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## Plants

# Ma'oli'oli

## *Schiedea kaalae*

### SPECIES STATUS

Federally Listed as Endangered

Genetic Safety Net Species

IUCN Red List Ranking - CR D

Hawai'i Natural Heritage Ranking – Critically Imperiled

Endemism – O'ahu

Critical Habitat - Designated

**SPECIES INFORMATION:** *Schiedea kaalae* is a small, sometimes woody perennial with thick, leathery leaves usually tufted at the topmost portion of the stem. Its flowers are borne on large, open panicles. *Schiedea kaalae* was historically known from the north-central and south-central Wai'anae Mountains and the northern Ko'olau Mountains of O'ahu. These populations are at great risk of habitat degradation caused by feral pigs and goats, invasion of alien plant species, and fire. *Schiedea kaalae* appears to be long-lived, but there is no evidence of natural regeneration by seed. Seedlings of *Schiedea kaalae* are apparently consumed by introduced slugs and snails.

**DISTRIBUTION:** Pahole Gulch, Kaluaa Gulch, Pohakea Pass, Pu'u Kaua and Palawai Gulch in the Wai'anae Mountains. Also, Ma'akua Gulch and Makaua stream in the Ko'olau Mountains.

**ABUNDANCE:** Currently, less than 25 individuals remain in 7 small populations.

**LOCATION AND CONDITION OF KEY HABITAT:** *Schiedea kaalae* typically grows in deep shade on steep slopes, cliffs, and stream banks in diverse mesic and wet forests at elevations between 64 and 869 m (210 and 2,850 ft). This species remains on State and private lands at Pahole Gulch, Kaluaa Gulch, Puu Kaua, Palawai Gulch, Maakua Gulch, Huliwai Gulch and Makaua Stream. The habitat is being degraded by feral goats and pigs, as well as being taken over by invasive alien plant species. Associated native species include *Alyxia oliviformis*, *Athyrium arnottii* (hoio), *Athyrium sandwichianum*, *Boehmeria grandis*, *Charpentiera* sp., *Claoxylon sandwicense*, *Cyrtandra calpidicarpa*, *Cyrtandra laxiflora*, *Diospyros hillebrandii*, *Dryopteris unidentata*, *Freycinetia arborea*, *Hedyotis acuminata*, *Nothocestrum longifolium* (aiea), *Pipturus albidus*, *Pisonia sandwicensis*, *Pisonia umbellifera*, *Pouteria sandwicensis*, *Psychotria hathewayi*, *Selaginella arbuscula*, or *Xylosma hawaiiense*.

**THREATS:**

- Habitat degradation by feral pigs and goats;
- Competition from alien plant species;
- Fire;
- Predation by slugs and snails;
- Small number of extant individuals.

**CONSERVATION ACTIONS:** The goals of conservation actions are not only to protect current populations, but also to establish new populations to reduce the risk of extinction. In addition to common statewide and island conservation actions, specific actions include:

- Survey historical 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:**

- Continue surveys of population and distribution in known and likely habitats;
- 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:**

International Union for Conservation of Nature and Natural Resources, 2004, IUCN Red List of Threatened Species: Data Base Search, <http://www.redlist.org/search/search-basic.html>.

The Hawai'i Natural Heritage Program, 2005. Hawaii Natural Heritage Program Search, <http://www.hinhp.org/printpage.asp?spp=PDMALOH0A0>.

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