#### December 2020

## KAUAI FOREST BIRD RECOVERY PROJECT NEWSLETTER

### A LOSS FOR THE VISITOR INDUSTRY IS A GAIN FOR KFBRP

KFBRP has been helping Kaua'i's forest birds fight their own mosquito-driven pandemic for decades. Then 2020 brought us Covid-19. All new staff hired prior to Covid-19 had to adapt quickly to changing rules as the visitor industry shut down and hotel reservations were cancelled. New hires were required to quarantine before coming to work.

Luckily, there was a silver lining to the visitor industry shut down for KFBRP. Thanks to CARES Act funding, the County of Kaua'i and their Kupa'a Kaua'i Initiative, and Malama Kaua'i's Aloha 'Aina Workforce Program, KFBRP was awarded two new full time temporary positions: one Office Assistant and one Avian Conservation Field Assistant. These individuals came to us when they were displaced from visitor industry jobs (visitor industry loss, our gain!). Four additional positions were made possible through the Kupu 'Āina program. Ultimately, with the addition of the new service members, KFBRP was able to power through the backlog and move forward at full speed with their mission of protecting Kaua'i's forest birds.





### 2020 Field Season Recap

This field season we devoted a large portion of time and effort to Puaiohi. Our goal was to find as many nests and baby "PUs" as possible. We ended the season finding upwards of 70 Puaiohi nests and banded 37 nestlings and 10 adults. One notably prolific nester even produced three seperate broods in the same nest cup, six chicks in all! Of these banded birds, we put radio transmitters on eight young birds, hoping to better understand their movements around the Alaka'i.

The radio towers that we received last field season have made an interesting addition to our field work. It has taken a lot of trial and error to get the towers to work just right. The tower batteries are recharged using solar power, which at times is hard to come by in the Alaka'i. Despite this challenge, we were able to pick up signals from many of the birds with transmitters, and are excited to begin analyzing this data!

This coming field season we are thrilled to welcome a larger field crew to focus not only on Puaiohi, but 'Akeke'e too. Our banding success in 2020 will allow next season's crew to hit the ground running! We will get to see where our banded birds are, what they are up to, how they interact with their neighbors, and most importantly how our work is helping them overcome the challenges they face and where we need to make improvements. We will also focus on banding the next generation of baby "PUs" and adults that have evaded us!

### The Buzz: Update from the Field

We've been busy buzzing around Kōke'e and the Alaka'i Plateau this year, continuing our research on the distribution of the Southern House Mosquito, *Culex quinquefasciatus*. This species of mosquito is responsible for spreading avian malaria to the highly susceptible, and quickly diminishing population of native and endemic forest birds that occupy the remote regions of the island. One bite from an infected mosquito can prove fatal for many of these endangered birds. Throughout the years of the study we have been monitoring relative abundance, spatial distribution and breeding pools in order to implement landscape level mitigation in the future.

We have just wrapped up our latest field study, which ran from mid-August through early November. Data was collected from six sites, two roadside and four remote, ranging in elevation from 1,051ft to 1,381ft. In total we collected 463 *Culex* specimens. Our lowest elevation site located along Camp 10 Road in Kōke'e yielded the highest amount of captures, 180 *Culex*, while our highest elevation site, Halepa'akai, had the least amount at 20 captures.

During each site visit, a larval survey was conducted in order to locate breeding pools. When mosquito larvae were detected, samples were taken using a dip cup or baster, and transported back to our office bug house. In most cases, the larvae found were *Aedes japonicus*, not the malaria-carrying *Culex*. On the pothole-riddled, rugged dirt road leading to our Camp 10 trap sites, we surveyed several large ruts. These ruts contained hundreds of *Culex* larvae. With the help of our Kupu crew, we were able to drain and fill in these *Culex* breeding hotspots.

The KFBRP "SWAT Team" will continue to contribute to this study in the new year, starting in the spring and working through early summer.







### **Birds, Not Mosquitoes: Updates from the Lab**

by Teya M. Penniman, Project Coordinator Birds, Not Mosquitoes

**The project:** A multi-agency partnership continues to work on developing an innovative approach to suppress *Culex quinquefasciatus* – the invasive Southern House Mosquito that transmits avian malaria to our native forest birds, often with deadly effect. The tool uses a naturally-occurring bacterium (*Wolbachia*) as a form of insect birth control. This type of biological control is considered a "biopesticide" and has to be approved and registered with the Environmental Protection Agency. But first it has to be shown to work.

