

This species typically grows in volcanic or clay soils or on cliffs in windward coastal areas at elevations between 0 and 194 m (0 and 636 ft) and containing one or more of the following associated native plant species: *Bidens mauiensis*; *Lycium sandwicense* (ohelo kai); *Lysimachia mauritiana* (kolokolo kuahiwi); *Melanthera integrifolia* (nehe); *Panicum torridum* (kakonakona); *Scaevola taccada*; or *Schiedea globosa* (NCN) (HINHP Database 2001; Service 1999; Wagner *et al.* 1999; 56 FR 55770; R. Hobdy, pers. comm., 2001).

The major threats to this species on Maui are habitat degradation by feral goats and cattle, competition from the nonnative plant species *Leucaena leucocephala*, trampling by humans on or near trails, and fire (Service 1999; 56 FR 55770).

Clermontia lindseyana (Oha wai)

Clermontia lindseyana, a short-lived perennial member of the bellflower family (Campanulaceae), is a small, branched tree that grows 2.5 to 6 m (8.2 to 20 ft) tall. *Clermontia lindseyana* is either terrestrial or epiphytic. *Clermontia lindseyana* is easily distinguished from the other species within this genus by several characters: Much larger leaves and flowers; petals similar to sepals; and spreading floral lobes. Rock (1962) commented on the leaves being conspicuously hairy beneath (Cuddihy *et al.* 1983; Lammers 1999).

This species has been observed in fruit from June to October and in flower from February to August. Little else is known about the life history of *Clermontia lindseyana*. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (HINHP Database 2001; Service 1996a; 59 FR 10305).

Historically, *Clermontia lindseyana* was known from Maui and the island of Hawaii. The two Maui occurrences are located in Waiopai and Wailaulau Gulches in the Kahikinui and Kula Forest Reserves on State and private lands, and are estimated to total about 330 individuals (GDSI 2001, HINHP Database 2001, Service 1996a, 59 FR 10305; Arthur Medeiros, USGS-BRD, *in litt.* 2000).

On Maui, *Clermontia lindseyana* grows in *Acacia koa* mesic forest containing one or more of the following associated native plant species: *Coprosma* spp.; *Cyrtandra* spp.; *Ilex anomala* (kawau); *Myrsine* spp.; or native fern species, at elevations between 1,142 and 1,870 m (3,747 and 6,134 ft) (HINHP Database 2001; Service

1996a; 59 FR 10305; R. Hobdy, pers. comm., 2001).

The threats to *Clermontia lindseyana* are trampling and grazing by cattle, trampling and browsing by goats, and trampling and rooting by pigs; competition with the nonnative plant *Pennisetum clandestinum*; and consumption of berries, flowers, and vegetation by black rats (Service 1996a; 59 FR 10305).

Clermontia oblongifolia ssp. *mauiensis* (Oha wai)

Clermontia oblongifolia ssp. *mauiensis*, a short-lived perennial member of the bellflower family (Campanulaceae), is a shrub or tree with oblong to lance-shaped leaves with petioles. *Clermontia oblongifolia* is distinguished from other members of the genus by its calyx and corolla, which are similar in color and are each fused into a curved tube that falls off as the flower ages. The species is also distinguished by the leaf shape, the male floral parts, the shape of the flower buds, and the lengths of the leaf and flower stalks, the flower, and the smooth green basal portion of the flower (the hypanthium). *Clermontia oblongifolia* ssp. *mauiensis* is reported from Maui and Lanai, while ssp. *oblongifolia* is only known from Oahu and ssp. *brevipes* is only known from Molokai (Lammers 1988, 1999; 57 FR 20772).

Clermontia oblongifolia ssp. *mauiensis* is known to flower from November to July. Little else is known about the life history of this species. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Rock 1919; Service 1997; 57 FR 20772).

Historically, *Clermontia oblongifolia* ssp. *mauiensis* was known from Lanai and Honomanu Valley on Haleakala, East Maui. Currently, it is known from Lanai and West Maui. This species is currently known from one occurrence with an unknown number of individuals, at Kaulalewelewe on privately owned land within the West Maui Mountains Watershed Partnership (GDSI 2001; HINHP Database 2001; Lammers 1999; Service 1997; 57 FR 20772).

This plant typically grows on the sides of ridges and ridge tops in *Metrosideros polymorpha*-dominated montane wet forests at elevations between 414 and 1,764 m (1,358 and 5,787 ft) and containing one or more of the following associated native plant species: *Cheirodendron* spp. (NCN); *Clermontia* spp.; *Coprosma* spp.; *Dicranopteris linearis*; *Hedyotis* spp.;

Ilex anomala; *Melicope* spp.; or *Myrsine* spp. (HINHP Database 2001; Service 1997; 57 FR 20772; R. Hobdy, pers. comm., 2001).

The only known population of this species on Maui is vulnerable to extinction from a natural or human-caused environmental disturbance caused by its small size; depressed reproductive vigor; competition with the nonnative plant species *Tibouchina herbacea*; and habitat degradation by feral pigs (Service 1997; 57 FR 20772).

Clermontia peleana (Oha wai)

Clermontia peleana, a member of the bellflower family (Campanulaceae) and a short-lived perennial, is an epiphytic shrub or tree that grows on native trees and tree ferns. Two subspecies are recognized: *C. peleana* ssp. *singuliflora* (with greenish-white petals) and *C. peleana* ssp. *peleana* (with blackish-purple petals). This species can be separated from other Hawaiian members of the genus by its epiphytic growth, small triangular green calyx lobes, and single-lipped flowers (Lammers 1999).

Clermontia peleana has been observed in flower during June and November, and in fruit during November. Little else is known about the life history of *C. peleana*. Flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (HINHP Database 2001; Service 1996a; 59 FR 10305).

Clermontia peleana ssp. *singuliflora* was formerly found on the island of Hawaii and on East Maui, but has not been seen in either place since the early 1900s (HINHP Database 2001; Service 1996a; Wagner *et al.* 1999; 59 FR 10305; Lyman Perry, DOFAW, pers. comm., 2000).

Nothing is known of the preferred habitat of or native plant species associated with *Clermontia peleana* on the island of Maui (R. Hobdy, pers. comm., 2001; Service 1996a; 59 FR 10305) or of the threats to *Clermontia peleana* on the island of Maui (Service 1996a; 59 FR 10305).

Colubrina oppositifolia (Kauila)

Colubrina oppositifolia, a member of the buckthorn family (Rhamnaceae), is a long-lived tree with extremely hard, red wood. This species is readily distinguished from the other species in Hawaii by the opposite leaf position, dull leaf surface, and entire leaf margins (Wagner *et al.* 1999).

This species has been observed in fruit and flower in September and June, and in flower during December and January. Little else is known about the