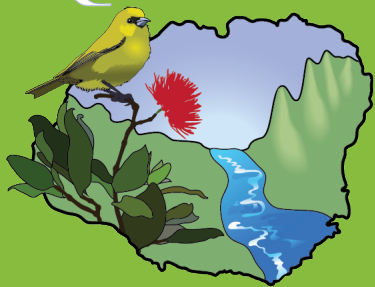
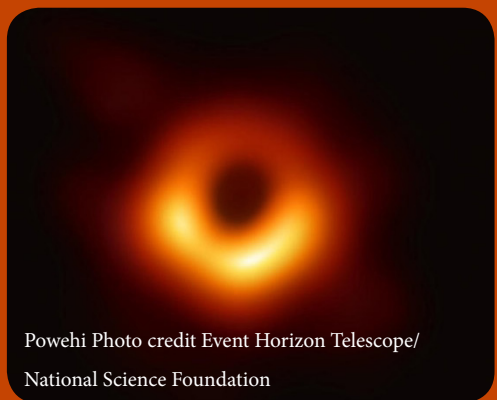


# KAUAI FOREST BIRD RECOVERY PROJECT



# NEWSLETTER

## POWEHI



Powehi Photo credit Event Horizon Telescope/  
National Science Foundation

A black hole was photographed for the first time this year and was given the name Powehi, a Hawaiian phrase roughly translating to “the adorned fathomless dark creation”. One of the baby ‘Akikikis we banded this year received band colors in red and black. It reminded us of the newly photographed black hole, so we decided to lovingly give it the nickname Powehi. Although they have similar colors, Powehi (the bird) is 1041 times smaller than her namesake!



Powehi Photo credit Bryn Webber



KFBRP 2019 Crew From left to right: Cali Crampton, Tyler Winter, Lauren Smith, Justin Hite, Noah Hunt, Abby Kreuser, Erica Gallerani, Bryn Webber

## 2019 Field Season Recap

During our 2019 field season, we spent considerable time trapping rats! Rats kill a lot of birds, so making sure our rat traps are working is very important. We did a carcass study where we monitored the decay rates of birds and small mammals in order to understand the predation and decay rates of animals in the forests where we have our rat traps. We also put out cameras at many of our rat traps to see how animals interact with traps. Through these efforts, we now we have a better idea of who is showing up at our traps, how many rodents are actually being killed, and what the data we are collecting actually means!

In 2019 we erected a loose grid of eight telemetry towers donated by Kaua'i DOFAW and USGS and put transmitters (some donated by Holohil) on a score of native forest birds, which allowed us to track the movements of individual birds. We discovered interesting behavior from the telemetry data, including movements of ‘Akeke’e and the ‘Akikiki.

In order to get transmitters on birds, we had to mist-net to catch birds. During this process, we caught many birds that we did not put transmitters on, but got very valuable data from these incidental catches including information on the prevalence of malaria and survival rates, and bird population information.

Another major project was surveying mosquitoes at our main Halepa‘akai field camp once a month from April-August. We also sampled a half-dozen other sites on and off the Plateau during this period. These data will help inform mosquito control to protect our birds from avian malaria.

# The Buzz

Over the past few newsletters, we have included information about mosquitoes on Kaua'i and how they affect the native forest birds. Here, Teya recaps the ecological situation on Kaua'i and brings us up to speed on the plans for mosquito control discussed this past year.

## MOSQUITO MONITORING

By Teya Penniman, Coordinator of Hawai'i Landscape-scale Mosquito Control at American Bird Conservancy

### The Why:

We face an extinction crisis. Climate change and globalization are driving the ecosystems and species that we protect – our biological heritage – to extinction. In the United States Pacific Island ecoregion alone, more than 580 species, over one-third of the listed species in the U.S., are currently in danger of extinction. Many more of these endemic species are on the same trajectory. Our best projections predict that these declines will continue unabated and with increasingly severe consequences, unless we take action now.

The reasons behind the decline of Hawai'i's endangered native forest bird populations are emblematic of this extinction crisis. These iconic species face threats not present during their evolution on these islands, leaving them poorly adapted for their recently invaded

ecosystems. To conserve our biological heritage for future generations, introduced diseases (such as avian malaria transmitted by the Southern house mosquito) and mammalian predators (rats, cats, and mongoose), must be controlled to maintain healthy ecosystems. For some of our native forest bird species, avian malaria causes more than 90 percent mortality.

