

## Plants

# Uhiuhi

*Caesalpinia kawaiiensis*



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### 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 – O'ahu, Hawai'i, Maui, Lana'i

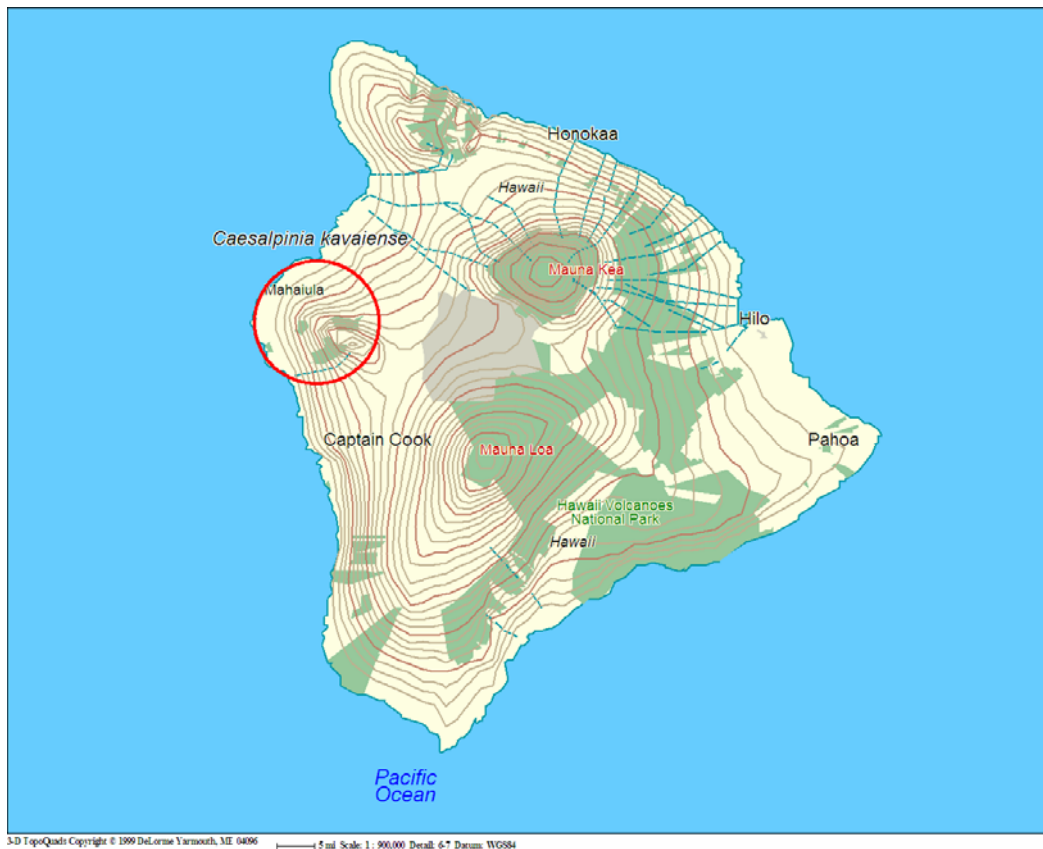
**SPECIES INFORMATION:** *Caesalpinia kawaiiensis*, a member of the pea family (Fabaceae), is a tree that can grow up to 10 meters (33 ft) tall, with trunks that have dark gray bark with rough rectangular or oblong plates. The leaves are pinnate, having 4 to 8 leaflets about 3 centimeters (1.25 inches) in length. The flowers are perfect (with both male and female organs) with a pink to rose calyx and red anthers borne in terminal racemes that are pink to red in color. Seed pods are flat, very thin, bluish-glaucous when young, and pale pink to gray when older. They are about 8 centimeters (3.2 inches) long and 5 centimeters (2 inches) wide, with a conspicuous line running down the length of the pod. The wood of *C. kawaiiensis* is highly valued for its color, grain, and density. Hawaiians made spears with the wood and also a fishing implement known as la'au melomelo or la'au maklei. The past cutting of trees for these uses is likely not the contributing factor to its decline and current endangered status, as numbers have more recently declined as a result of grazing by introduced cattle, goats and sheep. *C. kawaiiensis* plants, both wild and cultivated produce viable seed. Seeds of *C. kawaiiensis* have been tested by the Center for Conservation Research and Training, finding that they are orthodox and can tolerate freezing and drying. The laboratory germination time was one to three weeks.

**DISTRIBUTION:** *C. kawaiiensis*, an endemic Hawaiian tree species, was once widespread on the islands of Kaua'i, O'ahu, west Maui, Lana'i, and the North Kona District of Hawai'i. It occurred throughout dry forest ecosystems, ranging in elevation from 78 meters (250 feet) to 910 meters (3,000 feet).

**ABUNDANCE:** *C. kawaiiensis* is now extinct on Kaua'i, Lana'i, and Maui and is found only on O'ahu in the Wai'anae range, and on the island of Hawai'i on the slopes of Mt. Hualalai. Eight subpopulations are known, totaling 50 individuals; however, many of these are probably non-reproductive due to various problems. Less than 20 individuals total are found in two populations on the island of Hawai'i. Less than 10 individuals

total remain in the two populations on O'ahu. The last remaining individual in Waimea Canyon (Po'omau) died in 1992, as a result of hurricane Iniki.

**LOCATION AND CONDITION OF KEY HABITAT:** *C. kawaiensis* is restricted to dry or mesic forests between 80 to 920 meters (262 to 3,018 ft) elevation. The Hawai'i population occurs on the Pu'uwa'awa'a Ranch, State-owned land, and on private land owned by the Bernice P. Bishop Estate. These lands are leased as cattle pasture. These habitats have been devastated by development, livestock grazing, fire, and invasion by aggressive alien plant species. On the island of Hawai'i, the dry forest habitats have been altered severely through invasion by *Pennisetum setaceum* (fountain grass), which forms dense monotypic cover throughout large areas, inhibiting seedling recruitment and vastly increasing the risk of fires. Recently, firweed (*Senecio madagascariensis*) has become established and is increasing in density and frequency throughout the area. Associated native species include *Dodonaea viscosa* (a'ali'i), *Diospyros sandwicensis* (lama), *Metrosideros polymorpha* (ohi'a), *Psydrax odorata* (alahe'e), *Erythrina sandwicensis* (wiliwili), *Chenopodium oahuense* (aheahea), and *Colubrina oppositifolia* (kauwila).





### THREATS:

- Development (one North Kona population);
- Goats;
- Pigs;
- Competition with alien plants, especially fountain grass;
- Fire;
- Seed predation by rats;
- Black twig borer;
- Collection of seed by unauthorized individuals.

**CONSERVATION ACTIONS:** The goals of conservation actions are to not only protect current populations, but to also establish further populations to reduce the risk of extinction. The Division of Forestry and Wildlife occasionally collects seeds from the wild and propagated plants in their Hilo nursery. The seedlings are then transplanted into fenced enclosures where they are assisted by watering and weed control. The species is in cultivation at several botanical gardens throughout Hawai'i. 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;
- Exclosure fences are needed around any trees not currently protected by them.

#### 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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