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## Plants

### *Kokia cookei*

#### SPECIES STATUS:

Federally Listed as Endangered

Genetic Safety Net Species

IUCN Red List Ranking – Extinct in the Wild (EW)

Hawai'i Natural Heritage Ranking - Presumed Extinct  
(Captive or Cultivated Only) (GXC)

Endemism – Moloka'i

Critical Habitat - Designated

**SPECIES INFORMATION:** *Kokia cookei* is considered one of the rarest and most endangered plant species in the world. In 1910, a single living tree was discovered within the general area of the initial sighting and may in fact, have been one of the original trees. In 1915, this last remaining wild specimen was found in extremely poor condition though a few seeds were found and collected. *Kokia cookei* became extirpated from the wild in 1918. Seeds from this collection produced only one seedling that survived past 1933. This one remaining seedling was planted at a Kauluwai residence on Moloka'i, and produced over 130 seedlings though none of these plants have persisted. In the late 1950's, the single plant at Kauluwai, Moloka'i died and it was presumed extinct. In 1970, a single plant of the species was discovered at the Moloka'i residence, probably a surviving relict of the previous cultivated plant. But in 1978, a fire destroyed the last remaining rooted plant of *Kokia cookei*. Fortunately, before it was destroyed, a branch was removed and later grafted onto a related species at the Waimea Arboretum. Currently, *Kokia cookei* exists as approximately 23 grafted plants.

**DISTRIBUTION:** The full natural range of *Kokia cookei* cannot be determined due to the near complete loss of native, dryland forest on Moloka'i. Now only found in cultivation

**ABUNDANCE:** *Kokia cookei* is extinct in the wild. Currently, the species exists as 23 grafted plants in 5 different locations on the islands of Maui, Moloka'i, Hawai'i and O'ahu. Seven individuals are in cultivation in facilities on the islands of Maui and O'ahu. One individual is located at a private residence on the island of Hawai'i. The remaining 15 individuals are in small outplanting sites on Moloka'i Ranch lands, at Puu Nana.

**LOCATION AND CONDITION OF KEY HABITAT:** The only historical habitat is dryland forest on the western (leeward) end of Moloka'i near Mahana, northeast of Puu Nana at approximately 200 meters (660 feet) elevation

**THREATS:**

- Exotic invasive plants;
- Heavy grazing from goats, deer, sheep and cattle;
- Habitat conversion as a result of agricultural practices;
- Seed predation by rats;
- Low number of individuals and populations;
- Lack of naturally rooted plants;
- Lack of viable seed production.

**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. 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.

**References:**

Center for Plant Conservation, 2005. National Collection of Endangered Plants.  
[http://www.centerforplantconservation.org/ASP/CPC\\_NCList\\_Quick.asp](http://www.centerforplantconservation.org/ASP/CPC_NCList_Quick.asp).

Hawai'i Natural Heritage Program. 2005. Hawaii Natural Heritage Program Search,  
<http://www.hinhp.org>.

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>.

US Fish and Wildlife Service. 1979. Final Listing, Endangered ETWP; Determination that *Kokia cookei* is an Endangered Species, State of Hawaii, Vol. 44, No. 211 (10-30-1979), 44 FR 62470 62471, 2 pp.

Wagner, W. L., D. R. Herbst, and D. H. Lorence. 2005. Flora of the Hawaiian Islands website. <http://ravenel.si.edu/botany/pacificislandbiodiversity/hawaiianflora/index.htm> [August, 2005].

Wagner, W.L., Herbst, D.R., and 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.