

No Photo Available

Plants

Nani wai'ale'ale

Viola kauaiensis var. *wahiawaensis*

SPECIES STATUS:

Federally Listed as Endangered

Genetic Safety Net Species

Hawai'i Natural Heritage Ranking - Imperiled; Subspecies Critically Imperiled

Endemism – Kaua'i

Critical Habitat - Designated

SPECIES INFORMATION: *Viola kauaiensis* var. *wahiawaensis*, a member of the violet family (Violaceae), is a perennial herb with upward curving or weakly rising, hairless, lateral stems about 10 to 50 cm (4 to 20 in) long. The kidney- to heart-shaped leaves are usually 2 to 5 cm (0.8 to 2 in) long and 3.5 to 6 cm (1.4 to 2.4 in) wide, and widely spaced. The toothed leaf blades are unlobed or rarely three-lobed, hairless or covered with a few minute hairs, with a broadly wedge-shaped base. The solitary flowers are borne in the leaf axils. Two types of flowers are present. One is self-pollinating and does not open, while the other opens and requires cross-pollination. The flowers that open have hairless petals which are white on the upper surface and purple or blue to white on the lower surface. These petals are narrowly spatula-shaped, the upper petals measuring about 15 to 19 mm (0.6 to 0.7 in) long, the lateral ones about 18 to 23 mm (0.7 to 0.9 in) long, and the lower ones about 18 to 23 mm (0.7 to 1 in) long. The nonopening flowers usually occur on short lateral stems. Their greenish petals are hairless, the upper ones being three-lobed and about 1 to 1.6 mm (0.04 to 0.06 in) long. The fruit is a deeply lobed capsule 8 to 13 mm (0.3 to 0.5 in) long. Variety *wahiawaensis* is distinguished by having broadly wedge-shaped leaf bases, whereas var. *kauaiensis* has heart-shaped to truncate leaf bases. The species is distinguished from others of the genus by its non-woody habit, widely spaced leaves, and by having two types of flowers: conspicuous, open flowers and smaller, unopened flowers

DISTRIBUTION: *Viola kauaiensis* var. *wahiawaensis* is known only from the Wahiawa Mountains of Kaua'i.

ABUNDANCE: Fewer than 100 individuals are known.

LOCATION AND CONDITION OF KEY HABITAT: This species is found at Kanaele Swamp (often referred to as Wahiawa Bog), an open bog surrounded by low scrub of 'ōhi'a, uluhe, and 'ōhi'a ha at about 640 m (2,100 ft) elevation. Another eight plants are on a nearby ridge between Mount Kapalaoa and Mount Kahili in wet shrubland

dominated by *Diplopterygium pinnatum* ground cover, with scattered 'ōhi'a and *Syzygium* sp., at about 865 m (2,840 ft) elevation.

THREATS:

- Reduced reproductive vigor due to the small number of existing populations and individuals;
- Stochastic extinction;
- Habitat degradation through the rooting activities of feral pigs;
- Competition with alien plants such as *Juncus planifolius* and *Pterolepis glomerata*.

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:

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