Where we are in the process: Researchers at Michigan State University have successfully transinfected a Hawai'i Culex mosquito with an incompatible strain of Wolbachia. To do that, they first removed the Wolbachia strain normally found in Hawai'i Culex (using tetracycline for getting rid of a bacterial infection). Then they reinfected male mosquitoes with a strain of Wolbachia (wAlb) from Asian tiger mosquitoes (Aedes albopictus) found in Hawai'i. When the transinfected male mosquitoes mated with "wild" Culex females, no viable offspring were produced - in other words, the process is working! This is a huge and critical step. The Michigan lab is making sure that they have a stable line of transinfected mosquitoes by rearing them for at least ten generations and continuing to test for incompatibility (no baby mosquitoes result).

What's next: We're working to obtain the required state permit to bring the transinfected *Culex* adults or eggs back to a biosecure facility at the University of Hawai'i, and we're in discussions with federal officials about permit options and requirements. There are a lot of moving parts to a project of this scale and community engagement and support will be a critical component. More than 25 people representing more than ten different agencies or organizations are involved, but so far we only have one full-time position focused on the work. We expect to bring on an outreach associate in early 2021 to help increase our efforts to connect with community stakeholders.

How you can help: Continue to support the Kaua'i Forest Bird Recovery Project. KFBRP staff are helping to identify and fill critical research gaps so we can be sure the implementation is as effective as possible. KFBRP research is informing our understanding of mosquito reproduction and dispersal, including how variable it can be across years and seasons. Staff are also making significant contributions to the community engagement piece, through awesome videos and other outreach activities. Talk with your friends and family about the importance of protecting our native forest birds and their habitats.

Learn more at: www.dlnr.hawaii.gov/mosquito.

For more information about *Wolbachia*, please see KFBRP video at: https://youtu.be/RR31iQ6qmmU



Alon Averbuj checks mosquito traps at the Kawaikōī station





Monika Mira analyzes mosquitos trapped in the field

# CAMERA TRAPS

If a pig knocks over a rat trap in the woods and no one is around to see it, does it still make a noise? With the use of camera traps, we can find an answer. This fall, we placed cameras in one of our research sites to keep an eye on our A24 rat traps. We noticed that a concerning amount of them had been knocked off of their places and were strewn all over the ground. We wanted to find out who was knocking them off and what we could do about it. Not only did we find the culprits, but we also got some fascinating photos that we'd like to share with you.

We detected lots of nosy pigs (*Sus scrofa*), inquisitive whitetailed deer (*Odocoileus virginanus*), and curious cats (*Felis catus*). They all seem to be quite captivated by the A24 rat traps, which can be a problem for us if the traps aren't secured well enough. One particularly pesky pig is Spots. Of the 15 traps with cameras, Spots was seen at nine. Of the 10,627 total photos from all the traps, Spots appeared in 289 (about 2.72% of photos). Only two other pigs were detected; they appeared in 34 photos combined. We have now implemented some different techniques to ensure that the pigs won't knock off any more traps.

We also saw lots of birds: some Chinese Hwamei (*Garrulax canorus*), Kaua'i 'Elepaio (*Chasiempis sclateri*), and Puaiohi (*Myadestes palmeri*)! In total we saw up to four individual Puaiohi. They appeared in 21 photos across four traps, representing 0.20% of the 10,627 total photos.

Finally, we predictably can see some rats scurrying around the traps, hopping on top of them and interacting with them. Occasionally we will see the corpse of a rat nearby the trap and on rare occasions we will see other species scavenging corpses. In one photo we saw a cat that either hunted a rat or scavenged one of the corpses.

Not only are these photos mesmerizing on their own, but they provide us valuable insight into what occurs at our research sites when we are not there. With their help we have been able to adapt our protocols in order to successfully deploy traps and help protect Puaiohi from further predation.













### PIGS RUN AMUCK AT MOHIHI

Field Season	Percent of Traps Knocked off Tree
FEB 2019	0%
JUL 2019	1%
NOV 2019	6%
APR 2020*	23%
JUL 2020	2%
NOV 2020**	69%

\*We added zipties during this season because we noticed the 6% knocked off from the last visit. The 23% during APR 2020 reflects the traps before the zipties had been put on traps.

\*\*After visiting and noticing that 69% of traps had been knocked off, we've begun experimenting again to find a better way to secure the traps.





