



Kahoʻolawe Island Reserve Commission

Kanaloa kahoolawensis Status Update

Currently, there is one individual plant at Maui Nui Botanical Garden (MNBG) in Kahului, and three individuals at Hoʻolawa Farms in Haiku, Maui for a total of four plants in cultivation.

The one at MNBG has been in decline but is producing seed pods (Figure 1). These pods will be harvested and sent to Lyon Arboretum's Micropropagation Lab.



Seed pod development on MNBG plant

The three plants at Hoʻolawa Farms consist of one large plant and two medium sized cuttings (Figure 2). In June a seed pod from this plant was sent to Lyon Arboretum's Micropropagation Lab and was excised but unfortunately was found to be decayed and rotten.



One large and two medium sized cuttings at Ho'olawa Farms

The enclosure for the Ho'olawa Farms plant is being fortified in the event of a Maui County Hurricane Warning event. The KIRC has assisted the Plant Extinction Prevention Program with hardware, lumber and labor for the current Hurricane season (June 1 – November 30, 2019).

Current management for the plants consists of collecting and sharing of pollen between the four individuals and the pollen collection for cryopreservation storage at the National Laboratory for Genetic Resource Preservation Lab in Fort Collins, Colorado. Cuttings are taken on a regular basis for propagation attempts when the plants are flushing. Additional measures include constant management for fungal disease (*Phomopsis* fungus, Powdery mildew) regular fertilization programs and other horticultural needs as warranted.

DOH IV Restoration Status Update (Period Covered November 2018 to June 2019)

The purpose of the Year 1 of this DOH Project is to reduce the Non-Point Source Pollutant “Excessive Sedimentation” along with habitat restoration in Hakioawa Watershed. In August 2018 work began in the 15ha (37A) Project Site. From November 2018, to June 2019, 188 volunteers have contributed 2,880 hours of time to help with *wattle* construction and outplantings of native grasses and shrubs. Located in Tier I (surface cleared) 8,391 plants (of 10,000 total) have been placed in corridors built along the contours of the landscape. Burlap fabric is laid out and rocks, and or gravel are placed into the wattle and then rolled up. A combination of native reclaimed soil, Black Gold potting mix and Sunshine Mix #4, is spread above the wattle as a raised soil bed for the plants, and irrigation lines are laid out for the delivery of water. *Gabions* (geotextile baskets filled with rocks to act as check dams) have been constructed in the Project Site and have begun to capture soil after rains.

A water level meter was placed at the 75 foot elevation in Hakioawa Stream to record stage, or height of the water when the stream flows during rain events. This measuring device recorded between October 2018 and May 2019 and the results have been correlated to the rainfall recorded during this time period. Five vegetation plots were read in June 2019 to determine plant species presence and percentage of coverage after restoration. Eight soil erosion pin transects were read once in November, 2018 and were re-measured in June 2019. A significant difference in lower soil erosion rates was detected between bare hardpan soils with and without restoration.

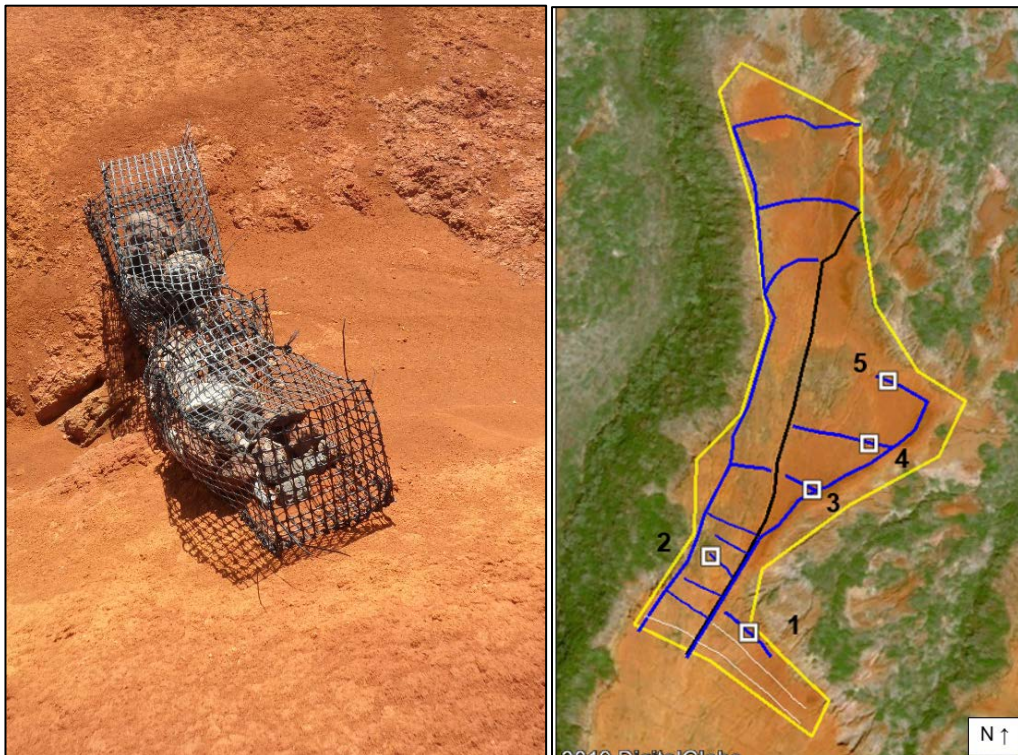
Baseline photopoints and drone images were initially taken in September and October 2018 and were retaken in June (Drone images in July) 2019 to detect a difference in the vegetation. A Non-Point Source Brochure describing the Best Management Practices used in the Project Site was developed and printed. A poster on the DOH Project was presented at the 2019 Hawai'i Conservation Conference in Honolulu. One last planting will occur in July and a final report and billing will be due in August 2019.