### The What:

Higher-elevation forests in Hawai'i do not have the Southern house mosquito. These remote upper-elevation montane forest refugia, which now protect Hawai'i's forest birds from the devastating effects of avian malaria, are projected to drastically decline in size in the very near future. Due to a warming climate these heat-loving mosquitoes will be able to spread upslope.



Southern House Mosquito (or *Culex quinquefasciatus*)

## MOSQUITO MONITORING DETAILS

To increase the potential of this work on Kaua'i, KFBRP and USGS field technicians and some very dedicated volunteers have worked tirelessly to capture the Southern House Mosquito (or *Culex quinquefasciatus*) within native forest bird habitat. The main focus was our highest elevation field site, where we spent 10 months trapping mosquitos from fall 2018 til late summer 2019. We also visited six other sites at varying elevations from March-July to learn more about the distribution, seasonality, and survivorship of these mosquitos that are right on the edge of penetrating pristine forest bird habitat. Trips in winter and spring months yielded low mosquito numbers, while as many as 48 adult southern house mosquitos were captured over just seven trap nights in August of this year at our high elevation site. If we were able to keep the mosquitos alive long enough (using cotton balls soaked in sugar water) to survive the helicopter ride out of the field, we then quickly shipped them to US Fish and Wildlife Service in Honolulu, where they were reared up. These individuals will be the founders of the IIT populations that will one day be rereleased on Kaua'i to control the mosquito population and save the birds.



## ...the buzz continued

One promising tool to help stop this decline is the “Incompatible Insect Technique,” which uses a naturally-occurring bacteria called *Wolbachia* to interrupt mosquito reproduction, thereby reducing mosquito populations. This strategy acts like an insect birth control and is not a genetic modification. Instead, it depends on releasing into the environment male mosquitoes (which don’t bite) that have been exposed to the *Wolbachia* bacteria. When these males mate with females in the wild, no viable offspring are produced. Fewer mosquitoes means fewer vectors of avian malaria. This approach is currently in use on the U.S. mainland and elsewhere in the world to help suppress mosquitoes that carry human diseases, such as dengue or Zika. It is considered so safe that in some areas, residents have regular packages of male *Wolbachia* shipped to their home during the mosquito “season.”

The Steering Committee for Landscape Scale Mosquito Control, a partnership of federal, state, academic, and nonprofit agencies, is working with Michigan State University (MSU) to lab-rear male southern house mosquitoes that have been infected with the *Wolbachia* bacteria. The work at MSU is still in its

infancy. Rearing protocols for the Hawaii-collected Southern house mosquito are still being developed and tested in Hawai‘i and at MSU. Once these protocols are developed and a viable population can be reliably mass-reared in the laboratory, work on infecting the lab-reared populations with *Wolbachia* strains found in Hawaii will be conducted.

The Incompatible Insect Technique has been shown to be both safe and effective, but its conservation application in Hawai‘i will be novel. Any releases into the environment will require community engagement, public input, and permits from federal and state regulatory agencies. It is a challenging strategy, but one of the only ones we have left, especially given recent results of a forest bird translocation project on Maui indicating that mosquitoes have advanced further upslope than previous surveys indicated. Supplementing the protection that our natural areas provide to these birds in terms of habitat with a landscape-scale mosquito control program will enhance the capacity of these refugia to support future populations of endangered forest birds in Hawai‘i.



Trapping mosquitos in the Alaka‘i



## Corpse Study

As KFBRPs fans may know, we put in a lot of work into maintaining our trap grids to safeguard our native forest birds and their offspring from rodents. These traps also protect native plants from rat predation.

With over 425 A24 traps in action it is important to ensure that traps are killing what they're supposed to: rats and mice, not birds or other animals. We check traps every 4 months to rebait, confirm functionality and assess performance through corpse counts and the counters mounted on the traps. During these checks, we typically find 0-3 rat or mouse corpses and often the counter tallies exceed the number of corpses counted. This mismatch led us to assume that these traps kill more rodents than found below traps, presumably due to the rapid decay of a small animal carcass in the Alaka'i and scavenging by other animals. To estimate how many animals (rodents and other) we are missing with carcass counts (i.e., how many carcasses are scavenged and how fast they decay) we ran two studies of decay using rat and bird carcasses previously killed by USDA for wildlife control purposes.

