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*Flueggea* Willd

W. John Hayden

*University of Richmond*, [jhayden@richmond.edu](mailto:jhayden@richmond.edu)Follow this and additional works at: <http://scholarship.richmond.edu/biology-faculty-publications>Part of the [Botany Commons](#), and the [Horticulture Commons](#)**Recommended Citation**Hayden, W. John. "Flueggea Willd." In *Manual of the Flowering Plants of Hawai'i*, edited by Warren L. Wagner, Derral R. Herbst, and S. H. Sohmer, 620-21. Vol. 1. Honolulu: University of Hawaii Press, 1990.

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## 7. FLUEGGEA Willd.

[*Acidoton* P. Br., nom. rej., non *Acidoton* Sw.; *A.* sect. *Flueggea* (Willd.) Post & Kuntze; *Neowawraea* Rock]

Contributed by W. John Hayden

Shrubs to large trees with watery sap. Leaves simple, alternate, pinnately veined, stipulate. Flowers unisexual (and the plants dioecious or rarely monoecious), actinomorphic, in axillary clusters; sepals 4–7, imbricate; petals absent; nectary disk lobed or entire; stamens (3)4–7, alternate with the lobes of floral disk, staminodes absent in pistillate flowers; filaments distinct; ovary superior, on a hypogynous disk, (2)3(4)-carpellate, ovules 2 per cell, hemitropous, pistillode present in staminate flowers; styles distinct and 2-lobed or stigmas sessile. Fruit a capsule or baccate, indehiscent. Seeds 2 per cell. [Hayden, 1987; Sherff, 1939b]

A pantropical but primarily Old World genus of 14 species, many of which are deciduous shrubs. The sole species in Hawai'i, however, is a large forest tree, much like its apparently closest relative, *Flueggea flexuosa* Müll. Arg., which ranges from the Philippines to eastern Melanesia. Originally the basis of the monotypic *Neowawraea*, the following species has long been erroneously assigned to *Drypetes* Vahl; morphology of reproductive structures (Hayden, 1987), wood anatomy (Hayden & Brandt, 1984), and leaf architecture (Levin, 1986a, 1986b, 1986c) are more consistent with placement in *Flueggea* of tribe *Phyllanthaeae*. In transferring the species to *Flueggea* the name *phyllanthoides* is preoccupied. The generic name honors Johann Flügge (1775–1816), German physician and botanist at Hamburg.

### 1. *Flueggea neowawraea* W. Hayden

[*Neowawraea phyllanthoides* Rock; *Drypetes phyllanthoides* (Rock) Sherff]

(end, E) *Mehamehame*

Dioecious trees up to 30 m tall and 2 m in diameter, bark pale brown, rough and scaly, lenticels abundant, whitish, shoots glabrous, sapwood reddish brown, heartwood black. Leaves thin, chartaceous, upper surface green, lower surface pale green, glaucous, ovate-elliptic, 4–14 cm long, 2–9 cm wide, glabrous, margins entire, apex acute, base truncate to rounded or oblique, petioles 0.5–2 cm long, stipules

deltate, 2–3 cm long, with lacinate-ciliate margins. Staminate flowers on pedicels 3–4 mm long, sepals 5, green with brownish tips, somewhat spatulate, 1.5–2 mm long, with erose-lacinate margins, filaments ca. 1 mm long, anthers 1–1.5 mm long, basifixed, pistillode conical, ca. 0.3 mm long; pistillate flowers on pedicels 5–14 mm long, sepals 5, unequal, 1–2.5 mm long, outer ones ascending with acute apices, inner ones spreading and spatulate with lacinate margins, ovary 2.5–3 mm long, globose, stigmas sessile, 2-lobed. Fruit reddish brown to black, juicy, globose, 3–6 mm in diameter, subtended by persistent sepals,

borne on pedicels 5–20 mm long. Seeds slightly curved, 2–4 mm long, ca. 1 mm wide,  $\pm$  triangular in cross section, testa with deep subhilar invagination, embryo embedded in endosperm. Very rare, in dry to mesic forest, 250–1,000 m, on northwestern Kaua'i; Wai'anae Mountains, O'ahu; Moloka'i(?); southwest slope of Haleakalā, Maui; and Kona Coast, Hawai'i.—*Plate 84.*

*Flueggea neowawraea* is one of the rarest trees in Hawai'i. According to U.S. Fish and Wildlife Service records, 13 extant populations comprising a total of 41 individuals were known in 1982. Herbarium collections suggest a few additional populations may be scattered in the Wai'anae Mountains of O'ahu and along the Kona Coast of Hawai'i. Kaua'i has 2 known localities and

Maui has just one. The species is presumed extinct on Moloka'i; the single individual from which a specimen was taken in 1931 is known to have died sometime prior to 1939. The principal cause for the demise of this species is the black twig borer (*Xylosandrus compactus*), which attacks the plants long before reproductive maturity. Often described on herbarium labels as gigantic trees in various states of senescence or decay, but forming vigorous stump shoots and, hence, somewhat reminiscent of American chestnut (*Castanea dentata* Borkh.). Sometimes confused with *Antidesma platyphyllum*, *A. pulvinatum*, or *Xylosma hawaiiense*, from which it may be distinguished by the combination of glabrous and glaucous lower leaf surface, entire leaf margins, and globose fruit.