



Plants

'Oha wai

Clermontia pyrularia

SPECIES STATUS:

Federally Listed as Endangered

Genetic Safety Net Species

IUCN Red List Ranking - Critically Endangered (CR D)

Hawai'i Natural Heritage Ranking - Critically Imperiled (G1)

Endemism - Island of Hawai'i

Critical Habitat - Designated

SPECIES INFORMATION: *Clermontia pyrularia*, a member of the bellflower family (Campanulaceae), a terrestrial tree 10 to 13 ft (3 to 4 m) tall, has alternate toothed leaves 5.9 to 11 in (15 to 28cm) long and 1 to 2 in (2.5 to 5 cm) wide with winged petioles. A cluster of two, three, or sometimes up to five flowers has a main stalk 1.1 to 2.4 in (2.8 to 6 cm) long; each flower has a stalk 0.3 to 0.8 in (0.8 to 2 cm) long. Five small green calyx lobes top the hypanthium. The white or greenish-white petals are covered with fine hairs, measure 1.6 to 1.8 in (4 to 4.5 cm) long, and are fused into a curved two-lipped tube 0.2 to 0.3 in (5 to 8 mm) wide with five spreading lobes. The orange berry is inversely ovoid or inversely pear-shaped. Its flower and fruit are visible during the months of November and December. This species differs from others in its genus because of its winged petioles, green calyx lobes, two-lipped whitish-green flowers borne 2-5 per inflorescence, and the pear shape of its fruit.

DISTRIBUTION: *Clermontia pyrularia* is endemic to the Island of Hawai'i, found only on the northeastern slope of Mauna Kea, the western slope of Mauna Loa, and the saddle area between the two mountains.

ABUNDANCE: In the early 1990's five extant populations were known, which extended over a distance of about 47 by 6 mi (76 by 10 km), found near the Humu'ula Laupahoehoe boundary, near Hakalau Gulch, near Kealakekua, and near Ka'awaloa. This species is currently known in the wild from one population on State-owned land, composed of several individuals. There are also two outplanted populations on nearby State and Federally-owned lands.

LOCATION AND CONDITION OF KEY HABITAT: Hakalau Forest NWR and Laupahoehoe NAR. This species typically grows in koa- and/or 'ōhi'a-dominated Montane Wet Forests and Subalpine Dry Forests on old lava flows and old cinder cones, at elevations between 3,000 and 7,000 ft (910 and 2,130 m), on the northeast slope of

Mauna Kea, and leeward Mauna Loa. Associated species include *Coprosma* sp. (pilo) and *Rubus hawaiiensis* ('akala). Alien species that have invaded these habitats include *Lythrum maritimum* (pukamole) and *Passiflora tarminiana* (banana poka).



THREATS:

- Competition from alien grasses and shrubs in the forest understory;
- Stochastic extinction and/or reduced reproductive vigor due to the small number of existing populations and individuals;
- Fruit and seed predation by rats;
- Loss of pollinators;
- Browsing by cattle;
- Feral pigs.

CONSERVATION ACTIONS: The goals of conservation actions are to not only protect current populations, but also establish further populations to reduce the risk of extinction. Two populations have been planted in enclosures at Hakalau National Wildlife Refuge. The USFWS has developed a recovery plan that details specific tasks needed to recover this species. In addition to common statewide and island conservation actions, specific actions include:

- Survey historic range for surviving populations;
- Establish secure *ex-situ* stocks with complete representation of remaining individuals;
- Augment wild population and establish new populations in safe harbors.

MONITORING:

- Survey for populations and distribution in known and likely habitats;
- Monitor exclosure fences for damage and inside exclosures for signs of ungulate ingress;
- Monitor plants for insect damage and plant diseases.

RESEARCH PRIORITIES:

- Develop proper horticultural protocols and pest management;
- Survey *ex-situ* holdings and conduct molecular fingerprinting;
- Conduct pollination biology and seed dispersal studies;
- Map genetic diversity in the surviving populations to guide future re-introduction and augmentation efforts.

References:

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