The first study began in December 2018 when we placed 30 non-native bird carcasses on the plateau at our fenced field site, where the scavenging community included insects, cats, rodents, and birds, but not ungulates. We have been controlling rodents at this site since March 2015. We checked carcasses regularly to document decay and pinpoint the stage when carcasses typically are scavenged or go missing. After 4 months, 19 of the 30 were considered easily detectable, making it very likely that we would find a bird carcass in winter in this environment.

In the second study, which occurred in summer, we investigated if rats would decay at the same rates as birds. We also included a field site that is not fenced, so pigs, deer, and goats were present



Above: A glimpse of the wildlife that show up at our A24s



Image 1. Red-crested Cardinal E9-1 decaying. Photos from the left: deployment, 10 day check (BC=5), 20 day check (BC=3), 45 day check (BC=2), 90 day check (BC=2), 130 day check (BC=1). Thought to have been scavenged in between 10 and 20 days after deployment because of body position change and exposed skin.

### ...Corpse Study continued

and potentially scavenging carcasses. We began rodent trapping at this site in fall 2018.

During the summer trial, we deployed 123 bird and rat carcasses from May to September, 2019. Sixty carcasses, 30 bird and 30 rat, were deployed at each site, fenced and unfenced. We set up game cameras to watch if a carcass was to be scavenged by who and when. At the fenced site 51 of the 60 remained easily detectable. At the unfenced site, only 34 of the 60 carcasses remained easily detectable. At the unfenced site, 11 carcasses were scavenged by pigs in the first 15 days.

This small but very important study gives us “formulae” by which we can adjust our corpse counts at each of our sites and helps explain the mismatch between counter tallies and corpse counts. In the fenced site, we can assume we are killing 15-35% more rats than we find below traps, whereas in the unfenced site we estimate we are killing almost 50% more rats than we find. It also reassures us that over the five years we have been running these traps at our fenced site, we haven’t been killing a lot of non-target species, such as birds, that we have failed to detect on our trap checks. It seems like these A24s are really doing a good job of reducing rodent populations!

## Radiotelemetry to Inform Translocation and other Conservation Actions

“A Safe Harbor For ‘Akeke’e - Operation Translocation” was selected by the Holohil Grant Review committee for the 2019 first quarter grant. Through this grant program, we received 12 LB-2X transmitters to attach to critically endangered ‘Akeke’e. The goal of this project was to attach as many of the transmitters as possible to these elusive and cryptic birds to better understand their ecology with the long-term goal of facilitating a successful translocation to another island with higher elevation than Kaua’i. Such a translocation may be necessary to save this species from the threats of avian malaria and Rapid ‘Ōhi’a Death.

During the 2019 field season, we captured two young-of-the-year ‘Akeke’e. Transmitters were also attached to endangered ‘Akikiki, threatened ‘Tiwi, Kaua’i ‘Amakihi, and Kaua’i ‘Elepaio to use as comparative data as these species (except ‘Tiwi) are thought to have smaller territories and dispersal when compared to that of the ‘Akeke’e. All birds were outfitted with the HoloHil LB-2X transmitters at a field site with eight omnidirectional telemetry towers that record signals 24/7 (in theory, at least! In practice all towers experienced down time due to solar panel issues). These towers fairly consistently surveyed area of approximately 50ha in core ‘Akeke’e habitat.



Photo: ‘Akeke’e captured during the 2019 season

The movements captured by these towers using LB-2X transmitters will help inform the post breeding dispersal and habitat use of hatch year ‘Akeke’e. Both transmitted ‘Akeke’e were detected at two distinct tower locations for a brief amount of time the day of capture. No towers picked them up for the remainder of the two-week lifespan of the transmitters, indicating that the birds had left the study area. This behavior is not surprising for hatch year birds, who are likely looking for new territories.

While we did not receive much data from the transmitted ‘Akeke’e, we did receive a lot of comparative information from the other species that we tagged. Most of these species were detected for longer periods of time. Further analysis of both transmitted ‘Akeke’e and additional honeycreepers will be extremely valuable in determining not only the dispersal of young birds but the forest composition needed to facilitate the survival of these species. The data gathered will be used to help inform management and site selection for any possible translocation effort of the ‘Akeke’e to additional Hawaiian islands.



# An Update on Rapid 'Ōhi'a Death

In last year's newsletter, Kim Rogers wrote a piece about ROD. This year, she recaps last year's article while providing more recent information as well as advice on how to prevent the spread of the disease.

