

I Ola Kanaloa!

Program Review

April 24, 2024

Plan Goals and Actions:

1. Restore and conserve the natural environment

- A. Plant the hardpan
- B. Build erosion control features
- C. Restore native habitat
- D. Recover Kanaloa plant

2. Establish programs for learning, observation and data collection

- A. Create schools for Hawaiian knowledge & practices
- B. Facilitate Hawaiian science and research
- C. Host informal and experiential learning

3. Preserve the history of Kanaloa Kaho'olawe

- A. Document oral history from knowledge holders
- B. Build repository and storage facility
- C. Develop communication & interpretation program

4. Create sustainable shelters, facilities and habitation sites

- A. Build Kauhale & all Ho'omoana
- B. Produce food on-island
- C. Develop new water sources
- D. Produce alternative energy
- E. Pilot on-island resident program
- F. Build KThei site

5. Maintain cultural sites, customs and traditions

- A. Maintain and restore key sites & practices
- B. Maintain site database; monitor, document and manage change at sites

6. Expanding awareness, access and experience of the 'āina

- A. Complete Ala Loa & mauka-makai trails
- B. Survey 'ili boundaries & build ahu
- C. Re-establish terrestrial & marine ko'a

7. Providing a sanctuary for dialogue, healing and well-being

- A. Gather Hawaiian cultural experts
- B. Discuss Hawaiian governance
- C. Support healing for families and Hawaiian-serving programs and organizations

8. Establish Kanaloa's role through the transition to the Lāhui

- A. Represent Kanaloa in governance discussions

- B. Advocate for Aloha 'Āina & Kūkulu ke ea a Kanaloa
- C. Negotiate terms of transfer with State

Restoration Program Summary

I Ola Kanaloa! - Restore and Conserve the Natural Environment

- A. Plant the Hard Pan**
- B. Build Erosion Control Features**
- C. Restore Native Habitat**

Project I. A. Plant the Hard Pan

Since 2008, the Restoration Program has planted 61,000 (DOH II), 25,000 (DOH III), 10,000 (USDA NRCS) (10,000 (DOH III+), 10,000 (WSAG), 10,000 (DOH IV), 5000 (DOH V - O and M) 14,800 (CIP I), 14,800 (CIP II) totaling 160,600 native Hawaiian drought tolerant plants using 40 different species. In the WSAG project, 10,000 plants were put into a previously planted project site (DOH II) in Hakioawa Watershed. In CIP I and II, 14,800 and 14,800 more in Kamōhio Watershed for a total of 39,600 plants. Controlling alien species has been part of the restoration effort since native planting began. Beginning in 2008 the KIRC has been managing 183 acres of alien invasive species such as kiawe, ironwood, koa haole, lantana, glycine and buffel grass. Using mechanical methods along with herbicide, several watersheds have been included in the management effort including Hakioawa, Kaulana, and Kamōhio. Alien species in wetlands have also been managed including Lua ‘O Keāliialalo, Honokanai‘a, Kaukaukapapa and Keanakeiki. Table 1 lists the name of the project, grant amount, duration (start date/ end date) and the number of months, location, how many native plants, and area cleared of invasives in acres.

| Project Name | Amount | Duration | | Months | Location | Number of Plants | Area cleared of invasives (A) |
|--------------|---------------|----------|------|--------|----------------------------|------------------|-------------------------------|
| | | Start | End | | | | |
| DOH II | \$ 1,500,000 | 2005 | 2010 | 60 | Kaulana Hakioawa | 61,000 | 50 |
| DOH III | \$ 204,187.47 | 2013 | 2016 | 36 | Hakioawa | 25,000 | 10 |
| USDA NRCS | N/A | 2009 | 2010 | 12 | Kaukaukapapa Kealialalo | 10,000 | 100 |
| DOH III+ | \$ 90,000.00 | 2016 | 2017 | 9 | Hakioawa (Wailuna) | 10,000 | 10 |
| WSAG | \$ 100,000.00 | 2017 | 2019 | 18 | Hakioawa | 10,000 | 10 |
| DOH IV | \$ 49,586.34 | 2018 | 2019 | 12 | Hakioawa (Wailuna) | 10,000 | 0.5 |
| DOH V | \$ 92,185.91 | 2021 | 2022 | 14 | Hakioawa (Wailuna) | 5,000 | 0.5 |
| CIP I | \$ 500,000.00 | 2018 | 2019 | 12 | Kamohio | 14,800 | 1 |
| CIP II | \$ 500,000.00 | 2019 | 2021 | 24 | Kamohio | 14,800 | 1 |
| Sum | \$ 3,035,960 | | | 197 | | 160,600 | 183 |

