



Restoring Light to a Tropical Home

Anchialine Pool Restoration



Alula Bay Restoration Site

When invasive red mangrove and picklweed threatened to smother precious habitat in the vicinity of Alula Bay on the Kona Coast of Hawaii, U.S. Fish & Wildlife Service joined with community partners and volunteers to bring the sunlight back to 12 anchialine pools.

Anchialine (pronounced “AN-key-AH-leen”) pools are brackish waterbodies that are fed by subsurface groundwater (freshwater) and seawater, but have no surface connection to the ocean. They are physically connected to the coastal marine environment via porous subsurface bedrock, and their water surfaces rise and fall with the tides.

These pools provide an important home for threatened and endangered species, such as native shrimp, snails, and waterbirds such as the Hawaiian stilt. Some of the invertebrates exhibit unusual adaptations that allow them to live in waters that undergo extreme variation in salinity, water temperature and exposure to sunlight.

Anchialine pools are considered a priority habitat type for protection and restoration efforts in the Hawaii Fish Habitat Partnership Strategic Plan. A range of threats including non-native species introductions and coastal development have greatly reduced the extent of anchialine pool habitat in the last 150 years.

Invasive red mangrove



NPS



Bryan Harry/NPS

Endangered Hawaiian stilt

Rubra shrimp

Mike Yamamoto/USFWS



The shoreline area around Alula Bay on the Big Island is home to over 20 anchialine pools and an extensive archaeological complex including a heiau, or ancient Hawaiian temple structure. Both the aquatic habitat features and the ancient site had been severely degraded by invasion of non-native plants.

As part of an island-wide mangrove eradication effort, volunteers and participating agency staff cut and removed the entire 0.7 acre stand of dense mangrove and pickleweed. Together, we cleared over 560 cubic yards of compacted non-native plant biomass from the area over a total of 15 community workdays with as many as 15-20 volunteer participants. We “daylighted” 12 anchialine pools of various sizes and partners revegetated the area with native plants, resulting in establishment of a significant area of habitat for recolonization by native shrimp and other species.

The project will continue to grow in the future, restoring light to more habitats. The relatively modest Service funds invested in this project and administered by the Hawaii Fish Habitat Partnership is contributing to a much larger, highly leveraged aquatic habitat restoration project to keep Big Island estuarine and coastal areas free of destructive mangrove.

Project Partners

Malama o Puna
Big Island Invasive Species Committee
Pacific Coast Joint Venture/Hawaii
Wetland Joint Venture
Kaloko-Honokohau National Historical Park
Kona Hawaiian Civic Club
Na Wai Iwi Ola

Accomplishment Metrics

Species benefited

- ‘opae ‘ula shrimp
- ‘opae shrimp
- orange-black damselfly
- Hawaiian stilt
- Hawaiian coot
- Hawaiian moorhen
- Hawaiian duck

Habitat restored

- 0.7 acre of coastal lava terrain
- 12 anchialine pools



Brenda Zaun/USFWS

Endangered Hawaiian moorhen



NPS

Newly daylighted anchialine pools