You can find more information at [RapidOhiaDeath.org](http://RapidOhiaDeath.org)

## Threats to our Native Trees

by Kim Rodgers, Kaua'i ROD Outreach Specialist

In 2019, Rapid 'Ōhi'a Death took the lives of more 'Ōhi'a, Hawai'i's most abundant native tree in the forest. Since its first detection at Moloa'a State Forest Reserve on Kaua'i's northeast side, the pathogens leading to Rapid 'Ōhi'a Death have been confirmed in multiple locations on the North, East, and South sides of the island. More than one hundred 'Ōhi'a have now tested positive for either *Ceratocystis huliohia* or *Ceratocystis lukuohia*, the two fungi that colonize in the vascular system of 'Ōhi'a and block the flow of water throughout the tree, leading to its demise. Numerous trees in Koke'e State Forest, where our native forest birds can be found, have been tested; however, at this time no trees have tested positive.

Results from research studies on Hawai'i Island where Rapid 'Ōhi'a Death was first detected a half-dozen years ago point to the possible impact of feral ungulates (pigs, goats, cattle) in contributing to the disease transmission. Surveys from fenced areas where ungulates have been removed show significantly lower presence of the disease. A wound is required for an 'Ōhi'a to become infected. Scientists theorize that in these ungulate-free, fenced areas where there are no ungulates to create wounds—rubbing against the trunks and digging among the roots of trees—trees stand a better chance of staying healthy. Forest users are also highly encouraged to be mindful of 'Ōhi'a by not scuffing roots, breaking branches, and/or blazing trails when moving through the forest. A healthy 'Ōhi'a forest is critical to maintaining the fragile ecosystem necessary for Kaua'i's numerous native flora and fauna. A healthy 'Ōhi'a forest also replenishes aquifers and helps maintain a healthy ocean reef by preventing soil erosion.

Kama'aina and visitors can help prevent the spread of ROD by following these key five guidelines:

