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Plants

Koki'o

Kokia drynarioides

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 – Island of Hawai'i

Critical Habitat - Designated

SPECIES INFORMATION: A tree, up to 8 m tall, with shallowly lobed leaves and with large, ornamental, scarlet flowers. *Kokia drynarioides* is one of four species in the genus and the only one found on the island of Hawai'i. The sap of this rare tree has been used by Native Hawaiians to make red dyes for fishnets and its bark was used to treat thrush. In the early 1900's, botanists became concerned about the survival of this species and collected several pounds of seed that were later distributed to various gardens and arboreta for germination. Despite this, koki'o has become increasingly rare so that there are now less than ten trees known to exist in the wild. This decline may have had severe impacts on organisms that rely on the species, such as the now-endangered nectar drinking honeycreepers which depend on these trees for food.

DISTRIBUTION: Endemic to the leeward side of the island of Hawai'i.

ABUNDANCE: Only six plants known, although three may have been destroyed in fires. Many other plants have been outplanted in exclosures managed by the State of Hawai'i and private conservation groups.

LOCATION AND CONDITION OF KEY HABITAT: Native dry forests on the island of Hawai'i that occur on rough lava with a thin, extremely well drained soil at elevations of 455 to 1,915 meters. Associated native species include *Chenopodium oahuense*, *Dodonaea viscosa*, *Dracaena hawaiiensis*, *Erythrina sandwicensis*, *Mezoneuron kavaiense*, *Myrsine lanaiensis*, *Nothocestrum latifolium*, *Pennisetum setaceum*, *Nototrichium sandwicense*, *Planchonella auahiensis*, *Reynoldsia sandwicensis*, *Sophora chrysophylla*, and *Xylosma hawaiiense* var. *hillebrandii*. Alien species that have invaded this habitat include *Pennisetum setaceum*, *Nicotiana glauca*, *Senecio madagascariensis*, and *Lantana camara*.

THREATS:

- Browsing and trampling by livestock;
- Seed predation by rodents;
- Competition with invading non-native species;
- Vulnerable to natural devastation such as fire landslides and lava flows.

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. A number of plants have now been planted within fenced exclosures. 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 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:

- Survey for populations and distribution in known and likely habitats;
- Monitor exclosure fences for damage and inside exclosures for signs of ungulate ingress;
- 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.

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