Plants

Hau kuahiwi

Hibiscadelphus giffardianus

SPECIES STATUS:
Federally Listed as Endangered
Genetic Safety Net Species
IUCN Red List Ranking – Critically Endangered (CR D)
Hawai'i Natural Heritage Ranking - Possibly Extinct (Captive or Cultivated Only) (GHC)
Endemism – Island of Hawai'i
Critical Habitat - Designated

SPECIES INFORMATION: *Hibiscadelphus giffardianus*, of the mallow family (Malvaceae), is a tree up to 7 m (23 ft) tall with the trunk up to 30 cm (12 in) in diameter and whitish bark. The leaf blades are heart-shaped and 10 to 30 cm (4 to 12 in) long with a broad tip, a notched base, and stalks nearly as long as the blades. Flowers are typically solitary in the axils of the leaves and have stalks 1.5 to 4 cm (0.6 to 1.6 in) long. Five to seven filament-like bracts are borne below each flower and the calyx is pouch-like. The overlapping petals form a curved bisymmetrical flower with the upper petals longer, typical of bird-pollinated flowers. The flowers are grayish green on the outside and dark magenta within, and 5 to 7 cm (2 to 3 in) long. The fruit is woody with star-shaped hairs. This species differs from others in this endemic Hawaiian genus by its flower color, flower size, and filamentous bracts.

DISTRIBUTION: Only one tree of *Hibiscadelphus giffardianus* has ever been known in the wild, from Kipuka Puaulu (or Bird Park) in Hawai'i Volcanoes National Park. This tree died in 1930, but plants exist in cultivation from seeds originally collected before the tree died. Cuttings from these cultivated trees have been planted back into the now fenced original habitat at Kipuka Puaulu and currently nine mature plants and two suckers are known to exist. Individuals planted in Kipuka Ki were later determined to be hybrids and were removed by Park personnel. The cultivated plants in Kipuka Puaulu have spontaneously produced fertile hybrids with cultivated plants of *Hibiscadelphus hualalaiensis* that were also planted into Kipuka Puaulu and Kipuka Ki. Both the *Hibiscadelphus hualalaiensis* and the hybrids have been removed from the Park.

ABUNDANCE: Cuttings from the cultivated trees have been planted back into the now fenced original habitat at Kipuka Puaulu and currently nine mature plants and two suckers are known to exist.

LOCATION AND CONDITION OF KEY HABITAT: This taxon grows in mixed Montane Mesic Forest at elevations between 1,200 and 1,310 m (3,900 and 4,300 ft). Associated taxa include ʻōhiʻa, koa, *Sapindus saponaria* (aʻe), hoʻiʻo, *Coprosma* sp. (pilo), *Pipturus albidus* (mamaki), *Psychotria* sp. (kopiko), *Nestegis sandwicensis* (olopua), *Melicope* sp. (alani), *Dodonaea viscosa* (ʻaʻaliʻi), *Myoporum sandwicense* (naio), and introduced grasses. Alien species that have invaded this habitat include *Ehrharta stipoides* (meadow ricegrass), *Paspalum conjugatum* (Hilo grass), and *Paspalum dilatatum* (Dallis grass).

THREATS:

- Bark, flower, and fruit feeding by roof rats (*Rattus rattus*);
- Leaf damage in the form of stippling and yellowing by *Sophonia rufofascia* (twospotted leafhopper) and yellowing by the native plant bug *Hyalopeplus pellucidus;*
- Competition from the alien grasses;
- Habitat change from volcanic activity;
- Reduction in reproductive vigor due to the small number of existing cultivated individuals, all from a single parent.

CONSERVATION ACTIONS: The goals of conservation actions are to not only protect current populations, but also establish new populations to reduce the risk of extinction. The USFWS has developed a recovery plan (Big Island Addendum (13 spp.)) that details specific tasks needed to recover this species. 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:

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