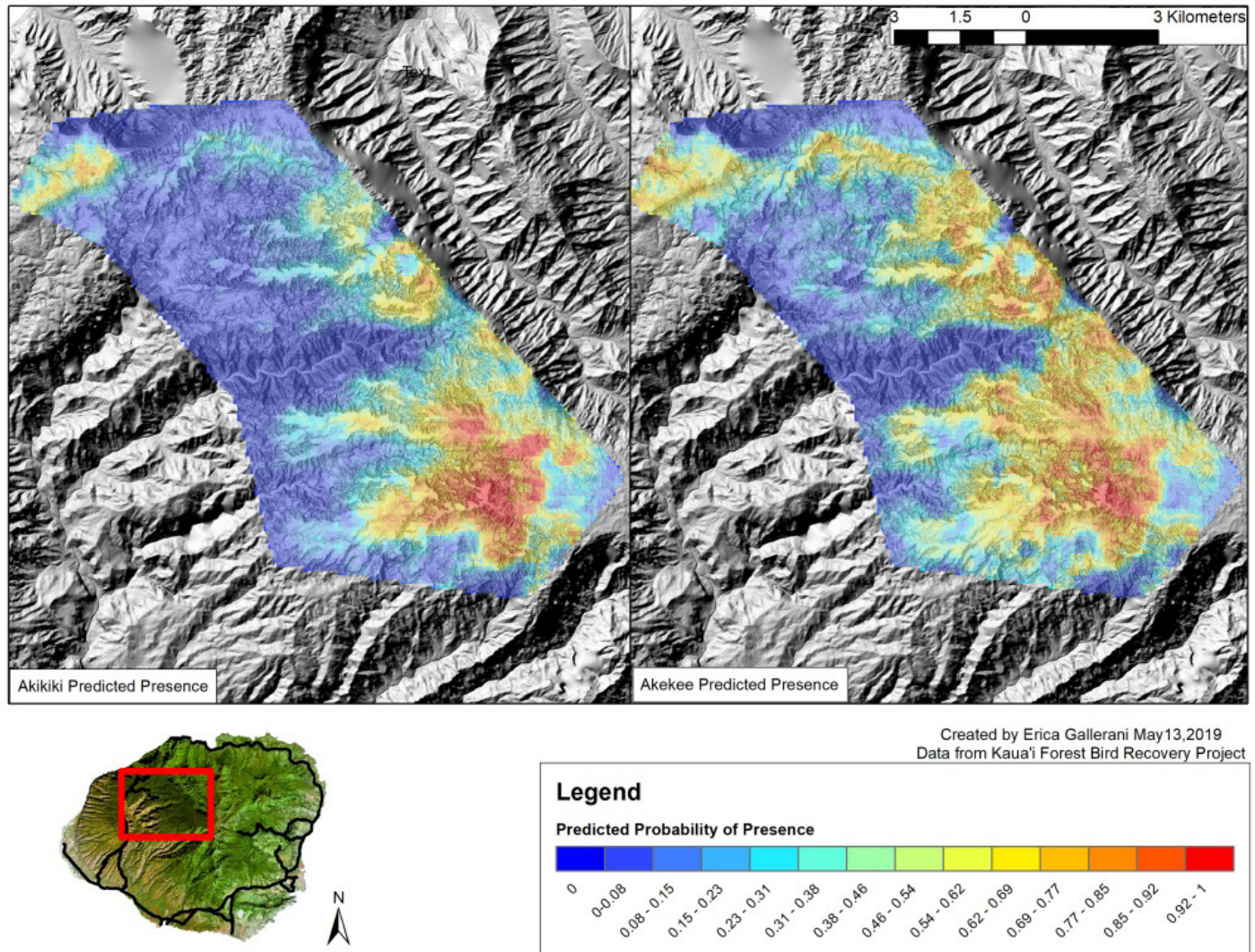
- 1) Keep your eyes open. If you see 'Ōhi'a with a limb or crown turning brown, take a picture, and contact KISC via email ([saveohia@hawaii.edu](mailto:saveohia@hawaii.edu)) or phone (808-821-1490). Samples of the wood must be taken by trained technicians and tested in a laboratory to confirm the presence of the ROD fungi.
- 2) Avoid injuring 'Ōhi'a. Wounds serve as entry points for the fungus and increase the odds that the tree will become infected and die from ROD. Avoid pruning and contact with heavy equipment wherever possible.
- 3) Clean gear and tools, including shoes and clothes, before and after entering the forest and areas where 'Ōhi'a may be present. Brush all soil off tools and gear, then spray with 70% rubbing alcohol. Wash clothes with hot water and soap.
- 4) Wash your vehicle with a high-pressure hose or washer if you've been off-roading or have picked up mud from driving. Clean all soil off tires—including mountain bikes and motorcycles—and vehicle undercarriage.
- 5) Don't move 'Ōhi'a wood or 'Ōhi'a parts, including adjacent soil. The disease can be spread to new areas by moving plants, plant parts, and wood from infected areas to non-infected areas.



# LiDAR in the Alaka'i Swamp

The high-resolution LiDAR (Light Detection and Ranging) data that we acquired in 2017 for the Alaka'i Swamp has finally come to fruition in the form of predictive modeling. We have analyzed this remotely sensed data to identify forest structure and topography metrics associated with 'Akikiki and 'Akeke'e nest locations (88 for 'Akikiki and 22 for 'Akeke'e) and occurrences (3,706 for 'Akikiki and 1,581 for 'Akeke'e) from 2012-2017 to predict their distribution in unsurveyed areas. As you know, these birds are critically endangered and a better understanding of their range and habitat preferences is essential if we are to continue to steward their recovery. There is also potential for these models to predict the most suitable

habitat for future translocations of individual birds. The results show that 'Akikiki and 'Akeke'e forage in areas with significantly different forest structure (maximum tree height, mean canopy height, relative heights) and topography (slope) based on occurrences. Elevation was consistently one of the most important metrics for predicting both species nest locations and occurrences and it appears both species are at the upper limits of their elevational range, making our mosquito work ever more important. We plan to continue to improve these models by adding remotely sensed climate and vegetation data. These models and observations are currently under review for publication...stay tuned!



