.). This species was not observed during road surveys on Maui and may be limited to the Waikapu Reservoir area. The *M. umbellata* infestation on Maui is limited in distribution and may be eradicable at this time. Detailed distribution maps and documentation of the infestation in Waikapu are needed. Other forestry plantations and similar areas with many non-native plantings could be surveyed to locate additional sites of *M. umbellata*.

TAXONOMY

Family: Sterculiaceae (Cacao family) (Wagner et al. 1999).
Latin name: *Melochia umbellata* (Houtt.) Stapf (Wagner et al. 1999).
Synonyms: *Visenia indica* C. C. Gimelin, *V. umbellata* Houtt. (Wagner et al. 1999), *Melochia indica* (Gmel.) Kurz. (Little and Skolmen 1989).
Common names: Melochia (Wagner et al. 1999).
Taxonomic notes: The genus, *Melochia*, is made up of 54 species from tropical and subtropcial areas from the southern United States to South America, the West Indies, and from India to southwestern Asia, Malesia, and Pacific Islands to the Tuamotus (Wagner et. al. 1999).
Nomenclature: The name is derived from the Arabic name of *Corchorus olitorius* L., Tossa jute (Wagner et al. 1999).
Related species in Hawai'i: There are no other species of *Melochia* known from the Hawaiian Islands. Of note is a new naturalized record of *Sterculia apetala* (Jacq.) Karst., also in the Sterculiaceae family, from Honokohau Valley, West Maui, which was originally planted in 1937 and 1939 and is now reproducing and spreading in the areas adjacent to the plantings (Oppenheimer 2003 in press).

DESCRIPTION

"Small trees or shrubs 2-15 m tall; young stems tomentose with stellate hairs. Leaves broadly ovate, 9-30(-50) cm long, 3.8-15(-27) cm long, stellate pubescent, margins irregularly crenate-serrate, base rounded to cordate, petioles 2.5-11(-20) cm long, stipules ovate to suborbicular, 4-10 mm long, deciduous. Flowers in open corymbiform cymes, the ultimate divisions umbellate, peduncles 3-7(-11) cm long, pedicels 1-3 mm long; calyx yellowish green to pinkish brown, the lobes deltate, 2-3.5 mm long, pubescent with stellate and also simple or forked hairs; petals pale pink to red, rarely yellow or orange-tinged, pale blue, purple, or violet, obovate to oblanceolate, 6-7 mm long; stamens of 2 lengths in different flowers, 4-5 mm long and 5.5-6.5 mm long; ovaries of 2 lengths in different flowers, 6-7 mm long and 4.5-5 mm long. Capsules green, brown, or purplish red, oblong, 8-10 mm long, incompletely septicidal, deeply grooved between carpels. Seeds brown, 2-3.5 mm long, winged." (Wagner et al. 1999).

BIOLOGY & ECOLOGY

Cultivation: *Melochia umbellata* is sometimes cultivated as a quick growing shade tree in reforestation projects (Neal 1965). In Hawai'i, *M. umbellata* was cultivated as early as 1871 (Hillebrand 1888, Wagner et al. 1999). It was widely planted as a forestry tree in the 1920's on the island of Hawai'i, and sparingly planted on O'ahu and Kaua'i (Little and Skolmen 1989). It is also reported as cultivated on Maui and Lana'i (Wagner et al. 1999).

Invasiveness: *M. umbellata* is a weed of roadsides and waste places near areas where it is cultivated in Hawai'i and elsewhere. Trees form thickets that crowd out other desirable vegetation.

Pollination: Unknown.

Propagation: *M. umbellata* is propagated from seeds.

Dispersal: *M. umbellata* seeds are winged and are likely dispersed by the wind.

Pests and diseases: Unknown.

DISTRIBUTION

Native range: *Melochia umbellata* is native to India and perhaps eastward to New Guinea (Neal 1965).

Global distribution: *M. umbellata* is widely cultivated in tropical regions as a shade tree for young forest trees and coffee plantations (PIER 2003).