Table 1. Summary of Restoration since 2008

Project I. B. Build Erosion Control Features

In DOH III many check dams and wattles made of geotextiles were created across the upper Project area in Hakioawa Watershed. In DOH IV and V, 50 check dams were constructed in the middle reaches of the Project Site and 17 long wattles were constructed and planted along the contours.

Project I. C. Restore Native Habitats

In DOH II, ‘a‘ali‘i was planted which is the host to the Blue Hawaiian butterfly. Also in DOH III ‘ohai and naio were planted and are both host to many native Hawaiian insects including the endangered Hawaiian yellow faced bee. In CIP I and CIP II ‘ohai and pa‘u o Hi‘iaka was planted restoring native habitat for native Hawaiian insects. In the WSAG project, an ‘aiea species (*Nothocestrum sp.*) was planted for the Hawaiian Sphinx moth as a host tree but was readily eaten by a 3 lined beetle. The Hawaiian owl, pueo, has been observed nesting near a trail in Kaulana Watershed.

In the wetland projects in Kealialalo, ahu awa and makaloa sedges were planted for habitat restoration. In Kaukaupapa wetland, Hawaiian cotton or ma‘o was planted for habitat restoration for the largest ma‘o shrubland in the state. Kōlea have been observed at Kealialalo.

In Honokanai‘a, milo, kou, hau and ‘aki‘aki grass along with *Fimbristylis sp.* (sedge) were planted for nearshore habitat restoration for seabirds

In **2011** the KIRC received **\$20,000** to purchase a large **woodchipper** from the **USFWS** for the restoration of two ephemeral wetlands on Kaho‘olawe. This supplemented a related project through the Natural Resources Conservation Service (USDA/NRCS) known as **Coastal and Upland Wetland Restoration on Kaho‘olawe.**

In **2022** The KIRC received **\$10,000 from Ducks Unlimited** to study Soil Biology on Kaho‘olawe and investigate the use of Biochar and Compost Teas to re-in vigor the hardpan and ephemeral wetland soils. This project is called **Soil Enrichment Trials in Degraded Restoration Sites on Kaho‘olawe (Biochar Project)** and is still ongoing. In **2024** an **Island Conservation sponsored anonymous donor provided \$25,000** for a project that will **deploy thousands of seedballs via drones**. Seedballs are being developed using Biochar inoculated with Kanaloa microbes and seed gathered from the island.

| Name | Funder | Amount | Duration | | Location | Number of Plants | Area cleared of invasives (A) |
|-----------------------|-----------------|-----------|----------|---------|-------------------------------|------------------|-------------------------------|
| | | | Start | End | | | |
| Coastal Wetlands | USFWS | \$ 20,000 | 2011 | 2013 | Kaukaupapa/Kealialalo | NA | 100 |
| Biochar Project | Ducks Unlimited | \$ 10,000 | 2021 | 2022 | Kaukaupapa/Kealialalo/Kamohio | NA | |
| Seedball Drone Deploy | IC via Donor | \$ 25,000 | 2024 | ongoing | Kamohio | TBD | NA |
| Sum | | \$ 55,000 | | | | 0 | 100 |

