

Flueggea neowaraea
Mēhamehame



Cyanea superba
ssp. *superba*
Hāhā



Chalcophaps
sandwichensis *ibidis*
O'ahu 'Elepaio



Hibiscus
brackenridgii
Ma'o Hau Hele



Achatinella
mustelina
Kāhuli tree snail



Hesperomannia
arbuscula



Viola chamissoniana
ssp. *chamissoniana*
Hawaiian Violet

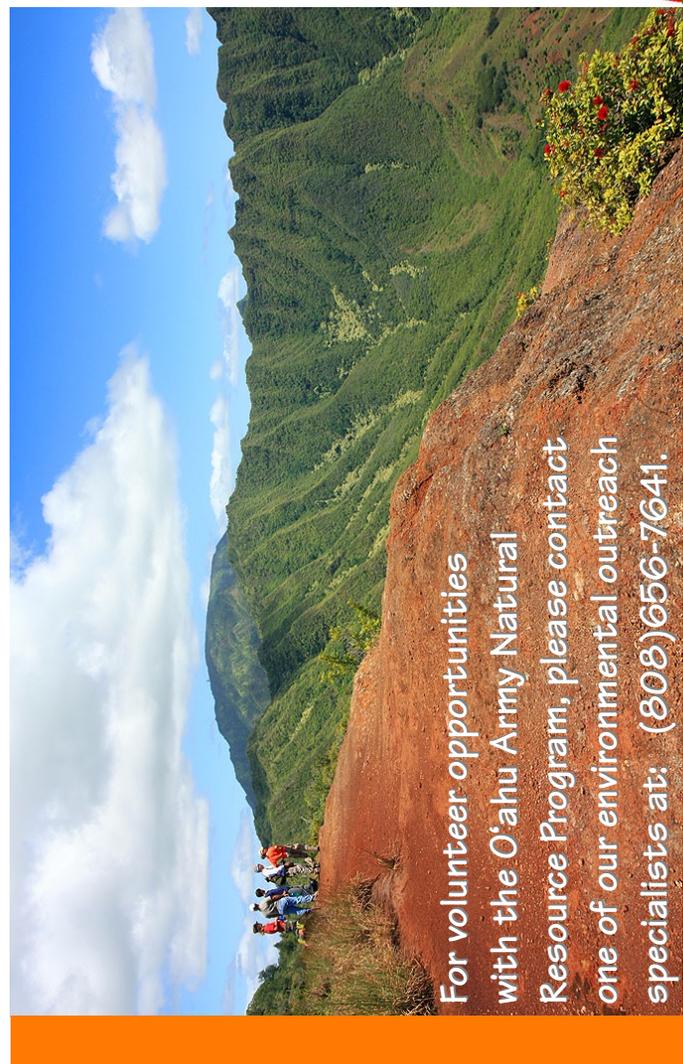
MĀKUA'S RARE NATURAL RESOURCES

O'AHU ARMY NATURAL RESOURCE PROGRAM ACTIONS IN MĀKUA VALLEY ARE GUIDED BY A MULTI-SPECIES MANAGEMENT PLAN, DEVELOPED WITH THE HELP OF EXPERT STATE AND FEDERAL BIOLOGISTS.

MĀLAMA 'ĀINA

HELP PROTECT THE LAND

Volunteers have logged hundreds of hours helping to protect Mākua's natural resources.



For volunteer opportunities with the O'ahu Army Natural Resource Program, please contact one of our environmental outreach specialists at: (808)656-7641.

U.S. ARMY GARRISON HAWAII NATURAL RESOURCES IN MĀKUA VALLEY



DID YOU KNOW?

The Army spends more than \$4 million per year protecting the endangered plants and animals of Mākua Valley.

The Army employs more than 30 technically-trained civilian and contracted field biologists to manage natural resources in Mākua Valley.

THREATS

TO MĀKUA'S NATURAL RESOURCES



Koster's curse

▶ Invasive, non-native plants (weeds) aggressively compete with native plants for nutrients, water, and sunlight.



Strawberry guava



Polynesian rat

▶ Introduced, non-native predators such as rats, eat native birds, bird eggs, plants, seeds and snails.

▶ Wild pigs and goats feed on and uproot native plants, and spread weed seeds. Pig wallows can become mosquito breeding grounds, and mosquitoes spread disease to native forest birds.



Wild pig wallow

▶ The non-native Rosy Wolf Snail (*Euglandina rosea*) preys on native Kāhuli tree snails.



Rosy Wolf Snail



▶ Wildfires destroy native forests and create open areas where invasive weeds quickly become established.

O'AHU ARMY NATURAL RESOURCE PROGRAM PROTECTION ACTIONS

THE O'AHU ARMY NATURAL RESOURCE PROGRAM (OANRP) CONTROLS WEEDS, BUILDS FENCES, AND MONITORS 42 ENDANGERED PLANT SPECIES, ONE ENDANGERED TREE SNAIL SPECIES, AND THE O'AHU 'ELEPAIO BIRD IN MĀKUA MANAGEMENT AREAS.



Chemical weed control



Manual weed control



Endangered plants grown from seed or cuttings are cared for in OANRP plant nurseries until they can be planted back into the wild.

Seedlings of *Schiedea obovata* in the nursery



Wild pigs and goats are managed by fence construction and hunting.

MĀKUA VALLEY IS CURRENTLY GOAT-FREE THANKS TO ARMY FENCES.

OANRP staff manages native snails and the 'Elepaio by surveying, monitoring, and controlling predators. Predator control for these endangered animals includes



Kāhuli - endangered O'ahu tree snails.

setting up bait stations and rat traps.



Rat trap and bait station

MORE THAN 4,000 ENDANGERED PLANTS HAVE BEEN OUTPLANTED BY OANRP STAFF IN MĀKUA MANAGEMENT AREAS.