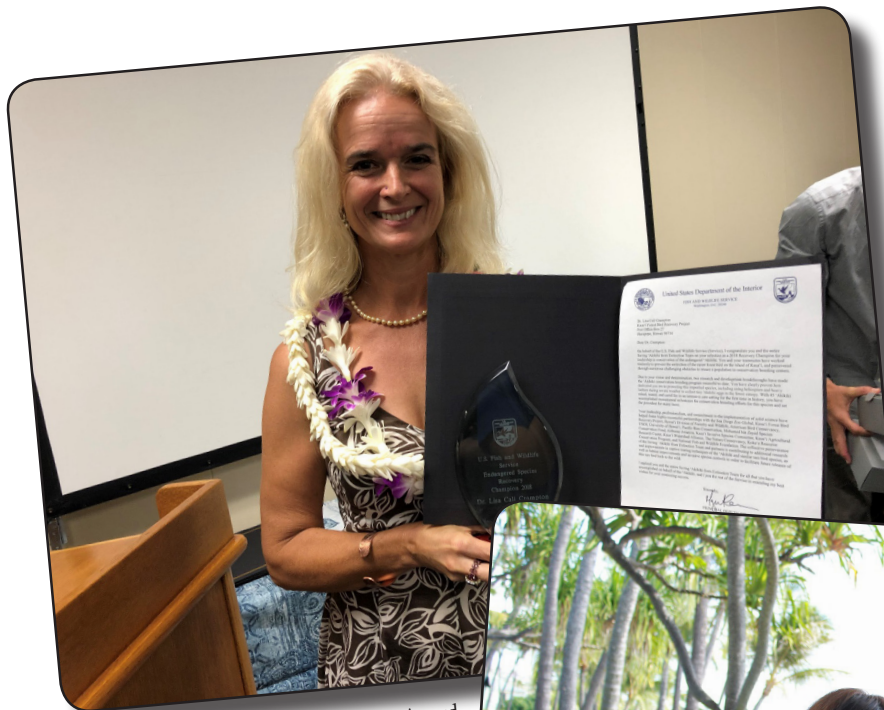


# 2 0 1 9 A W A R D S

This year was a big year for recognition of KFBRP staff and partners and the work we do to protect Kaua'i's forest birds.

In June Cali, Justin, and their state, federal, and San Diego Zoo Global partners on the "Saving 'Akikiki from Extinction Team" received the 2018 US Fish and Wildlife Service "Recovery Champions" Award. This award recognized the accomplishment of establishing a robust conservation breeding flock of 'Akikiki. According to the official award website, "the team has accomplished monumental milestones for conservation breeding efforts for this species and set the precedent for many more".

Building on this honor, Dr. David Duffy of the Pacific Cooperative Studies Unit nominated Justin for "Employee of the Year" at the Research Corporation of the University of Hawai'i (RCUH; our employer). In October, during a luncheon honoring all the nominees (and some tense nail-biting moments, because all of these nominees are extraordinary), Justin walked away with the second-place prize. Again, this award was largely based on the instrumental role Justin played in securing the future of 'Akikiki by establishing the conservation breeding flock, and his contributions to making all of our projects safer, more productive, and more efficient.



Cali receives the Recovery Champions Award



Justin receives his Employee of the Year award from Sylvia Yuen, Executive Director of RCUH



# DONATE YOUR TIME

You might have noticed that KFBRP stayed very busy with community events and outreach throughout this year! We would like to extend a big Mahalo to all of you for helping us spread the word, educating both local communities and global entities about the importance of saving our critically endangered native Hawaiian forest birds. We are thankful for all the continued community support, over the year, we received generous donations among others from the Rotary Club of Po'ipu, the Hawaii Visitor Industry Foundation, the County of Kaua'i Office of Economic Development, the Honolulu Zoological Society, the Center for Biological Diversity and many individual donors. We really couldn't do it without all of you!

We received another beautiful watercolor artwork donation from Deidre Husak showing the beautiful 'Apapane and a wonderful poem by local resident Kapua Janai! Please continue to show us your love of our forest birds with your artwork, we appreciate it very much!

Festivals and fundraisers continue to be one of our favorite ways to interact with the public on Kaua'i and generate support for our project. This year we attended Emalani Festival, Arbor Day,



Banana Poka Festival, Holly Jolly Holiday Fair, Earth Day at KCC and May Day Concert. Be sure to look for us at these events in the next year!

Thank you to everybody who supported us this year through our Bonfire t-shirt store! All our official t-shirts are now available year-round on demand at <https://www.bonfire.com/store/kauai-forest-bird-recovery-project/>. We are currently working on a few new t-shirt designs, stay tuned!