1-C.a Restore Native Habitat/Eradicate Feral Cats and Rodents from Kaho‘olawe (Summary: 5 Written Plans and Securing \$575,000) Project Table is presented at the end of 1-C.a

2008 – In 2008 the KIRC formed the **Kaho‘olawe Island Faunal Restoration Working Group** (KIFRWG). This group is comprised of various partners with vested interests in the Faunal Restoration on Kaho‘olawe. This partnership still exists in 2024 and is now working as the **Kaho‘olawe Island Seabird Restoration Project Steering Committee and Management Team**. Also, in 2008 the KIRC received a grant through the USFWS titled **Monitoring and Control of Feral Cats on Kaho‘olawe** for \$10,000. Staff captured 64 cats over a 1 ½ year period. Staff monitored cats using trail cams, spotlighting and sand track plots and also looked at dietary components and prevalence of toxoplasmosis (47.8%). The sand plots revealed the percentage of tracks in the plots was reduced from 80% to 20%. Staff also noticed a lot more native migratory water birds the last year of the study.

2009. - The first document the Partnership (KIFRWG) produced was called a **Feasibility Study on the Management of Invasive Mammals on Kaho‘olawe** published in 2009 through Landcare Research out of New Zealand. Main components listed broadcasting Brodifacoum for rodents and hunting and trapping for feral cats. Cost feasibility was investigated by using precedents. Cost varied up to 20 million dollars depending upon precedents and current estimates.

Also, in 2009 the first attempt of the eradication of rats from Lehua island was attempted using diphacinone rodenticide deployed by helicopter. Since that eradication effort failed, the KIRC shelved rodent eradication plans on Kaho‘olawe and investigated the feasibility of eradicating feral cats.

2012 - In 2012, the KIRC and Island Conservation developed a **Feral Cat Eradication Plan**. This 83-page document went into detail about the methodology and implementation of an island wide eradication of feral cats. Various scenarios were investigated including TnR, trapping and translocation (adopt), Immuno-contraception, introducing disease, and trapping and hunting. For Kaho‘olawe the best method at the time was using trapping through padded leg-hold and kill traps, hunting with dogs, using judas or sentinel cats and finally monitoring using trail cams and tracking. A four-phase timeline was developed. Phase 1 is Project Approval and Operational Planning Phase (Current Phase). Phase 2 is Preparatory Phase (Purchasing Supplies, hiring, training, infrastructure). Phase 3 is the Operational Phase (hunting, trapping and monitoring). Finally Phase Four is the monitoring/confirming eradication phase.

Around 400 trap and camera sites were estimated to be needed for Kaho‘olawe. Traps would be fitted with cellular telemetry transmitters for rapid response. Staff would initially run about 100 cameras and a trap a dozen sentinel cats equipped with GPS/telemetry collars. Specialized hunting dogs would be purchased and housed on Maui. Major expenses would be the hiring of an EOD to enter into UXO exclusion zones, and helicopter hired to transport trappers for rapid response. The budget for this project if started in 2013 was about 3 million dollars. Due to inflation today it would cost about 4-5 million dollars (3-5 years).

2013-2015. In 2015, the KIRC was granted funds from the **National Fish and Wildlife Foundation (NFWF)** for **\$350,000** to create a **Business Plan for the Restoration of Hawaiian Bird Life and Native Ecosystems on Kaho‘olawe** and the **Kaho‘olawe Island Seabird Restoration Project** was born. This was a partnership grant with Island Conservation. Major components included forming a Project Steering Committee and Project Management Teams to help write the plan. The main component of the business plan was to outline the steps for a complete eradication of invasive alien predators on Kaho‘olawe as discussed through the Project Steering Committee. The plan also looked at single species only eradication as an alternative. Total project cost was estimated at around 12 million dollars and included getting a special permit for Broadcast use of Brodifacoum for a multi-species non-native mammal eradication. The Business Plan also identified necessary action items.

