



DRAFT: Aug 22, 2005
Plants

Haha

Cyanea asarifolia

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 – Kaua'i

Critical Habitat - Designated

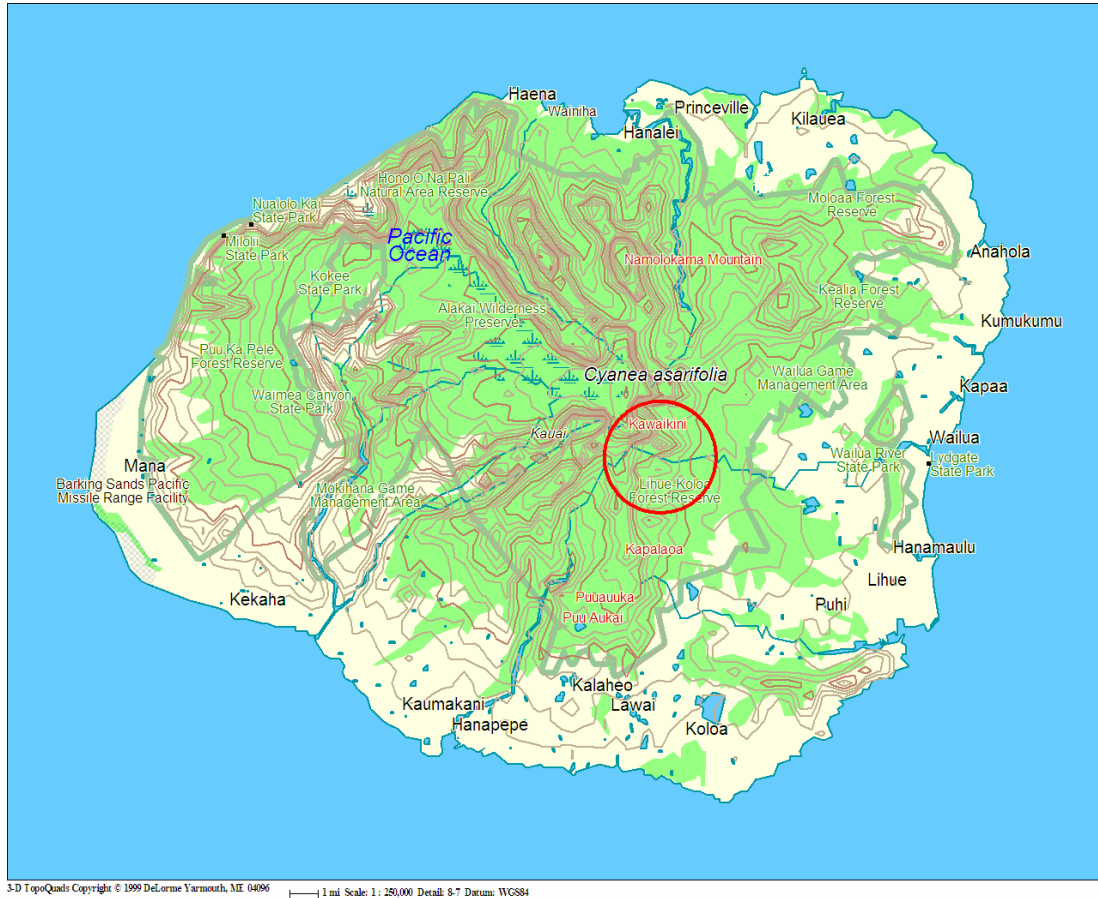
SPECIES INFORMATION: *Cyanea asarifolia*, a member of the bellflower family, is a sparingly branched shrub 1 to 3.3 ft (0.3 to 1 m) tall. The heart-shaped leaves are 3.3 to 4.1 in (8.5 to 10.5 cm) long and 2.8 to 3.1 in (7 to 8 cm) wide with leaf stalks 4.7 to 5.9 in (12 to 15 cm) long. Thirty to 40 flowers are clustered on a stalk 1 to 1.2 in (25 to 30 mm) long, each having an individual stalk 0.3 to 0.4 in (7 to 10 mm) in length. The slightly curved flowers are white with purple stripes, 0.8 to 0.9 in (20 to 22 mm) long, and about 0.1 in (3.5 mm) wide with spreading lobes. The five anthers have tufts of white hairs at the tips. The nearly spherical fruit is a dark purple berry about 0.4 in (1 cm) long. This species is distinguished from others of the genus that grow on Kaua'i by the shape of the leaf base, the leaf width in proportion to the length, and the presence of a leaf stalk. Discovered in 1970, *Cyanea asarifolia* was known only from a single population of five or six plants above the bed of Anahola Stream on the island of Kaua'i. Recent attempts to relocate this population have failed and this population is now thought to be extinct. In 1991, another population of 14 mature plants and 5 seedlings was discovered at the headwaters of the Wailua River in central Kaua'i. In 1992, Hurricane Iniki heavily damaged the *Cyanea asarifolia* population, either directly or indirectly destroying all but four or five juvenile plants.

DISTRIBUTION: A narrow endemic found at the base of Mt. Wai'ale'ale, central Kaua'i.

ABUNDANCE: Only one population has been observed in the last decade. This population now totals 10 individuals, and is found in the Blue Hole area of central Kaua'i, in the headwaters of the Wailua River.

LOCATION AND CONDITION OF KEY HABITAT: The Blue Hole is located within the Lihue-Koloa Forest Reserve. This species typically grows in pockets of soil on sheer

rock cliffs in lowland wet forests or shrubland at an elevation of approximately 330 meters (1,080 feet). Associated plant taxa include ferns, *Hedyotis elatior* (manono), *Metrosideros polymorpha* ('ōhi'a), *Touchardia latifolia* (olona), and *Urera glabra* (opuhe). Alien species in the habitat of this species include *Erigeron karvinskianus*.



THREATS:

- Avalanches and landslides;
- Slugs;
- Pigs;
- Competition from alien plant species;
- Reduced reproductive vigor due to the small number of existing individuals.

CONSERVATION ACTIONS: The goals of conservation actions are to protect current populations, but also to establish further populations to reduce the risk of extinction. The Division of Forestry and Wildlife (DOFAW) have outplanted and fenced 9 *Cyanea asarifolia* that have been planted in the Blue Hole area. The species is also currently being cultivated *ex-situ* by the National Tropical Botanical Garden. 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:

- Establish a slug enclosure around the remaining plants;
- 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 invertebrate pest damage and 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:

Carr, G. 2005. Hawaiian Native Plant Genera, University of Hawaii Botany Department, http://www.botany.hawaii.edu/faculty/carr/images/cya_asa_691.jpg [August 2005].

Center for Plant Conservation. 2005. National Collection of Endangered Plants. http://www.centerforplantconservation.org/ASP/CPC_NCList_Quick.asp [August 2005].

Hawai'i Natural Heritage Program. 2005. Hawaii Natural Heritage Program Search, <http://www.hinhp.org/printpage.asp?spp=PDMAL0H0A0> [August 2005].

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> [August 2005].

NTBG. 2005. Perlman, Steve. Field Data Booklet #51, SP 19448. Unpublished data.

USFWS. 1994. Final Listing, Endangered ETWP; Determination of Endangered or Threatened Status for 24 Plants From the Island of Kauai, HI; Federal Register, Vol. 59, No. 38, (25-FEB-94 59), 59 FR 9304-9329, 25pp.

Wagner, W.L., Herbst, D.R., Sohmer, S.H. 1999. Manual of the flowering plants of Hawai'i-- Revised Edition. Honolulu, HI: University of Hawaii Press and Bishop Museum Press. 1853p.