# Kaua'i Forest Bird Recovery Project



2023 Workplan

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# **Sector**

The Kaua'i Forest Bird Recovery Project aims to promote knowledge, appreciation, and conservation of Kaua'i's native forest birds. We focus on one threatened ('i'iwi) and three federally endangered species (puaiohi, 'akikiki, and 'akeke'e), with the goal of facilitating recovery of their populations in the wild.

#### Staff









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#### Kauaʻi's Endangered Forest Birds

Of the eight native forest bird species left on Kaua'i, one of these species is currently threatened ('i'iwi), and the three pictured below are critically endangered.



#### 'akikiki

The 'akikiki, like the other endangered species on the island, is endemic to Kaua'i. They are usually seen traveling and foraging in pairs or in family groups in forests of the Alaka'i Plateau at elevations above 1,140 meters. Is it estimated that there are only 45 birds left in the wild and by the end of 2023 they are expected to be extinct in the wild.

#### 'akeke'e

The species was federally listed as endangered in 2010 due to low numbers and a declining population trend of 98% from 2000 to 2012 (Paxton et al. 2016). Counts in 2018 estimated 1,162 birds in the wild (Paxton et al., 2020) but more recent data suggest fewer than 700 birds remaining. Like most of the native forest birds in Hawai'i, the 'akeke'e is restricted to high-elevation forests that are in nearly pristine condition on the eastern edge of Koke'e State Park and the Alaka'i Plateau.





#### puaiohi

Once inhabiting forests down to sea level, the puaiohi has now retreated to a 20km<sup>2</sup> area of the Alaka'i Plateau. Puaiohi occupy small territories along deeply-incised, narrow, forested stream beds above 1050 meters in elevation. This highly endangered species (population ~494 individuals; Crampton et al. 2017) is set apart from other native forest birds on Kaua'i by its large size, melodious song, and peculiar nesting and foraging biology.

### Threats

There are three main threats that have caused the decline of forest bird populations over time. At KFBRP, we are constantly researching and developing ways to combat these threats. Along with other conservation agencies, non-profits, community groups, and others, we are able to work together to mitigate these threats as much as possible.



#### Habitat Loss

Over time due to development, climate change, and introduction of invasive species, Kaua'i's native forest birds have been pushed to the highest area of the island - the Alaka'i Plateau



#### Predators

Rats, cats, and sometimes mice are all invasive mammals on Kaua'i that prey on birds. They climb to their nests and eat their eggs and chicks, and sometimes even the nesting adult.

#### Avian Malaria

*Culex* mosquitos - an invasive species on Kaua'i - carry avian malaria. Having evolved in the absence of this disease Kaua'i's honeycreepers have no immunity to it, putting them at high risk of extinction.

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### 2023 Project Summary

'Akikiki Collection	Bringing the remaining 'akikiki into human care	<ul> <li>December '21 - July '23</li> </ul>
Rodent Control and Puaiohi Research	Assessing rat abundance, lure attractiveness, and puaiohi survival	<ul> <li>December '20 - July '23</li> </ul>
HFBS and 'Akeke'e Surveys	Survey densities of Kaua'i forest birds and refine 'akeke'e occupancy estimates	• 2023 season
Bti and IIT Mosquito Work	Treating larval sources with aerial Bti and preparing for Incompatibile Insect Technology mosquito control	• 2020 -

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# 'Akikiki collection



It is currently estimated that only 45 'akikiki remain on Kaua'i. Due to the rates of their population decline, they are expected to be extinct by the end of 2023.

Given the sharp decrease in the 'akikiki population in recent years, federal and state wildlife agencies directed us to extract as many as possible of the remaining 'akikiki left on Kaua'i and move them to human care until it is safe for them to be rereleased in the wild.











#### **Rodent Control**

Using tunnels and cameras, we will continue to assess rat abundance within our survey sites. Using different lure combinations, we are aiming to narrow down the most effective trapping methods. In addition to this, we are conducting research to compare bird populations and survival on and off the rat trapping grid to observe any correlations or effects taking place.





#### Puaiohi C-SWG



Puaiohi are one of the more vulnerable native forest birds to rat predation due to their nesting on cliff walls - an easier spot for predators to reach. While we are implementing rat control, we are also surveying puaiohi to determine if there are positive effects of the trapping grids. Our crew works hard to carefully and consistently monitor nests and band as many puaiohi as possible to resight the survivors in coming years.

#### Hawai'i Forest Bird Surveys

2023 is KFBRP's year to conduct the forest bird surveys to collect data on bird densities, range, and abundance. Over 20 different transects were established in past forest bird surveys covering Koke'e State Park and the Alaka'i Wilderness Preserve. These transects will be visited between the months of March and May.

#### 'Akeke'e Surveys



As the 'akeke'e population declines, we are continuing to conduct regular occupancy surveys and collect ecological information to better understand their natural history. While there is currently no plan to relocate this species, this research aims to fill significant information gaps that will need to be addressed in case additional action is necessary to protect this species from going extinct.

# Mosquito Work

This year is the first year that we are beginning to employ mass mosquito control tecniques. As the 'akikiki and 'akeke'e are at risk of extinction due to the rise of avian malaria, it has become our priority to greatly suppress mosquitos within the next 2-3 years.



#### **Mosquito Trapping**

The trapping tools we have used to date focus on females. This year, we will be experimenting with new lures in the hopes of catching more male *Culex* to examine male dispersal and survival prior to release of IIT males.



#### C-SWG: Bti application and larval surveys

This year we plan to do targeted aerial applications of Bti (aka "dunk") to curb the mosquito population. To find additional sites to target, we will be conducting increased surveys of potential larval habitat.



#### IIT: Mosquito MRRs and ongoing surveys

This year, we will be doing additional surveys to lay the foundations for the deployment of Incompatible male mosquitoes to suppress reproduction and the *Culex* population.

# Partnerships

Our work would not be possible without the many partnerships we have. We are grateful to these organizations for their support and look forward to continue working with them!



### Future of KFBRP

2023 is the beginning of a new wave of growth at KFBRP. With the number of hands it takes to perform a species collection and staffing the mosquito project, as well as continuing our regular research, we hare hiring! Below are some other key areas of growth we are anticipating for the next couple years.

- 1. Continue planning and capacity development for IIT
- 2. Expanding our office/relocating somewhere bigger
- 3. Seeking more fund for
  - a. outreach efforts
  - b. 'akeke'e monitoring
  - c.adaptive management of rodent control
- 4. Continue to work with LOHE lab on song meter algorithm
- 5. Modelling 'i'iwi habitat
- 6. Purchase and deploy weather sensor network

### We thank you for your continued support in our efforts to protect Kaua'i's forest birds.

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