2017. The KIRC received an additional **\$150,000** in funds through **NFWF** to follow up on the action items identified in the Business Plan. **This was a two-year Project that included Operational Scoping, Biosecurity Planning, and Public Outreach** tethered to the **Kaho‘olawe Island Seabird Restoration Project**.

Operational Scoping: components included Rodent Eradication Methods Development where non toxic bait plots were installed over three main eco zones on the island to monitor bait degradation and movement. Some plots included biomarkers where black lights were taken into the field at night to look at non targets (mainly invertebrates).

Cat eradication methods development included testing various methods for trapping feral cats, including an automated trap monitoring system, body grip and other types of kill traps.

Non-target Species Assessment and Conservation Measures:

- Food web and marine bait consumers. Non-target animals consumed the placebo rodent bait.
- Hawaiian Short-eared Owl (Pueo). The Project discovered Pueo travel interisland and nest on Kaho‘olawe.
- Hawaiian hoary bat (‘ōpe‘ape‘a). The project discovered ‘ōpe‘ape‘a at all eight of the locations surveyed and a year-long presence suggesting breeding populations.
- Automated Acoustic Recorder to monitor for seabirds with analysis conducted by Conservation Metrics. Seabirds were recorded breeding at Kamohio.

Biosecurity Planning. The KIRC received an additional Grant with the **Hawaiian Invasive Species Council (HISC) for \$50,000** and allowed us to write a complete **Biosecurity Plan for Kaho‘olawe**.

Public Outreach. The project included public presentations, newsletter articles and also design of a logo and t-shirt.

Through this phase of the project, staff discovered non targets and by-kill using rodenticide were likely to be greater than expected. In 2023, a rodent eradication effort on

Midway Island failed so decisions were affirmed on scrapping rodent eradication during this time. With this new information, cat eradication is once again the main focus.

2022-2024 – The KIRC and Island Conservation once again teamed up to for project called **Feasibility Update for Invasive Mammal Eradication on Kaho‘olawe** and investigate new technologies to make costs more efficient for feral cat eradication with grants from **The Atherton Foundation and The National Geographic Society totaling \$15,000**. These technologies involved the use of a drone outfitted with AI Software to upload camera trap footage located at various locations on the island. The specially outfitted drones were also able to identify cats vs other animals and vegetation moving from the wind. This technology has a potential to save countless hours of field time and post processing of data. A writer from an online Conservation News outlet picked up the story about the project which can be viewed at:

[https://urldefense.com/v3/https://news.mongabay.com/2024/02/on-kaoolawe-new-technology-could-restore-a-sacred-hawaiian-island/;!!LIYSdFfckKA!x7UqkqDUgavMqVs8K96Yktf9zx4G8G67Ij5EDF7Bk4E2IE8uk--CAE5g6OZk18M7M-i2lDijgf7c6ze-7Ktx807gTuQ\\$](https://urldefense.com/v3/https://news.mongabay.com/2024/02/on-kaoolawe-new-technology-could-restore-a-sacred-hawaiian-island/;!!LIYSdFfckKA!x7UqkqDUgavMqVs8K96Yktf9zx4G8G67Ij5EDF7Bk4E2IE8uk--CAE5g6OZk18M7M-i2lDijgf7c6ze-7Ktx807gTuQ$)

The 2024 estimated costs for a feral cat eradication are **\$5,000,000** over the course of four years and **is deemed feasible**. Rodent eradication may now cost in the range of **\$15,000,000** and **was decided not feasible unless a license for brodifacoum is certified in the State of Hawaii**.

| Name | Funder | Amount | Start | End | Plans Developed | | |
|-------------------------------------|---------------------|------------|-------|------|---|--|--|
| Feral Cat Study | USFWS | \$ 10,000 | 2008 | 2011 | Small Mammal Eradication Feasibility Study | | |
| | | | | | Feral Cat Eradication Plan | | |
| Seabird Restoration Project | NFWF | \$ 350,000 | 2013 | 2015 | Business Plan for the Restoration of Native Birds | | |
| Seabird Restoration Scoping Project | NFWF | \$ 150,000 | 2016 | 2018 | Invasive Mammal Eradication Operational Scoping | | |
| Biosecurity Project | HISC | \$ 50,000 | 2017 | 2018 | Biosecurity Plan For Kaho‘olawe | | |
| Eradication Feasibility Update | Atherton Foundation | \$ 15,000 | 2022 | 2023 | Eradication Feasibility Update | | |
| Sum | | \$ 575,000 | | | | | |

