

The Principal Weedy Melastomaceae in Hawaii

D. L. PLUCKNETT and B. C. STONE¹

NONE OF THE NUMEROUS SPECIES of Melastomaceae is native to the Hawaiian Islands, yet at present at least a dozen species in nine different genera are found as weeds or seminaturalized plants in various localities in the Islands. Some of these species are hardly known out of cultivation, others are frequent in certain small areas, while a few are well-known common plants on most of the islands in the chain. Certain areas have become thickly populated with one or another of these species, and waste and pasture areas have been invaded, becoming in some cases nearly impenetrable thickets. Two or three of these species must be regarded as noxious weeds.

In Hillebrand's *Flora of the Hawaiian Islands* (1888) there is no mention of any melastomaceous species. Degener (1935: family 274) mentions *Heterocentron*, and (1930: 226) mentions *Tibouchina semidecandra* and *Melastoma malabathricum*. Earlier, W. T. Pope (1929: 147) had mentioned *Melastoma decemfidum* and stated that it had escaped from cultivation on Kauai, and had been introduced (presumably from a Florida nursery) in 1916. It seems from recent collections that this plant mentioned by Pope is, as Degener indicated, *M. malabathricum*; although both species are present in the Islands, only this one has been found on Kauai. The *Tibouchina* is said to have been introduced to Hawaii in 1910.

Degener indicated the pestiferous nature of these plants, and his prediction that they would spread has come true. At present they have a very spotty distribution, but where they have spread they often form virtually pure stands which have blighted many areas of natural vegetation and have become a foe of both the agriculturist and conservationist. Hosaka (1945) referred to *Melastoma malabathricum* as "an ag-

gressive shrub that forms dense stands—crowds out other plants . . . has no forage value."

Recently the extent of bauxitic or aluminous soils in Hawaii has been publicized (Sherman, 1954), and plants which accumulate aluminum have been the subject of a paper by Moomaw, Nakamura, and Sherman (1959). Among the Hawaiian plants found to accumulate aluminum was *M. malabathricum*, a known accumulator of aluminum in other areas (Webb, 1954). None of the other melastomaceous plants in Hawaii was used in the study by Moomaw *et al.*, but other species of the Melastomaceae are reported by Webb to accumulate aluminum.

The purpose of this paper is to discuss the distribution and spread of the noxious Melastomaceae in Hawaii with special reference to the most common species and to provide a key and brief descriptions of each as a preliminary step for a possible study of bauxitic soils and aluminum-accumulating species of Melastomaceae.

Three species are found on more than one island and may be considered common. These are *Tibouchina semidecandra*, *Melastoma decemfidum*, and *M. malabathricum*.

Three other species are rather abundant in a few isolated locations on one or two islands. These are *Clidemia hirta*, *Pterolepis glomerata*, and *Heterocentron subtriplinervium*.

The remaining species are restricted to a few small areas and do not threaten to become noxious weeds. These are *Oxyspora paniculata*, *Arthrostemma latifolium*, *Tetrazygia bicolor*, and *Medinilla magnifica*. Some of these species are referred to by Neal (1948: 569).

KEY TO COMMON SPECIES

Petals and all anthers brilliant purple; leaves densely silvery-pubescent with soft hairs, especially on undersides; open shrubs up to 12–15 ft. tall....*Tibouchina semidecandra* (1)
Petals pink, stamens pink or yellow; leaves

¹ Department of Agronomy and Soil Science, and Department of Botany, University of Hawaii, Honolulu. Manuscript received June 15, 1960.

pubescent but not densely silvery; with stiff hairs; compact shrubs usually 10 ft. tall or less.

1. Petioles and nodes set with sparse long stiff hairs up to 5 mm. long; calyces rather sparsely scaly; ribs below sparsely scaly; lateral veins more or less glabrous.....
.....*Melastoma decemfidum* (2)
2. Petioles and stems set with numerous short spinules to 1 mm. long; nodes with a few long scales; calyces silky with numerous scales; ribs and small veinlets rather densely scaly-spiny below*Melastoma malabatricum* (3)

1. *Tibouchina semidecandra* (Schrank and Mart.) Cogniaux

DISTRIBUTION: *Kauai*: Kokee, open grass area by museum, on ditch bank by roadside, Dec. 23, 1959, D. L. Plucknett 81-85.

Hawaii: N.W. Kilauea Crater, wet fern forest around houses, 1150 m., Aug. 30, 1933, Fosberg 10121. Volcano Road, near volcano, forest reserve along road, in mixed fern forest, tall shrub 5 m. high, Nov. 10, 1926, L. H. Mac Daniels 223. Volcano House, July 24, 1926, Aug. 24, 1926, C. S. Judd. 29 miles, Glenwood, Hawaii, July 23, 1926, Degener 8188; June 22, 1929, persistent in forested region, Degener 9641. Glenwood, el. 1000 m., in forest, Dec. 25, 1930, E. H. Bryan, Jr., 714. Kalanilehua, Aug., 1917, J. F. Rock 13029, 13030. Kurtistown, Jan. 20, 1960, along roadside, D. L. Plucknett 95. Hilo, May, 1932, A. Meebold.

Oahu: Nuuanu Valley, upper part near Upside Down Falls, well established in underbrush in thick woods, shrub 2 m. tall, flowers deep purple, Fosberg 27067, Sept. 15, 1946. Tantalus, grounds of E. F. Bishop, Oct. 3, 1930, H. E. Gregory. Observed, Manoa Valley, by Manoa stream, B. C. Stone, Feb. 1960.

