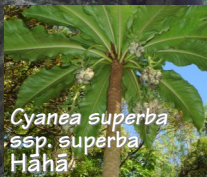




*Flueggea neowaraea*  
Mēhamehame



*Cyanea superba*  
ssp. *superba*  
Hāhā



*Chasiempis*  
*sandwichensis ibidis*  
O'ahu 'Elepaio



*Hibiscus*  
*brackenridgei*  
Ma'o Hau Hele



*Achatinella*  
*mustelina*  
Kāhuli tree snail



*Hesperomannia*  
*arbuscula*



*Viola chamissoniana*  
ssp. *chamissoniana*  
Hawaiian Violet

## MĀKUA'S RARE NATURAL RESOURCES

# MĀLAMA 'ĀINA

HELP PROTECT  
THE LAND

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



Volunteer Opportunities  
808-352-4372  
outreach@oanrp.com  
www.oanrp.com

## 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

► 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.

## ARMY NATURAL RESOURCES PROGRAM, O'AHU PROTECTION ACTIONS

THE ARMY NATURAL RESOURCE PROGRAM, O'AHU (ANRPO) CONTROLS WEEDS, BUILDS FENCES, AND MONITORS 42 ENDANGERED 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 ANRPO 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.**

ANRPO 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 pig traps and rat traps.



Goodnature rat trap: A-24

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