Project I. D. Recover Kanaloa Plant

Ka Palupalu o Kanaloa Partnership Project - Kanaloa kahoowawensis

Discovered on 'Ale'ale in 1993 as a new genus with only two wild plants in existence, efforts have been underway to recover the species into stable populations. After many failed propagation attempts of the cultivated plants, a breakthrough in 2016 produced two clones through cuttings. From these cuttings numerous seedlings have been produced. The KIRC implemented the KIRC **Ka Palupalu o Kanaloa Management Plan** through a working group "Hui" to restore *Kanaloa kahoowawensis* into the wild. This plan aligns with the already existing USFWS Recovery Plan and includes the timeline and history also detailing current efforts underway. **The partnership first formed in 2012 after the last known plant in the wild went extinct.**

The Partnership Hui meets on a quarterly basis. Various nurseries are now cultivating Ka Palupalu o Kanaloa plants in propagation facilities. **The goal is to propagate 100 or more plants at multiple nurseries and outplant into the wild on Kaho'olawe to begin to stabilize the species.**

The partners include the State of Hawaii/DOFAW, USFWS, the Maui Nui Botanical Garden, the National Tropical Botanical Garden (Kahanu Garden and Preserve), Olinda Rare Plant Facility, Ho'olawa Farms, RCUH Plant Extinction Prevention Program, Lyon Arboretum Micropropagation Lab, Makena Golf & Beach Club, and the Protect Kaho'olawe 'Ohana.

2024 - Twenty-one plants are in propagation and are distributed at Ho'olawa Farms (Haiku), Olinda Rare Plant Facility (Olinda), Maui Nui Botanical Gardens (Kahului) and Kahanu Gardens (Hana). Only the plants at Maui Nui Botanical Gardens are available to the public for viewing. The last seed from the now "extinct in the wild" plant collected in 2008 was successfully propagated in late 2023. There are now only two original seedlings from that last wild plant with the rest being clones/cuttings (4) and 2nd generation seedlings (15).

A Communications sub-group was formed and now meets on a quarterly basis. This group discusses public information dissemination, fund raising and shared goals within the Hui.

Project IV. B. Grow food on island

In 2012 a quarter acre was cleared on the inside eastern slope of Luamakika slope for the planting of 'uala (sweet potato) and ulu (breadfruit). Growing of uala was very successful. Once established and on a rotational schedule uala tubers was harvested monthly. 'Uala was also planted in the DOH V work site. 'Uala slips were planted behind check dams and other erosion control barriers after the accumulation of water deposited soil.

The planting of 'ulu was not successful due to the lack of watering on a consistent schedule.