## NEW FACES,

### NEW NORMAL

### Kupu 'Āina Service Members



#### **Chris O'Connor**

Chris brings a lifelong love of birds and previous experience rescuing, releasing, and restoring wild bird habitat, and has found a way to rebuild his life centered around what fills his heart with happiness. He moved to Kaua'i from Southern California in 2016 and was commissioned by the County of Kaua'i and the Kaua'i Museum to create

life size bronze sculptures of King Kaumuali'i and his wife Debrah Kapule. Unfortunately, flooding wiped out Chris's workshop and funding was lost for the project when Covid-19 came into the picture. He came to KFBRP after responding to a Kupu hiring ad and expressed his desire to work with the forest birds. Being an avid outdoors person, you might find Chris hiking, off-roading, or snorkeling in his time off. He's also recently started a podcast called "Divine Evolution" focussing on metaphysics and spirituality in the 21st century, which has been picked up by over a dozen streaming services!

#### **Emily Sullivan**

Emily was born and raised on Kaua'i. She recently completed her second year at Massachusetts Institute of Technology and is pursuing an undergraduate Degree in Biology. In her free, time Emily enjoys hiking, beach time, and playing a lot of volleyball. Back at school in Boston, she was part of the Mock Trial team and loved traveling around the east coast for tournaments. After spending this past summer working as a research



technician at the Hanalei National Wildlife Refuge studying the nesting habitat of the Hawaiian Gallinule, her mentor mentioned the opportunity available through the Kupu Service Program to work with KFBRP. Since she had volunteered with KFBRP in the summer of 2017 helping to band birds, she jumped at the opportunity to work with the forest birds again.

#### Liv Carrigan

After graduating from Hawai'i Pacific University's Honor's Program with an undergraduate degree in Psychology, Liv was a fulltime registered technician at a learning center on O'ahu where she worked with kids who have learning disabilities. When the pandemic began, she saw the need to pursue a position where she could



spend most of her days outdoors. Originally from the Seattle area, she came to Kaua'i from O'ahu to participate in the Kupu Service Program and was placed with KFBRP. Although this is her first foray into birds, she has enjoyed the experience of working with them. On her first banding trip, she held the beautiful little 'Anianiau in her hand and said it was one of the most special experiences she's had in a while, noting, "That day made me so grateful to be working for the birds." When not working for the birds, you'll find her sailing in her renovated 25ft Pacific Seacraft, which she recently converted from a diesel engine to electric.



#### **Dana Courtney**

Dana has enjoyed working with flora and fauna her entire life. She has worked in conservation and wildlife management of grizzly bears, bighorn sheep, Hawaiian forest birds, and Hawaiian waterbirds among others. She has also spent several years working with plants in different environments and now enjoys collecting

plants, gardening, and propagating keiki plants. She wanted to work with KFBRP because she believes in their mission. Dana has spent the majority of her time with KFBRP working on education and outreach projects for the program.

### Full-Year Kupu Service Member



#### **Alon Averbuj**

Alon graduated from California Polytechnic State University San Luis Obispo with a B.S. in Biological Sciences and a concentration in Ecology. There, he fell in love with birds after taking an ornithology course and gained a deep appreciation for the avian world around him. In the summers between terms he spent time at the San Diego Zoo teaching kids about conservation and interesting animal adaptations. He also spent a summer tracking California Condors and researching bats and mesocarnivores in Central California. Alon joined KFBRP in September 2020 and hopes to refine his birding skills as well as continue the never-ending journey of learning more about the natural world. In his free time he enjoys surfing, rock climbing, birding, and playing chess.

### Malama Kaua'i CARES Act Crew



#### Allie Cabrera

Before Covid-19 shut down the visitor industry jobs, Allie was working as a tour guide here on Kaua'i. She comes to KFBRP through Malama Kaua'i. Her position is funded through the CARES act and is intended as an introduction to conservation work. Allie has a degree in Environmental Conservation Education from New York University and has done a substantial amount of work in this field and thought this would be an exciting opportunity to explore another avenue of conservation. This is not her first experience working with birds, as her thesis was based on the Red-Tailed Hawk population in New York City. The time spent studying these incredible raptors and the impact on the community made a huge impression on her relationship to the bird world. Originally from Los Angeles, she came here years ago looking for a new place to experience. Allie enjoys spending time strolling the beaches of Kaua'i, which comes in handy when searching for found items like beach glass and driftwood to use in her hobby of making crafts.

#### Kelly Pummill

Kelly also comes to us through Malama Kaua'i and the CARES Act funding. Kelly, along with her husband, has spent the last nine years working in Alaska's Denali National Park during the summer months and the rest of the year living on Kaua'i's southside. After deciding to make Kaua'i their year-round



forever home last fall, Kelly was working as a coffee shop manager when the pandemic hit. It's her love of birds and conservation that has brought her to KFBRP. Growing up in Washington State on Vashon Island she developed a love of nature - specifically flowers and birds - at a young age. This passion has continued to this day, as she spent a lot of time photographing and studying wildflowers in Denali and volunteering every spring for the last six years for the Institute for Seabird Research and Conservation, a research field camp located on a remote island in the Gulf of Alaska. In her time off, Kelly has an interest in art of any kind and enjoys being in the water, hiking, camping, singing and playing ukulele.