## Community Work and Outreach



# Moving Forward

In 2020, we will focus on catching and banding more birds than we have in previous years. Through this effort, we hope to get a better understanding of survivorship rates, malaria rates, and much more! We plan to raise money to buy more telemetry tags so we can track more birds. Since rats are an ongoing threat to Kaua'i's native forest birds, we will continue to use A24 traps to reduce predation by rats in the bird's remaining habitat and may implement some modifications to make the traps more efficient. In the summer and fall (peak mosquito season), we plan to continuously run mosquito traps at multiple sites across the Plateau to better understand *Culex* mosquito life cycle across the remaining forest bird range. We look forward to focusing on the 'Akeke'e and working to better understand their behavior and movements to ultimately increase their population sizes.

## New Faces

### Kim Shobak

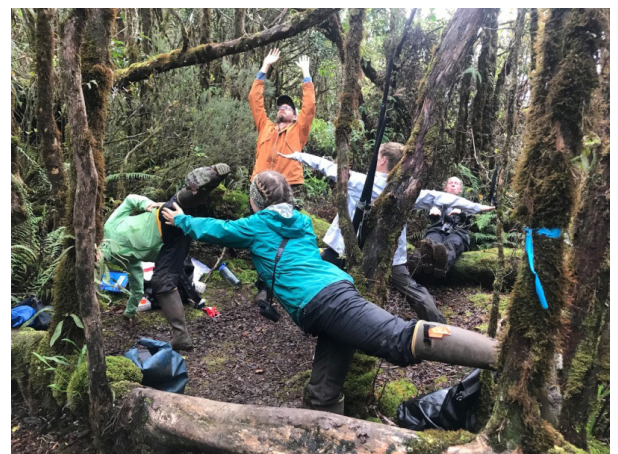


Kim Shoback received her B.S. in Environmental Science from Rutgers University and started her career in environmental consulting, but quickly tired of sitting in an office and quit to work in field biology.

She escaped the northeast and has been on a whirlwind tour of tropical forests by working a variety of field research jobs: first birds and native seed dispersal in the Dominican Republic, then tried to do a tree census in Puerto Rico but was rudely interrupted by Hurricane Maria. She stayed in Puerto Rico to study the effects of catastrophic hurricanes on forests, then studied the lek display of the white-ruffed manakin in Costa Rica and piping plover migration on the beaches of North Carolina.

Kim has been working as our Americorps Intern since October 2019. Although conservation is new to her, she thoroughly enjoys any opportunity to work with Kaua'i's endangered forest birds. In her spare time on the mainland, she works on farms and volunteers with The Raptor Trust, a bird rehabilitation center. When not working, she enjoys snorkeling, rock climbing, traveling, and exploring.

## Rainforest Yoga at the Fall Volunteer Trip





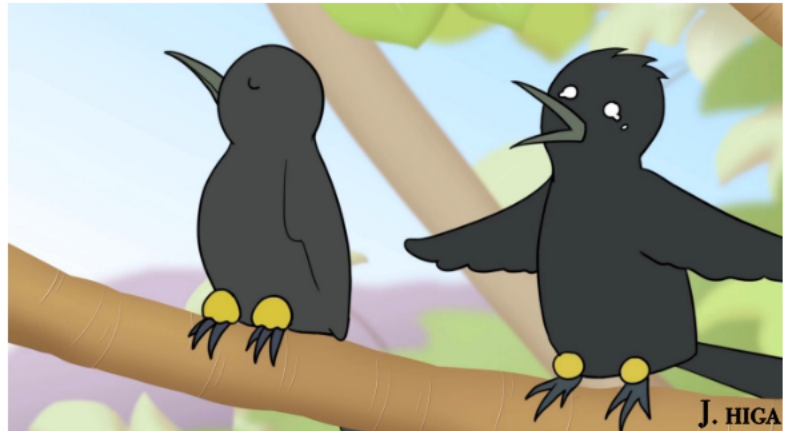
# The Symphony of the Hawaiian Birds is coming to Kaua'i!

We are super excited to announce the first performance of the Symphony of the Hawaiian Birds on Kaua'i in February 2020!

The Symphony of the Hawaiian Birds is a place-based interdisciplinary program that brings together science, music, art, dance, and education to tell the story of our endangered Hawaiian birds. Featuring original compositions, animations, hula, artwork, and lesson plans for teachers and students, the Symphony of the Hawaiian Birds has already been performed for over 10,000 people on O'ahu.

This is the first time this concert will be performed on a neighbor island and we are bringing 50 UH Wind Ensemble members over to Kaua'i! The performances are free to the public and we have received grant money to help pay for school buses for the Monday shows. We will have informational booth in the lobby and do some fundraising with art pieces donated by various local artists. Stay tuned for more! We are looking forward to seeing you all there!