Ocean Program Summary

| Project Name | Project Date | Grant Amount | Funder/Contributor | Outcome | Program & Project |
|--|---------------------|---------------------|---------------------------|--|------------------------------|
| Hawaii Undersea Research Laboratory (HURL) | 2000 to 2004 | N/A | KIRC/UH/OI | Acoustic tagging and documented spillover of bottom fish from the Reserve | VI C |
| Aerial Surveys | 2003 to 2024 | N/A | KIRC | 532 surveys conducted, documenting the presence of large mega-fauna, coastal disturbances, marine debris aggregation, vessel violations, sedimentation run off, native vegetation changes, sea bird populations. | VI C |
| Hawaiian Monk Seal Tagging and Monitoring | 2004 to Present | N/A | KIRC/ NOAA PIRO | Set protocol of monitoring and documenting seals on Kaho'olawe. Training to permit approach within 100 ft of seals on Kaho'olawe. | VI C |
| Protected Species Stranding Protocols | 2004 to Present | N/A | KIRC/PKO/NOAA PIRO | Set cultural and federal protocols in how to document the stranding of protected species on Kaho'olawe will occur. | VI C |
| Kaho'olawe Underwater Baseline Surveys (KUBS) | 2005 to 2008 | N/A | KIRC/UH | 4 final reports of marine surveys (fish, macro-inverts, coral) of 10 sights along Kaho'olawe's W, N and E shores | VI C |
| Opihi Surveys | 2005-2015 | NA | KIRC/TNC | Establish two monitoring sights on Kaho'olawe and uniformed surveying protocols so that population distribution and density can be compared to other sights around the State. | VI C |
| Shallow Water Benthic Mapping | 2006 | N/A | USGS | Shallow-Water Benthic Habitat Map of Kaho'olawe | VI C |

| Project Name | Project Date | Grant Amount | Funder/Contributor | Outcome | Program & Project |
|--|------------------------|---------------------|---------------------------|--|------------------------------|
| B-WET Kaipukaiaola; A partnership to provide meaningful outdoor experiences to pre-service and in-service teachers about Kaho`olawe | May 2007 to April 2008 | \$92,400 | NOAA | Professional Development in the Area of Environmental Ed for teachers | II C |
| Invasive Algae Survey | Jun-07 | N/A | KIRC/UH/TNC/DAR | Final report documenting a non-presence of any invasive algae. Creation of protocol for future survey methods and responses if invasives are found in the future | I C/VI C |
| Helu I'a (apex fish tagging project) | 2007-2012 | N/A | KIRC/DLNR-DAR | 278 apex fish tagged within the Reserve to monitor fish growth rates, movements/migrations and aggregation | VI C |
| Permitted Trolling Registration | Jan 2007 to Present | N/A | KIRC | To date we have assigned 1,664 registrations to fishers and provided educational outreach on the proper use of the Reserve | III D |
| Assessment of the Nearshore Marine Resources of the Kaho`olawe Island Reserve | June 2009-Oct. 2009 | N/A | KIRC/TNC | A final report of marine surveys (fish, macro-inverts, coral) of 10 sights along Kaho'olawe's W, N and E shores | VI C |
| "Take A Bite Out of Marine Debris" Marine Debris Removal from Kanapou | July 2010 to Dec. 2011 | \$108,103 | NOAA | 31 tons of marine debris removed from Kanapou | I C |

| Project Name | Project Date | Grant Amount | Funder/Contributor | Outcome | Program & Project |
|--|--------------------------|---------------------|---------------------------|---|------------------------------|
| Conservation Action Plan (CAP) | June 2011 to Dec. 2012 | N/A | TNC | Creation of a Ocean Program CAP | I C |
| "Marine Debris Removal on Kaho'olawe" Marine debris removal from Kanapou, Oawawahie and Puhianenu | July 2012 to June 2013 | \$285,000 | NOAA | 8.25 tons of marine debris removed from 3 locations | I C |
| Roi, To'au and Ta'ape removal from the Kaho'olawe Island Reserve | Feb. 2012 to Jan 2014 | \$79,638 | HCF | 691 invasive fish were removed from the Reserve totaling 738 lbs of biomass. 10 community workshops were held. | I C |
| Bridging land, sea and native culture practices through restoration on Kaho'olawe | Jan 2013 to Jan 2015 | \$50,000 | HCF | 533 invasive fish were removed from the Reserve totaling 588 lbs of biomass. Permanent coral surveys sights established | I C/VIC |
| "Kanapou Marine Debris Removal" | July 2014 to Dec. 2015 | \$100,530 | NOAA | 12 tons of marine debris removed from Kanapou | I C |
| Baseline Biological Surveys of the Coral Reefs of Kaho'olawe, Hawai'i | Jun-15 | N/A | KIRC/TNC | A comprehensive final report providing status and comparative changes from the 2009 surveys to the 2015 surveys | VIC |
| Coral Reefs of Kaho'olawe, Hawai'i | Dec. 2015 | \$32,000 | DLNR | 2.75 tons of marine debris removed from Kanapou | I C |
| The Healing of Kaho'olawe: Building Community to Restore Kealaikahiki | April 2016 to March 2017 | \$50,000 | HCF | 416 invasive fish were removed from the Reserve totaling 472 lbs of biomass. Gut and gonad analysis conducted of invasive fish. Coral surveys continue. | I C/VIC |

