

U.S. FISH AND WILDLIFE SERVICE - SPOTLIGHT SPECIES ACTION PLAN

Common Name: Pamakani

Scientific Name: *Viola chamissoniana* subsp. *chamissoniana*

Lead Region: Region 1

Lead Field Office: Pacific Islands Fish and Wildlife Office

Species Information:

Status: Endangered

Recovery Priority Number or Listing Priority Number: 3

Recovery Plan or Candidate Assessment Form: U.S. Fish and Wildlife Service. 1998. Recovery plan for Oahu plants. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pages, plus appendices.

Most Recent 5-year Review: January 18, 2008

Other: U.S. Fish and Wildlife Service. 2003. Endangered and threatened wildlife and plants; final designations or nondesignations of critical habitat for 101 plant species from the island of Oahu, Hawaii; final rule. Federal Register 68(116):35950-35993.

Threats: Invasive introduced plants gravely threaten *Viola chamissoniana* subsp. *chamissoniana* by altering the taxon's habitat and competing with it for moisture, nutrients, and growing space (Factor E). Feral goats and pigs also threaten the taxon, for although many individuals grow on steep cliffs where they cannot be reached by the ungulates, many others are within their reach and are thus susceptible to predation (Factors A and C). Furthermore, the animals degrade the plants' habitat by hastening the spread of invasive introduced plants (Factors A and E). They also disturb the substrate above the cliffs, thereby increasing the size and frequency of landslides and rock falls on the cliff faces (Factor E). These disturbances directly affect even the plants inaccessible to the ungulates.

Target: The target for this taxon is to maintain species status. This taxon is endemic to the Waianae Mountains and is now known from 9 populations. There are a total of 666 mature and 33 immature individuals within these populations. Seedlings are known from all sites, but are extremely hard to track and fluctuate widely in number.

Measure: Maintain this taxon in the wild at all populations by adding management of the Makaha, Ohikilolo, Halona populations, and maintain genetic representation in storage.

Actions

1. Maintain the wild populations of *Viola chamissoniana* subsp. *chamissoniana*. Current levels of monitoring and threat management will be maintained over the 5-year period. These actions will include monitoring existing fences at Makua Military Reservation and Makaha Valley twice a year as well as controlling invasive introduced plant species in the immediate area of the wild populations at Ohikilolo Ridge, Puu Kumakalii, Halona, and Makaha, as needed. In addition, within the next five years the Oahu Army Natural Resource Program will initiate discussion with the landowner in Makaha to expand fencing

to address ungulate threats to unprotected populations and work with the Hawaii Division of Forestry and Wildlife to control the ungulate threat to the Halona population. The Oahu Army Natural Resource Program will also initiate discussion with the Hawaii Division of Forestry and Wildlife on a strategy to address the ungulate threat to the Makaleha population. The responsible party for these actions is the Oahu Army Natural Resource Program. These actions will begin addressing recovery actions #141, control feral and wild ungulates, and #4, develop and implement long-term monitoring programs for all species. These actions will partially address the threats from ungulates (Factor A and C) and will continue over all 5 years.

2. Collect propagules from additional individuals found while monitoring the Puu Kumakalii, Puu Hapapa, and Makaleha populations, to supplement the existing collection at the Oahu Army Natural Resource Program nursery. In addition, within the next 5 years the Oahu Army Natural Resource Program will initiate collections from Halona and Makaha to establish as nursery stock. The party responsible for this action is the Oahu Army Natural Resource Program. This will address recovery actions #5, reestablish wild populations within the historic range; # 21, select populations for expansion; and #22, prepare sites and plant. This action will partially address all listing factors and threats and will continue over all 5 years.
3. Continue preserving genetic material *ex situ* at the Oahu Army Natural Resource Program nursery. The existing collection of genetic lineages from Puu Kumakalii, Puu Hapapa, and Makaleha will be propagated and maintained and this will continue over all 5 years. In addition, after collections begin within the next 5 years, the Oahu Army Natural Resource Program will establish and maintain nursery stock from Halona and Makaha. The party responsible for this action is the Oahu Army Natural Resource Program. This action will address recovery actions #5, reestablish wild populations within the historic range; # 21, select populations for expansion; and #22, prepare sites and plant. This action will partially address all listing factors and threats and will continue over all 5 years.
4. Maintain the existing collections of mature seeds in storage at the Oahu Army Natural Resource Program seed storage facilities. Continue to collect mature seeds from the nursery collections from each site for genetic storage. The party responsible for this action is the Oahu Army Natural Resource Program. This will address recovery actions #5, reestablish wild populations within the historic range; # 21, select populations for expansion; and #22, prepare sites and plant. This action will partially address all listing factors and threats and will continue over all 5 years.
5. Continue surveys within suitable habitat in Makaha and Makaleha. The party responsible for this action is the Oahu Army Natural Resource Program. This will address recovery action #11, identify and map all extant wild populations. This action will partially address all listing factors and threats and will continue over all 5 years.

Estimated costs of the actions:

Action	Description	Cost*
1.	Maintain wild populations through ungulate and invasive introduced plant control	\$250,000
2.	Collect mature seeds for propagation for reintroduction and storage	10,000
3.	Establish and maintain nursery collection	25,000
4.	Maintain genetic storage collections in a seed bank	5,000
5.	Surveys of historic sites	5,000
	TOTAL	\$295,000

*All costs will be borne by the U.S. Army.

Role of other agencies: The Oahu Army Natural Resource Program is critical to the implementation of this action plan. The U.S. Fish and Wildlife Service will oversee these actions as the agency with oversight of the Oahu Army Natural Resource Program's implementation of the Makua Military Reservation biological opinion.

Role of other ESA programs: The section 7 program is critical to overseeing the implementation of these actions as part of the Makua Military Reservation biological opinion.

Role of other FWS programs: Not applicable.

Additional funding analysis: The actions described above cannot be undertaken nor the stated target reached without continued funding from the U.S. Army. If additional funding is available, ungulate control at the Makaleha population and fencing for the Keaau population, which is within a public hunting area, are potential actions to implement. This would be done in cooperation with the Hawaii Division of Forestry and Wildlife. Collections for genetic storage from additional populations could be made by other parties if funding became available. This would bring more individuals into storage in the next 5 years. This would be done in cooperation with the Hawaii Division of Forestry and Wildlife. The estimated costs of these additional actions would be about \$50,000 to \$100,000 per year.