State of Hawai'i distribution: *Melochia umbellata* is cultivated and naturalized on the island of Hawai'i in the Hilo and Puna districts, especially the Waiakea area, where it was It is also commonly observed along Volcano Road near the turnoff to Kulani, along the Stainback Highway, and near Hilo Airport (Little and Skolmen 1989). Forestry records report 5,496 trees planted on the island of Hawai'i in the areas of Hilo, Honuaula, Kohala, Malama-ki, Manowaialee, and North Kona Watershed (Skolmen 1960). *M. umbellata* is also cultivated on the islands of Kaua'i, O'ahu, Maui, and Lana'i (Little and Skolmen

1989, Wagner et al. 1999). Forestry records report 9 trees planted in the Lihue-Koloa area of Kaua'i, and 200 trees planted in the Ewa area of O'ahu (Skolmen 1960). The status and distribution on other Hawaiian Islands is not well known and needs further investigation.

Island of Maui distribution: On Maui, *Melochia umbellata* is reported from near the Waikapu Reservoir, Waikapu Valley, about 1,500 ft (457 m) elevation, where several hundred trees occur around the reservoir and up the steep south slope (Fern Duvall pers. comm.). According to Duvall, the infestation covers double digit acres and could potentially be eradicated. *M. umbellata* may be limited to the Waikapu Reservoir area, which was not covered in island wide road surveys due to limited access. It was reported by Wagner et al. (1999) as cultivated on Maui, but was not observed by us anywhere else on the island.

CONTROL METHODS

Physical control: It may be possible to pull up small seedlings and saplings.

Chemical control: The following chemical control information is derived from Motooka (1999). Dr. Motooka demonstrated drilling and injection of herbicides to control weedy tree species at a workshop at the Komohana Agricultural Complex in Hilo. Drilling holes in tree trunks with a gasoline-powered drill allows the application of more herbicide than spraying herbicide notches cut with a machete. Herbicides used for injection or notch application included Roundup (glyphosate), Remedy (triclopyr), and DMA4 (dimethylamine salt of 2,4-D). Holes were drilled every 12 inches around the circumference of the tree trunk, notches were cut every 4 inches. Herbicides were used at 100% concentration and were injected at a rate of approximately 4-ml per hole for drilling treatments and 1 ml per notch for notching treatments.· Tree species treated by drilling or notching included *Trema orientalis* (gunpowder tree), *Melochia umbellata* (melochia), *Schefflera actinophylla* (octopus tree), *Spathodea campanulata* (African tulip tree).· After four weeks all gunpowder trees showed complete defoliation with all herbicides. All three herbicides also had visible effects on the other species treated, although defoliation was slower and less complete than on the gunpowder trees. Defoliation was slower on trees that were notched with herbicides sprayed into the cuts.

In addition, an application of triclopyr (10%) to cut stumps is reported as being a successful control method for *M. umbellata* in Hawai'i Volacano National Park (PIER 2003).

Biological control: Unknown.

Cultural control: The public could be discouraged from planting *M. umbellata*.

Noxious weed acts: None known.

MANAGEMENT RECOMMENDATIONS

M. umbellata was widely planted as a forestry tree on the island of Hawai'i. Today, *M. umbellata* forms thickets on the sides of roads and disturbed areas in the Hilo and Puna districts. *M. umbellata* was sparingly planted on other Hawaiian Islands including Kaua'i, O'ahu, Maui, and Lana'i. On Maui, *M. umbellata* is reported from the Waikapu Reservoir area, 1,500 ft (457 m) elevation, where several hundred trees now occur over double digit acres around the reservoir and up a steep slope (Fern Duvall pers. comm.). Based on the demonstrated invasiveness of *M. umbellata* on the island of Hawai'i, it seems likely that the infestation on Maui will continue to become more widespread in the future if no control is done. A detailed distribution map of the current infestation in Waikapu is needed. The infestation on Maui may be eradicable at this time. Forestry planting and other areas on Maui and other Hawaiian Islands should be surveyed to locate additional *M. umbellata* plantings.

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