



Bender, NTBG



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Plants

Alula, Olulu

Brighamia insignis

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 and Ni'ihau

Critical Habitat - Designated

SPECIES INFORMATION: *Brighamia insignis*, a member of the bellflower family (Campanulaceae) is usually an unbranched plant with a succulent stem that is bulbous at the base and tapers toward the top, ending in a compact rosette of fleshy leaves. It has clusters of fragrant yellow flowers in groups of three to eight in the leaf axils. Petals are fused into a tube 7 to 14 cm (3 to 6 in) long. The fruit is a capsule 13 to 19 mm (0.5 to 0.7 in) long, which contains numerous seeds. The long floral tube appears to favor outcrossing by hawkmoths. Seeds are viable, and the species is easily propagated and kept in cultivation.

DISTRIBUTION: *B. insignis* was historically known on Ni'ihau and Kaua'i. On Kaua'i, populations were known from the headlands at Ho'olulu and Waiahuakua Valleys along the Nā Pali Coast. On Ni'ihau, a population was known from Ka'ali Cliff, but has not been observed since 1947.

ABUNDANCE: Currently, *B. insignis* is reported along the Nā Pali Coast within or on the boundary of the Hono O Na Pali Nature Area Reserve, in Ho'olulu, Waiahuakua, and possibly on the Ha'upu Range on the island of Kaua'i. The number of populations and individuals are rapidly declining. In the last decade, wild populations have been lost from Ni'ihau and Kaua'i. In 1994, USFWS reported five populations totaling 45 to 65 individuals. It is now believed that populations are extant only at Ho'olulu (fewer than 10 plants) and Waihuakua (fewer than 5 plants).

LOCATION AND CONDITION OF KEY HABITAT: Nā Pali Coast State Park and private land on Ha'upu Ridge. *B. insignis* is found from sea level to 480 meters (1,575 ft) elevation on rocky, sparsely vegetated ledges with little soil or on steep sea cliffs. They are found in lowland dry grasslands or shrublands with annual rainfall usually less than

170 centimeters (65 in.) On the Nā Pali coast, these habitats are increasingly invaded by non-native species such as *Melinis minutiflora* and *Erigeron karvinskianus*, among others.



THREATS:

- Goats through browsing and dislodging rocks in steep areas;
- Competition from non-native plants;
- Landslides;
- Invertebrate pests;
- Carmine spider mite (*Tetranychus cinnabarinus*), an introduced insect, has been observed to cause leaf loss in both cultivated and wild individuals of *Brighamia insignis*.
- Loss of native pollinators;
- Stochastic extinction due to low total numbers.

CONSERVATION ACTIONS: The goals of conservation actions are to protect current populations, but also to establish further populations to reduce the risk of extinction. This species is widely distributed in botanical gardens throughout the world. The National Tropical Botanical Garden has successfully increased seed set in wild plants through hand pollination. 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 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 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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