## **NEW ADDITIONS TO OUR PERMANENT STAFF**



Jenny Allen

Jenny has been rescuing animals in need since kindergarten and has always had a special love for birds. Australian birth and by veterinary а from graduate the University of Sydney, Jenny came to the US

for a Residency in Equine Medicine at Washington State University, but quickly became engaged in the conservation science community after the 1989 Exxon-Valdez disaster—when oil-spill remediation work drew her to Alaska for more than a decade as a technical program manager—before ultimately returning to her warmer roots and making Kaua'i home in 2010. Along with horses and birds, Jenny's other lifelong passion is native plants, and on Kaua'i she has worked for the National Tropical Botanical Garden at Limahuli, Princeville Botanical Garden, and the Kaua'i Invasive Species Committee (KISC).

Jenny joined KFBRP in May of 2020 to provide fiscal and program support. Being a long-time KFBRP fan and in awe of the work that the team does, she is thrilled to be on board. She also volunteers for the Hanalei National Wildlife Refuge doing weekly botulism surveys for endangered waterbirds, and for the University of Hawai'i Bishop Museum Plants of Hawai'i project, helping database and catalog Hawai'i's plant collections. In her spare time she enjoys hiking, camping, gardening, and learning about birds.



#### Roy Gilb

Roy joined KFBRP in May 2020 as the GIS Analysis and Database Assistant. He grew up in the hills of Virginia and spent as much time outside in the Blue Ridge



Mountains as possible. After obtaining a degree in Geography from the University of Richmond with a concentration in computer science, he spent some time studying climate change and sustainability at the University of Cape Town. After returning to the US, he began his career in GIS at the Virginia Deptartment of Conservation and Recreation in Richmond, VA. There he worked on GIS data projects that included identifying the most valuable lands for native plant and animal life and also worked with a team of ecologists on a series of large-scale species distribution models. His latest job was at a GIS consulting company in Richmond where he worked on a variety of projects, including a nation-wide VA Cemeteries GPS mapping contract. His continued interest in conservation brought him to KFBRP, where he manages their data processes and occasionally joins for field work. In his free time, he enjoys running as far as possible on trails and up mountains, rock climbing, and plaving guitar.

Banding Highlights



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# **BIRD OUTREACH GONE VIRTUAL**

### Sustainachella-Soaring with Bird Conservation

Although we weren't able to participate in our usual face-to-face outreach events this year, we enjoyed reaching out to a whole new audience by participating in the many virtual events that happened over the summer. We particularly enjoyed being part of the 'Sustainachella – Soaring with Bird Conservation'– a series of virtual community workshops hosted by the City of Miami Beach focusing on environmental stewardship and sustainable living habits. You can watch a recording of the event here:

https://youtu.be/tlvnflYyfEU

### New Hawai'i Bird Field Guide

Our project could not thrive without our many partnerships with other conservationists. Our partners Helen Raine from the Pacific Birds Habitat Joint Venture and her husband Dr. André Raine from the Kaua'i Endangered Seabird Recovery Project published a new book this year: The ABA Field Guide to Birds of Hawai'i. They partnered with Jack Jeffrey, another long-time supporter of our project, to put together a beautiful book, the perfect companion for anyone wanting to learn more about the natural history and diversity of the state's birds, and when and where to see them. Check out this interview we recorded earlier this year, where they introduce their book and give an update on the current conservation status of Kaua'i's endangered birds:

https://fb.watch/2atQI29-Zi/

**Check out their book here:** https://www.aba.org/ store/american-birding-association-field-guide-tobirds-of-hawaii/



A physically distanced outreach event in Kōke'e

## A KAUA'I FOREST BIRD TALK STORY

### Preserving Oral History

We have collected scientific data on Kaua'i's native Hawaiian forest birds since the 1970s. These data help us make educated decisions about effective management of the bird populations, but leave out a whole layer of our field work: the personal experiences and observations of the people collecting the data.

Earlier this year, we invited a group of scientists who were among the first to scientifically study Kaua'i's birds and conducted interviews to preserve their memories and impressions from over 40 years ago.

Here is a short piece by Sheila Berry, Program Coordinator for the Nature Conservancy, which sent two participants to the event:

"Earlier this year Melissa and Lucas participated in something very special. A group of scientists and conservationists gathered at the historic 1935 Civilian Conservation Corps Camp in Kōke'e State Park for two days at the invitation of the Kaua'i Forest Bird Recovery Project (KFBRP). Many participants had played a role in early research and protection of the native forest birds on Kaua'i, and the goal was to share and preserve knowledge and experiences through personal interviews and informal fireside discussions.

