



Forest & Kim Starr, HEAR

## Plants

# Alani

## *Melicope knudsenii*

### SPECIES STATUS:

Federally Listed as Endangered

IUCN Red List Ranking – Critically Endangered (CR C2a, D)

Hawai'i Natural Heritage Ranking - Critically Imperiled (G1)

Endemism – Kaua'i, Maui

Critical Habitat - Designated

**SPECIES INFORMATION:** *Melicope knudsenii* grows into a tree 3-10 m tall. This species is a member of the citrus family (Rutaceae). Inflorescences are often large, with up to 200 flowers. The tree has smooth grey bark and yellowish brown to olive-brown hairs on the tips of the branches. Leaves are variable, ranging from oblong to elliptic, 3.5 to 9.8 inches long and 1.8 to 3.9 inches wide. The lower surface of the leaves is uniformly covered with olive-brown hairs. The densely hairy flowers are bisexual or may be unisexual. Flower clusters usually contain 20-200 flowers per cluster. The sepals and petals are covered with silky grey hairs and the sepals persist in fruit.

**DISTRIBUTION:** Kaua'i, in Olokele Valley and Waimea Canyon; East Maui at Auwahi.

**ABUNDANCE:** On Kaua'i fewer than 5 plants are known. On Maui, the last wild trees have now died.

**LOCATION AND CONDITION OF KEY HABITAT:** *Acacia koa*-*Metrosideros polymorpha*-*Dicranopteris linearis* Montane Mesic Forest. On Maui this species is found within Haleakalā National Park. On Kaua'i it is found on State land in the Koaie drainage area of Waimea Canyon. *M. knudsenii*'s habitat is subject to degradation by feral ungulates and introduction of invasive alien plant species. Associated native species include *Syzygium sandwicensis*, *Cheirodendron trigynum*, *Myrsine lessertiana*, *Ilex anomala*, *Alphitonia ponderosa*, *Zanthoxylum dipetalum*, *Kadua terminalis*, *Pleomele aurea*, *Bobea*, *Tetraplasandra waimeae*, *Xylosma hawaiiensis*, *Eurya sandwicensis*, *Psychotria mariniana*, *Melicope anisata*, *Melicope barbiger*, *Pouteria sandwicensis*, *Dodonaea viscosa*, and *Dianella sandwicensis*.

### THREATS:

- Alien plants, including *Erigeron karvinskianus*, *Triumfetta semitriloba*, and *Grevillea robusta*;

- Feral ungulates (pigs, goats, cattle);
- On Maui, the species' habitat has been converted to pasture and has been steadily degraded by grazing.

**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. 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:**

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>.

Hawai'i Natural Heritage Program, 2005. Hawaii Natural Heritage Program Search, <http://www.hinhp.org/trackedspecies.asp?taxa=P&usesa=>.

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