



## Plants

# Haha

## *Cyanea dunbariae*

### 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 – Moloka'i

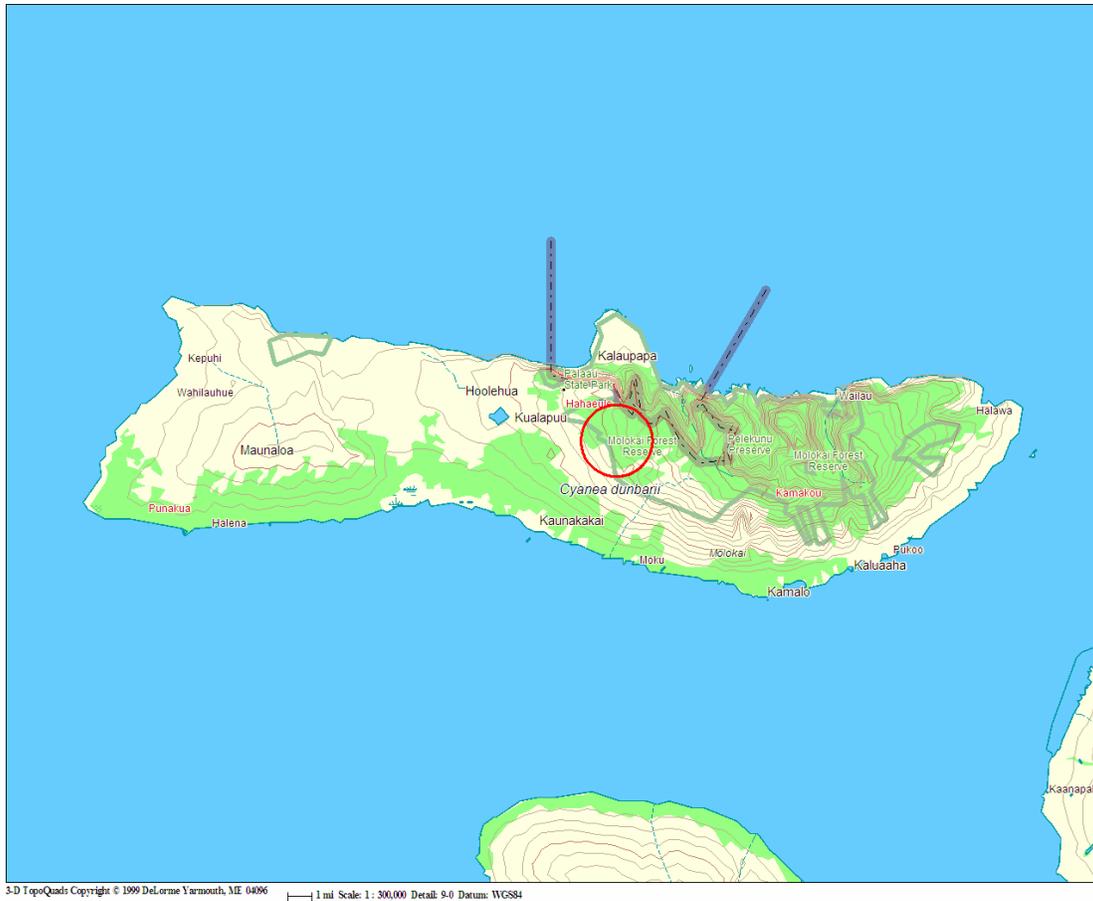
Critical Habitat - Designated

**SPECIES INFORMATION:** *Cyanea dunbariae*, a member of the bellflower family (Campanulaceae), is a branched shrub 1.5 to 2 m (4.9 to 6.6 ft) tall. The oval to broadly elliptic leaves are 10 to 22 cm (3.9 to 8.7 in) long and 6 to 14 cm (2.4 to 5.5 in) wide, with irregularly lobed or cleft margins. The flowers are arranged in groups of six to eight on a stalk that is 3 to 7 cm (1.2 to 2.8 in) long. The corolla is white, 25 to 38 mm (1.2 to 1.5 in) long. The corolla is slightly curved, with spreading lobes three-fourths as long as the tube. This species is distinguished from others in this endemic Hawaiian genus by the lack of prickles on the stems and the irregularly lobed and cleft leaf margins.

**DISTRIBUTION:** *Cyanea dunbariae* is endemic to the island of Moloka'i. *Cyanea dunbariae* was collected in 1918 at Waihanau and Waialae valleys, and was not observed again until 1992, when a population was rediscovered in Mokomoko Gulch.

**ABUNDANCE:** Approximately 15 to 20 mature plants are known from the Mokomoko Gulch population, which occurs on State-owned land within Moloka'i Forest Reserve, at an elevation of 685 m (2,250 ft). Only 9 individuals (4 mature, 1 immature, 4 seedlings) remained in 2004, when heavy pig damage was observed in the area.

**LOCATION AND CONDITION OF KEY HABITAT:** Moloka'i Forest Reserve. *Cyanea dunbariae* is found in mesic to wet *Dicranopteris linearis* (uluhe)-*Metrosideros polymorpha* ('ōhi'a) forest on moderate to steep slopes along a stream. Associated species include *Perrottetia sandwicensis* (olomea), *Pipturus albidus* (mamaki), *Clermontia kakeana* (haha), *Cheirodendron trigynum* ('olapa), and *Freycinetia arborea* ('ie'ie). The area is invaded by alien plant species, including *Rubus rosifolius* (thimbleberry), *Buddleja asiatica*, *Psidium guajava*, *Commelina diffusa* (honohono), *Hedychium* sp. (ginger), *Erigeron karvinskianus*, *Melinis minutiflora* (molasses grass), and *Kalanchoe pinnata* (air plant).



### THREATS:

- Competition from alien plant species;
- Rats;
- Axis deer;
- Pigs;
- Slugs;
- Naturally occurring landslides and flooding;
- Reduced reproductive vigor due to the small number of individuals in the only known population.

**CONSERVATION ACTIONS:** The goals of conservation actions are not only to protect current populations, but also to establish further populations to reduce the risk of extinction. 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;
- An enclosure fence should be considered for the area.

#### MONITORING:

- Survey for populations 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:

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