Altitude range 1,500-4,500 ft.; requires moist relatively cool habitat. At lower elevations it is usually under shade, but at Kilauea Crater it may be found in the open (elev. 3,400 ft.). This species is a spectacular shrub and in cultivation is very attractive. It does not appear to be as aggressive as the two *Melastoma* spp. and tends to spread only in disturbed areas. It has not been

found deeply penetrating the native forest, but is often very common along roadcuts, houselots, trails, and near buildings.

2. *Melastoma malabatricum* L.

DISTRIBUTION: *Kauai*: Kilohana Crater, dominant shrub, 320 m., 7 Aug. 1928, E. H. Bryan 626. Reservoir near Hanahanapuni Crater, Mar. 24, 1960, Plucknett 116, 117. Wailua bauxite project area, Mar. 24, 1960, Plucknett 118-123.

Hawaii: Anauulu Rd. above Hilo, side of gully in canefield, flowers pink, Dec. 7, 1933, alt. 400 m., Fosberg 10490. Kaumana, alt. 200 ft., flowers pink, Sept. 1953, Amy Suehiro. Keaau Orchard-Volcano Highway Intersection, by roadside, Dec. 4, 1959, Plucknett 78. Hilo-Volcano Road, 4 miles mauka, Jan. 20, 1960, roadside, Plucknett 93, 94. Hilo radio tower, Jan. 20, 1960, Plucknett 89, 90, 92.

Altitude range 0-1,000 ft. In contrast to *Tibouchina*, *Melastoma malabatricum* is tolerant of drier and warmer habitats and tends to spread in lowland areas rather than in disturbed areas of native forest. Usually found in open habitats such as pastures, waste areas, and fields with weedy vegetation. On Kilohana Crater on Kauai and the adjoining areas where it once was dominant, *Rhodomyrtus tomentosa* (Ait.) Hassk. appears now to be replacing it, but it still remains an important weedy species in this area.

Pope's reference (1929: 147) to *Melastoma decemfidum* on Kauai is probably in error since only *M. malabatricum* has been found on that island. The plant is known on Kauai as "Isenberg bush" probably because of its association with Kilohana Crater and the Isenberg home there. *Rhodomyrtus tomentosa* has also been called "Isenberg bush" on Kauai but it more commonly is known as "Indian gooseberry."

On Hawaii *Melastoma malabatricum* may be found in great abundance in the Keaukaha area near the Hilo Airport and along the Volcano Road.

M. malabatricum is vigorous in growth and spreads rapidly from numerous seeds, usually spread by birds.

3. *Melastoma decemfidum* Roxb.

DISTRIBUTION: *Hawaii*: Hilo, sent to J. Kim, Honolulu, B. Ag. Forestry, 10 Dec. 1957. Hilo-

Volcano Road, 4 miles above Hilo, top of road cut, Dec. 5, 1959, Plucknett 79, 80.

Altitude range 0–1,000 ft. Flourishes in open areas of high rainfall on Hawaii. Together with its weedy relative, *M. malabatricum*, *M. decemfidum* has become dominant in the Keaukaha area near the radio tower and also may be seen in thickets along the Volcano Road. This shrub has been observed as a small tree with a trunk 4–5 in. in diameter and up to 12 ft. high in the Keaukaha area.

LESS COMMON MELASTOMACEOUS PLANTS IN HAWAII

There are several species which seem to be spreading in certain areas but which at present cannot be classed as dangerous or even common weeds. It seems useful to indicate briefly their presently known distributions.

Clidemia hirta (L.) D. Don. This rather small plant has been collected on Oahu on Mt. Tantalus, twice on the Poamoho Trail in the Koolau range, and twice near the Hawaiian Sugar Planters' Association nursery in Wahiawa. There are no reports of *Clidemia* from the other islands.

Pterolepis glomerata (Rottb.) Miquel. Specimens of this plant have been collected from Palikea in the Waianae range, and from Poamoho and Pupukea in the Koolau range on Oahu.

Heterocentron subtriplinervium (Link and Otto) Br. and Bouche. According to the labeled specimens in Bishop Museum there are four species of *Heterocentron* in Hawaii, but probably only one or two of these species are actually

represented. Neal (1948: 568) reported only *H. roseum* Br. and Bouche. Clarification of the species of *Heterocentron* will probably be presented in the new edition of Neal's *In Gardens of Hawaii* (in preparation).

There are five specimens determined as *H. subtriplinervium* in the Bishop Museum. These were collected from Mt. Tantalus, Oahu, and from Hawaii along the Hilo-Kona and Hilo-Kilauea roads.

Arthrostemma latifolium D. Don. This plant has been found escaping at the Makiki Nursery, in Honolulu, and along south Opaueula ridge on Oahu.

REFERENCES

- DEGENER, O. 1930. Plants of Hawaii National Park. Honolulu.
- 1935. Flora Hawaiiensis. Honolulu.
- HOSAKA, E. Y. 1945. Noxious weeds of Hawaii. Bd. Comm. Agric. For. Honolulu. (Loose-leaf.)
- MOOMAW, J. C., M. T. NAKAMURA, and G. D. SHERMAN. 1959. Aluminum in some Hawaiian plants. *Pacif. Sci.* 13(4): 335–343.
- NEAL, M. C. 1948. In gardens of Hawaii. Bishop Mus. Spec. Publ.
- POPE, W. T. 1929. Manual of Wayside Plants of Hawaii. Honolulu.
- SHERMAN, G. D. 1954. Some of the mineral resources of the Hawaiian Islands. Hawaii Agr. Exp. Sta. Spec. Publ. 1.