One story transported the group to a 1975 expedition to the Alaka'i Plateau when some of the island's now extinct forest birds could still be found. The group remembered that this was a time when the Kama'o sang from treetops surrounding the campsite and the Kaua'i ' $\overline{O}$ ' $\overline{O}$  could be heard singing from the ' $\overline{O}$ hi'a trees. Many stories captured the unique challenges and sometimes humorous outcomes of the work itself, highlighting successes and failures that ultimately shaped present-day conservation in Hawai'i.

The event included a short hike into the native forest along the Alaka'i Swamp Trail with a group of researchers, conservation practitioners, and passionate ornithologists, some of whom had not been to Kaua'i in decades. Lucas, who spent six years with KFBRP before joining TNC, found it deeply fulfilling to see



the group's excitement when a federally-endangered 'Akeke'e was first heard, then spotted, foraging on the crown of an 'ōhi'a tree just off the boardwalk.

Partners from Hamline University Center for Global Environmental Education and the lab of Dr. Andrew Fricker at Cal Poly conducted and recorded the interviews. In the coming months, they will collaborate with KFBRP to create content for multimedia displays around the island, bringing the history of conservation to life.

One of the participants who initially wondered aloud whether participants were simply composing a eulogy for the birds remarked with a smile that coming together and sharing these experiences lifted his spirits. For Melissa and Lucas, this event re-affirmed the importance of TNC's work, in partnership with the Kaua'i Watershed Alliance, KFBRP, and many others, to protect this special habitat for the birds.

# **Cheers and Tears During Bird Symphony**



KCC Performing Arts Center filled to capacity during Symphony of the Hawaiian Birds

We started the year off with a phenomenal performance of the "Symphony of the Hawaiian Birds" at the Kaua'i Community College (KCC), which brought many audience members to tears.

The standing-room-only concert showcased original music written to celebrate the native forest birds of the Hawaiian Islands and was performed by the University of Hawai'i at Mānoa Wind Ensemble led by Dr. Jeffrey Boeckman in collaboration with the KCC Wind Symphony led by Sarah Tochiki. This performance marked the first time the Symphony of the Hawaiian Birds has been performed on Kaua'i, where many of the endangered bird species highlighted in the program reside. In one piece, a flautist imitated the haunting call of the now extinct Kaua'i ' $\overline{O}$ ' $\overline{o}$ , provoking a powerful emotional response.

Thanks to the support of the County of Kaua'i Office of Economic Development and Corteva Agriscience, we were able to also bring this concert to over 1000 Kaua'i students and develop a Kaua'i-specific forest bird curriculum which is available free of charge on our website.

https://kauaiforestbirds.org/tools-for-teachers/

A big Mahalo goes out to everybody who supported our fundraiser during the concert, we raised over \$8000 to protect our native forest birds!

Did you miss the concert? Don't worry, all the movements have been released on

https://youtu.be/N2X6iAZsCg4

# KUPU ACCOMPLISHMENTS



Building new field camp and storage shed





Banding

## New Face Masks Available

In addition to our official KFBRP t-shirts, you can now find some cool face masks at our Bonfire store: https://www.bonfire.com/store/kauai-forest-bird-recovery-project/



### Silver Lining of the COVID Pandemic for Wildlife: The Anthropause



By Julia Diegmann

The dramatic slowdown in human activity caused by the pandemic - often referred to as "anthropause" - provided an unusual opportunity for scientists all over the world: the pause has created unique natural experiments, allowing researchers to compare how animals behaved before, during, and after the pandemic. In birds, anthropogenic noise has been linked to decreased breeding success, increased flushing behavior, and changes in vocalization.

Especially interesting is a study by Luther et al.<sup>1</sup> published in *Science*, which compares soundscapes and songs across the San Francisco Bay area before and during the shutdown. Songbirds in this area responded to the reduced noise levels by producing higher performance songs at lower amplitudes, effectively maximizing communication distance and salience.

1. Luther et al. 2020. "Singing in a silent spring: Birds respond to a half-century soundscape revision during the COVID-19 shutdown." *Science* Vol 370: Issue 6516. On Kaua'i, helicopter noise in the forest - a stressor native birds face - was drastically reduced by the lack of touristic helicopter traffic during the shutdown and might have given our native birds a break from noise pollution.



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Donations can be submitted to our non-profit partner: Garden Island Resource Conservation & Development

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