| Project Name | Project Date | Grant Amount | Funder/Contributor | Outcome | Program & Project |
|--|--------------------------|---------------------|---|--|------------------------------|
| Coral Reef Ecosystem Program (CREPS) | July 2016 and April 2019 | N/A | NOAA | 2 final reports of marine surveys (apex fish population and coral health) comparing Kaho'olawe to other sights around MHI and NWHI | VI C |
| CIP Marine Debris Removal Project | Dec. 2017 to Jan 2018 | \$63,000 | State of Hawaii CIP | 3 tons of marine debris removed from Kanapou | I C |
| Malama Kaho'olawe | July 2017 to June 2018 | \$50,000 | HCF | 314 lbs of invasive fish biomass was removed from the Reserve. Gut and gonad analysis conducted of invasive fish. Coral surveys continue. 5,073 naive plants were planted. | I C/VI C |
| Learning Aina Through Kaho'olawe and Arts Integration | Aug. 2017 to July 2019 | \$79,333 | NOAA | Provide access for elementary school teachers. Curriculum development utilizing arts integration as a focus. Digital documentation to bring Kaho'olawe to others. | II C |
| Reef Mapping | 2017 to 2023 | N/A | KIRC/SCRIPPS Institute of Oceanography | Three-dimensional reef mapping of 4 sights on Kaho'olawe's North coast | VI C |
| CIP | June 2019 to June 2020 | \$15,625 | CIP | 6,000 native plants planted in Honokanai'a | I C |
| Marine Science Education and Training from a Hawaiian Perspective on Kaho'olawe: A Pilot Program for Maui Youth | Nov. 2019 to Oct. 2021 | \$15,000 | PIRO | Staff held over 24hrs of workshops and in class lectures/lessons to over 200 high school marine science students. 16 marine science students from 3 different public high schools access Kaho'olawe to implement lessons | II C |
| NFWF Marine Debris Grant | Jan 2020 to June 2023 | \$76,000 | NFWF | 8 tons of marine debris removed from Kanapou | I C |

| Project Name | Project Date | Grant Amount | Funder/Contributor | Outcome | Program & Project |
|--|-------------------------|---------------------|---------------------------|--|------------------------------|
| Engaging Hawaii communities through Kaho'olawe's culture, history and coastal restoration | Jan 2021 to Nov. 2021 | \$20,000 | Cooke Foundation | Planted 6,260 native plants in Honokanai'a. Established beach slope change monitoring program | I C |
| Kanaloa-Kaho'olawe Pollutants in Fish Project Report: Dissolved Contaminants and Microplastics | 2022 | N/A | KIRC/PKO/UH | Final report evaluating the impacts of pollutants on reef ecosystems from military activity in the restoration of Kanaloa-Kaho'olawe. | VI C |
| Restoring Coastal Wetlands on Kaho'olawe Island, Hawai'i (CWC) | Sept. 2022 to Aug. 2024 | \$355,531 | NOAA | 28,686 native plants will be placed in Honokanai'a. Silt pond maintenance completed. 24 outreach events held. 12 wild life surveys conducted. Sediment run monitored in Honokanai'a | I C |
| Developing a Digital Application for the Collection of Kilo 'Ike Pili Institute of Museum and Library Services (IMLS) 6 | July 2023 to June 2026 | \$99,960 | IMLS | Will be developing a shared database where environmental observations can be entered, cataloged, and analyzed with the Protect Kaho'olawe 'Ohana (PKO) and KIRC representatives. KIRC data collection will all be done via aerial surveys circumnavigating the island approximately every other month. Provision of transportation and access fees for PKO accesses into | II B/ VI C |