Volunteers rolling up a *wattle* with burlap fabric and rocks



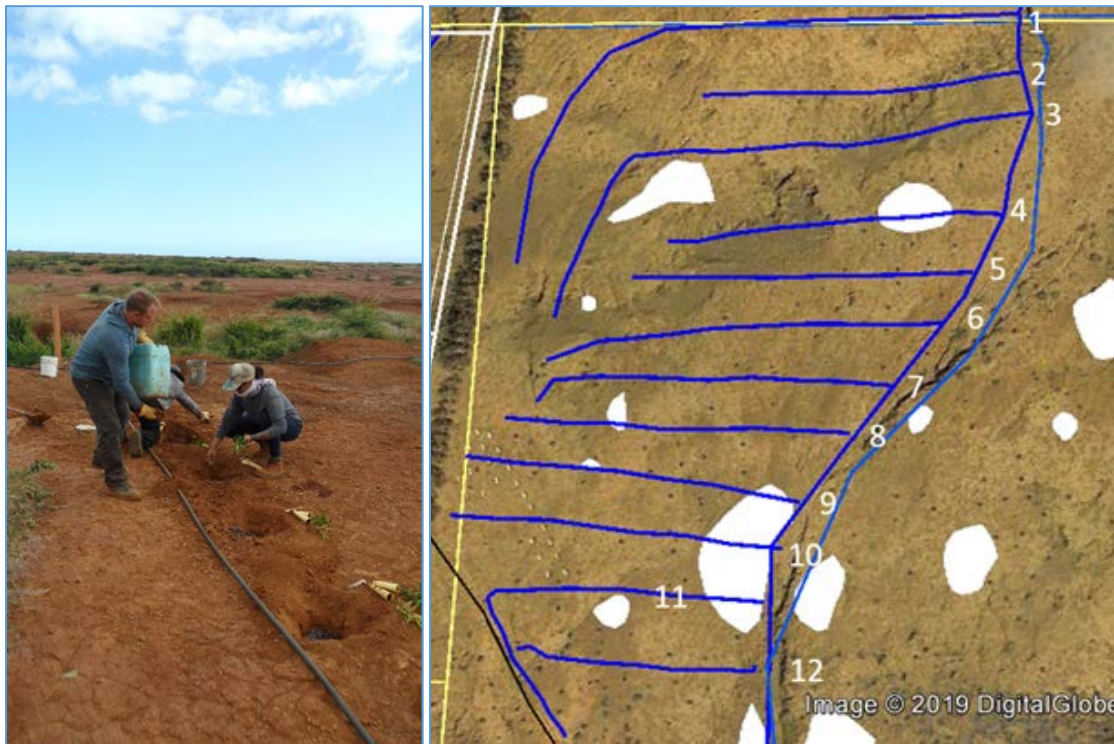
Planting pili grass in the soil mixture in the *wattle* corridor



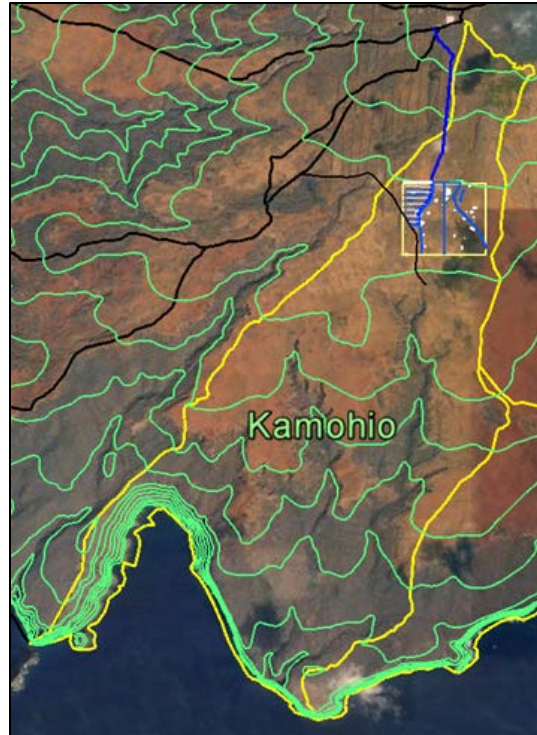
LEFT: Gabion capturing sediment after a rain event. **RIGHT:** Map of Project Site wattles (blue) and planting corridors along contours and five vegetation plots (white squares).

Dryland Forest Restoration Project Status Update

The CIP Dryland Forest Project was designed to outplant 14,800 native shrubs, trees, and grasses in Kamōhio Watershed to establish native plants and help mitigate soil erosion. From November 2018 to June 2019 a total of 12,500 native plants have been placed along 12 irrigation lines in a 10ha (25A) Project Site. A 1.5" main line was brought 0.8 miles from Tanks 1 and 2, to feed the irrigation lines totaling 2100m (6900 feet) in length. Plants were placed in holes dug with an auger every 1m with fertilizer and kiawe mulch. Another 14,800 plants will be placed on irrigation in a second 10ha (25A) section of the Dryland Forest Project Site beginning in Fall 2019.



Planting along Line 1 in the Project Site and map of irrigation lines (blue) in Zone A of the 25 acre Project Site. White areas are archaeological sites.



Area of Dryland Forest Project Site in Kamōhio Watershed on Kaho‘olawe