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Cyanea grimesiana subsp. *grimesiana*

SPECIES STATUS:

Federally Listed as Endangered

Genetic Safety Net Species

Hawai'i Natural Heritage Ranking - Subspecies Critically Imperiled (G1T1)

Endemism – O'ahu, Moloka'i

Critical Habitat - Designated

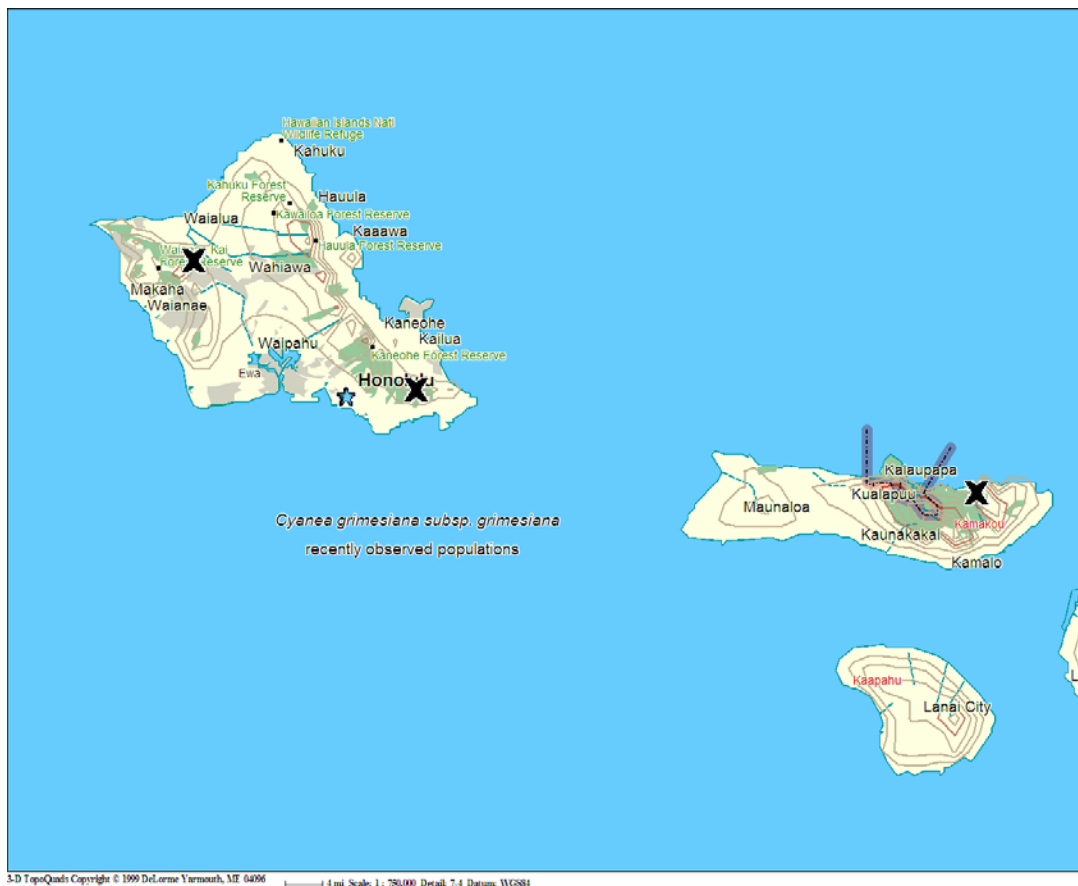
SPECIES INFORMATION: *Cyanea grimesiana* subsp. *grimesiana*, a member of the bellflower family (Campanulaceae), is a shrub 1 to 3.2 m (3.3 to 10.5 ft) tall. The leaves are pinnately divided, with 9 to 12 segments per side. The leaf blades are 27 to 58 cm (10.6 to 22.9 in.) long and 14 to 32 cm (5.5 to 12.6 in.) wide (across the segments). The inflorescence comprises 6 to 12 flowers. The calyx lobes, 15 to 30 mm (0.5 to 1 in.) long, egg-shaped to lance-shaped and overlap at the base. The petals are purplish or greenish to yellowish white, often suffused or striped with magenta, and 55 to 80 mm (2 to 3 in.) long. The orange berries are 18 to 30 mm (0.7 to 1.2 in.) long. This species is distinguished from others in this endemic Hawaiian genus by the pinnately lobed leaf margins and the width of the leaf blades. This subspecies is distinguished from the other two subspecies by the shape and size of the calyx lobes, which overlap at the base.

DISTRIBUTION: Historically, *Cyanea grimesiana* subsp. *grimesiana* was known from at least 40 populations located in the Wai'anae and Ko'olau mountains on O'ahu, Wailau Valley and Pu'u Kahea on Moloka'i, central and northern Lāna'i, and scattered locations on Maui, but Lammers (1998) split this taxon into several species with *C. mauiensis* for the Maui populations, and *C. munroi* for those on Lāna'i and most of them from Moloka'i.

ABUNDANCE: In 1994, *C. g.* subsp. *grimesiana* was known from 14 populations on those 4 islands. These were one population from Mt. Ka'ala NAR and three populations from Pahole NAR on State land, one population each from North Haleauau Gulch on the federally owned Schofield Barracks Military Reservation and North Kaluaa Gulch on private land, and two populations from Oahu's Ko'olau Mountains on State and private land; on Moloka'i, one population is known from Kukuinui Ridge on State land and the other is within the State's Olokui NAR; on Lāna'i, two populations from Kaiholena Gulch and an unnamed gulch south of Puhielelu Ridge, in the central portion of the island, both on private land; on Maui, two populations from Iao Valley on private land. In 1994, the total current populations statewide between these populations consisted of fewer than 50 individuals. Most populations had just a few individuals

each. The last known wild Ko'olau plant died in 2004 , 1 plant may survive in the Wai'anae Mountains at Pu'u Pane. In 2000, 10 plants were observed in W. Makaleha Valley. In 2004, 1 plant was observed at Pia Valley. It is not known if plants still survive on Moloka'i in Wailau Valley. The total number of remaining plants is probably less than 15 statewide.

LOCATION AND CONDITION OF KEY HABITAT: Locations described above. *C. g.* subsp. *grimesiana* is typically found in mesic forest often dominated by 'ōhi'a and koa, or on rocky or steep slopes of stream banks, and between 350 and 945 m (1,150 and 3,100 ft) elevation. Associated plant taxa include *Antidesma* sp. (hame), *Bobea* sp. ('ahakea), *Psychotria* sp. (kopiko), *Xylosma* sp. (maua), and various native and alien ferns. These habitats on Moloka'i are invaded by alien species including *Clidemia hirta*, *Kalanchoe pinnata*, *Rubus rosifolius*, and others. On O'ahu, these habitats are invaded by aliens including *Toona ciliata*, *Grevillea robusta*, and others, in the Wai'anae Mountains; and *Clidemia hirta*, *Oplismenus hirtellus*, *Psidium cattleianum*, *Cordyline fruticosa*, *Rubus rosifolius*, and others, in the Ko'olau Mountains.



THREATS:

- Feral ungulates (axis deer, goats, and pigs);

- Competition with various alien plants;
- Trampling by hikers;
- Military activities;
- Fire;
- Landslides;
- Rats;
- Reduced reproductive vigor due to small number of living individuals.

CONSERVATION ACTIONS: The goals of conservation actions are not only to protect current populations, but also 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.

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;
- Map genetic diversity in the surviving populations to guide future re-introduction and augmentation efforts.

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