Title: Administration Program Summary

| Project Name | Project Date | Amount | Funder | Outcomes | Program & Project |
|--|---------------------|---------------|--|---|------------------------------|
| KIRC Virtual Museum Pilot Program (IMLS 1) | 2014 to 2015 | \$49,935 | Institute of Museum and Library Services/Native American Native Hawaiian Museum Services | Scanned 306 photos to be included in pilot project (total of 600 images--one access image and one master image per photo). All digital files for photos labeled and placed on server. Data of 400 photos inputted into Museum Archive Software database. Data of 400 photos and images (both access and master) linked. Access images of 400 photos edited (for sharpness and clarity only) 400 photos properly housed in archivally safe material (polypropylene photo sleeves) and placed in appropriate storage facility (secured, air-conditioned room with no windows) | III.B III.D |
| KIRC Virtual Museum Pilot Program | 2015 | \$5,000 | Hawai'i Council for the Humanities | Installed computer for public use in KIRC office for researching KIRC Living Library. Created and distributed pamphlet on how to access Kaho'olawe Virtual Museum | III.D |
| Kaho'olawe Island Reserve Commission Virtual Museum Web Interface and Mobile App (IMLS 2) | 2016 to 2019 | \$49,976 | Institute of Museum and Library Services/Native American Native Hawaiian Museum Services | Created a geospatial database of Kaho'olawe images. Development and implementation of the of Kahoolawe Island Guide mobile application. Integration of mobile app with Google Maps/Google Street view. Digitally photograph/scan artifacts, photos & documents. | III. B III. D |

| Project Name | Project Date | Amount | Funder | Outcomes | Program & Project |
|--|---------------------|---------------|--|--|------------------------------|
| The KIRC Virtual Museum | 2016 | \$45,200 | Hawaii Tourism Authority (HTA) | Documented via video, three oral history interviews. | III. A |
| Kahoolawe Virtual Museum Stage 3: Collaborations & Special Collections (IML 3) | 2018 to 2022 | \$75,000 | Institute of Museum and Library Services/Native American Native Hawaiian Museum Services | <p>Built and reorganization of archival space within the KIRC Kahului offices. Migrated 1500 records into new content management system (CMS). Rehoused and cataloged 700 sample artifacts from the Navy Collection.</p> <p>Status of Kaho‘olawe Living Library 3/31/24: There are currently 2105 entries in the Kaho‘olawe Living Library database. Most of the entries are published at https://kirc.pastperfectonline.com/ but will be later published on a new website through Catalogit</p> | III. B III. D |
| Expanding Public Access to Kaho‘olawe through Live Stream Video and Virtual Reality (ILMS4) | 2021 to 2022 | \$98,230 | Institute of Museum and Library Services/Native American Native Hawaiian Museum Services | Developed and pilot several digital and virtual reality tools that could provide safe and meaningful access to Kahoolawe Island Reserve. Developed live streaming video from Kaho‘olawe that was changed to a monthly live video access update due to island security issues and a Kaho‘olawe Virtual Reality (VR) Huaka`i. | III. C |
| Enhancing the Technological Infrastructure of Kaho‘olawe Island | 2022 to 2024 | \$99,041 | Institute of Museum and Library Services/Native American Native | The proposed project increased the organizational capacity of the KIRC through technological enhancement of the Kaho‘olawe Island Reserve Commission’s (KIRC) current hardline servers and | III.B III.D |

| Project Name | Project Date | Amount | Funder | Outcomes | Program & Project |
|-----------------------------------|---------------------|---------------|--------------------------|--|------------------------------|
| Reserve Commission (IMLS5) | | | Hawaiian Museum Services | technical hardware to a cloud-based system that will allow staff to have both in-office and remote access. | |