

Flueggea neowawraea (mehamehame)

Flueggea neowawraea, a member of the spurge family (Euphorbiaceae), is a large tree up to 30 m (100 ft) tall and 2 m (7 ft) in diameter with white oblong pores covering its scaly, pale brown bark. This species is usually dioecious (having separate male and female plants) and is the only member of the genus found in Hawaii. It can be distinguished from other Hawaiian species in the family by its hairless whitish lower leaf surfaces and round fruits (Hayden 1999, Service 1999).

Individual trees of *Flueggea neowawraea* bear only male or female flowers and must be cross-pollinated from a different tree to produce viable seed. Little else is known about the life history of this species. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Hayden 1999, Service 1999a).

Historically, *Flueggea neowawraea* was known from Molokai, Oahu, Kauai, Maui, and Hawaii Island. Currently, this species is found on Kauai, Oahu, Maui, and Hawaii. This species was last collected on Molokai in 1931 from Waihi by G. W. Russ (HINHP Database 2000).

On Molokai, *Flueggea neowawraea* occurred in gulches in mesic forest between 450 and 840 m (1,476 and 2,755 ft) in elevation (J. Lau, *in litt.* 2001).

Information on threats that may affect *Flueggea neowawraea* on Molokai is unknown.

Hedyotis mannii (pilo)

Hedyotis mannii, a member of the coffee family (Rubiaceae), is a short-lived perennial with smooth, usually erect stems 30 to 60 cm (1 to 2 ft) long, which are woody at the base and four-angled or -winged. This species' growth habit; its quadrangular or winged stems; the shape, size, and texture of its leaves; and its dry capsule, which opens when mature, separate it from other species of the genus (Wagner *et al.* 1999).

Little is known about the life history of this species. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1996a).

Historically and currently, *Hedyotis mannii* is found on Lanai, West Maui, and Molokai. After an absence of 50 years, this species was rediscovered on Molokai in 1987 by Steve Perlman on private land in Kawela Gulch in TNCH's Kamakou Preserve. Only one occurrence

of five plants is known to exist in this area (GDSI 2000, HINHP Database 2000).

On Molokai, *Hedyotis mannii* grows on dark, narrow, rocky gulch walls in mesic and perhaps wet forests at 593 to 1,212 m (1,945 to 3,975 ft) in elevation. Associated plant species include *Cibotium* sp., *Cyanea* sp., *Pipturus* sp., *Psychotria* sp., or *Scaevola* sp. (HINHP Database 2000, Service 1996a, Wagner *et al.* 1999).

The threats to *Hedyotis mannii* on Molokai are habitat degradation by feral pigs; competition with the non-native plant *Melinis minutiflora*; and catastrophic extinction through random environmental events to which the limited number of individuals are extremely vulnerable (HINHP Database 2000, Service 1996a, 57 FR 46325).

Hesperomannia arborescens (NGN)

Hesperomannia arborescens, a long-lived perennial member of the aster family (Asteraceae), is a small shrubby tree that usually stands 1.5 to 5 m (5 to 16 ft) tall. This member of an endemic Hawaiian genus differs from other *Hesperomannia* species in having the following combination of characters: Erect to ascending flower heads, thick flower head stalks, and usually hairless and relatively narrow leaves (Wagner *et al.* 1999).

This species has been observed in flower from April through June and in fruit during March and June. No other information is available on flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors (Service 1998c).

Hesperomannia arborescens was formerly known from Lanai, Molokai, and Oahu. This species is now known from Oahu, Molokai, and Maui. On Molokai, one occurrence of three individuals is known from private land (GDSI 2000, HINHP Database 2000).

On Molokai, *Hesperomannia arborescens* is found on slopes or ridges in wet *Metrosideros polymorpha-Dicranopteris linearis* lowland forest or mesic *Diospyros sandwicensis-M. polymorpha* lowland forest transition zones between 175 and 959 m (574 and 3,146 ft) in elevation. Associated native species include *Antidesma* sp., *Boehmeria grandis*, *Broussaisia arguta*, *Cheirodendron* sp., *Cibotium glaucum*, *Clermontia pallida* (oha wai), *Coprosma* sp., *Cyrtandra* sp., *Diplopterygium pinnatum* (uluhe lau nui), *Elaphoglossum* sp. (ekaha), *Freycinetia arborea*, *Hedyotis* sp., *Ilex anomala*, *Myrsine* sp., *Nephrolepis exaltata*, *Nestegis sandwicensis*, *Pipturus* sp., *Psychotria mauiensis* (kopiko), *Smilax melastomifolia* (hoi kuahiwi),

Thelypteris sp. (palapalaia), *Urera glabra*, or *Wikstroemia* sp. (HINHP Database 2000).

The major threats to *Hesperomannia arborescens* on Molokai are habitat degradation by feral pigs, goats, and humans; competition with non-native plants, such as *Clidemia hirta*, *Kalanchoe pinnata*, and *Rubus rosifolius*; and catastrophic extinction due to random environmental events or reduced reproductive vigor resulting from this species' limited numbers (HINHP Database 2000, 59 FR 14482).

Hibiscus brackenridgei (mao hau hele)

Hibiscus brackenridgei, a short-lived perennial member of the mallow family (Malvaceae), is a sprawling to erect shrub or small tree. This species differs from other members of the genus in having the following combination of characteristics: Yellow petals, a calyx consisting of triangular lobes with raised veins and a single midrib, bracts attached below the calyx, and thin stipules (leaf bracts) that fall off, leaving an elliptical scar. Three subspecies of *Hibiscus brackenridgei* are now recognized: ssp. *brackenridgei*, *molokaiana*, and *mokuleianus*. Subspecies *molokaiana* was found on the island of Molokai. At the time when we listed this species in 1994, only two subspecies, *brackenridgei* and *mokuleianus*, were recognized. Subsequent to the final rule listing this species in 1994, we became aware of Wilson's (1993) taxonomic treatment of this group, in which *Hibiscus brackenridgei* var. *molokaiana* was changed to subspecies status and recognized as distinct from *Hibiscus brackenridgei* ssp. *brackenridgei*. Wilson's (1993) treatment is cited in the supplement in the revised edition of the "Manual of the Flowering Plants of Hawaii" as the basis for recognizing *Hibiscus brackenridgei* ssp. *molokaiana*. We will address this name change in a future **Federal Register** document (Bates 1999, HINHP Database 2000, Wagner *et al.* 1999, Wilson 1993).

Hibiscus brackenridgei is known to flower continuously from early February through late May, and intermittently at other times of year. Intermittent flowering may possibly be tied to day length. Little else is known about the life history of this plant. Pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1999a).

Historically, *Hibiscus brackenridgei* ssp. *molokaiana* was known from Molokai and is currently found on Oahu. This subspecies was last collected on Molokai in 1920 from Laau