## SYMPHONY OF THE HAWAIIAN BIRDS KAUA'I EDITION



**PUBLIC CONCERT: 2/23/20 AT 4PM**

**SCHOOL CONCERTS: 2/24/20 AT 9:30AM & 10:45AM**

**KAUA'I COMMUNITY COLLEGE PERFORMING ARTS CENTER**

**UNIVERSITY OF HAWAII AT MĀNOA WIND ENSEMBLE  
CONDUCTOR: JEFFREY BOECKMAN**

**COST: FREE**

**[WWW.SYMPHONYOFHAWAIIANBIRDS.COM](http://WWW.SYMPHONYOFHAWAIIANBIRDS.COM)**

### A little Thing

Such a little thing, and yet...  
The song of a bird, delicate and sweet,  
a few notes of reply,  
then a song from another voice nearby.  
I sat by the side of the trail,  
in a small patch of sun,  
closed my eyes, just listened.  
A few notes here, a few there,  
another song, differently textured.  
Not loud, not demanding,  
just there.  
Yet as I listened,  
I stopped being separate,  
stopped being "me out for a walk."  
The birdsong gently enveloped me,  
welcomed me,  
invited me to be a part of the forest.  
Reminded me, that really,  
we all already are  
a part of the Oneness of Life.

by Kapua Janai



Kaua'i Elepaio, PC. Blake P.  
KAUAI FOREST BIRD  
RECOVERY  
PROJECT



## A Thank You Letter

I'm a helicopter pilot who flies the various conservation crews all over the island of Kauai. I get a lot of "thank you-s" while flying this rugged group about the island. When dropping them off at their remote campsites so they can get to the work they are so passionate about, I hear, "Thanks for lift!" When extracting these crews, after they have been clawing through the mud, sleeping in wet tents, and living off cold cans of Spaghetti O's, I hear, "Thanks for getting us out of the field." My reply to their gratitude is always the same, "My pleasure, I have the easiest job out of any of you guys".

The flying may be easier and more comfortable than working and camping in the wettest places on the planet, but it is by no means easy flying. I may have cut my teeth in other types of heli ops, but flying conservation in Hawaii has sharpened them to a fine point. It's experiences such as tow-in landings over 1000 foot waterfalls while certain botanists climb the exposed skids to safety. It seems evolution would see to it that rare plants only grow in places even helicopters have trouble getting to. Also, situations like slinging ungulate-proof fences high atop the ridges of the Napali Coast, where it's either windy or really dam windy. And then, there's the weather, the ever dynamic weather. The visibility can change just as fast as the wind blows, which leaves little time for mistakes. This is by far the most challenging part of my job. But even when the weather takes a turn for the worse, and we have to leave crews in the field, I still hear "Thank you for trying."

Despite all the hair raising challenges I face while flying conservation crews around, it is my favorite part of the job. I'm honored to be a part of this hearty group of people who are well educated, well informed, and so passionate about the work they do. These crews are literally knee deep in protecting our native forests and animals. They give their sweat and blood for the cause. After a tough week in the field, I listen to the trials and tribulations these crews face. Sometimes I'll say, "Well, that's why you guys get the big bucks." One soldier of conservation replied to that quip with, "Ya right, we get paid in sunrises and sunsets." And that is absolutely true. You are rich. Rich in experiences in nature, and rich in seeing sites so few are ever graced with, and rich with doing work that fulfills the soul.

So with that, it's my turn to say "Thank you." Thank you for hiking miles and miles to collect rare seeds. Thank you for diving head first into shearwater burrows to check on the chicks. Thank you for pounding fence posts until your hands bleed. Thank you for climbing 40-foot extension ladders suspended only by ropes to ever so gently collect endangered forest bird eggs. Thank you for the fence checks, the cat hunting, the bird strike counting, the weeding of invasives and the protection of the natives. Thank you for finding work you are passionate about and sticking with it, even in the sometimes harsh conditions of the native Hawaiian forests.

I'm sure that if the citizens of Hawaii could share my birds eye view, and see what happens out there on the front lines of conservation, they would share my respect and gratitude for these crews. I hope to continue to help out with this ever so important cause. And, as long as the weather cooperates, I'll try to get you home in time for happy hour.

Sincerely,  
Chris Currier.  
Airborne Aviation