Kaua'i Forest Bird Recovery Project 2021 Newsletter

Project Leader, Lisa "Cali" Crampton, celebrates 10 Years with KFBRP

"Cali" came to KFBRP ten years ago to help save Kaua'i's forest birds from extinction. Since her arrival, we have gained a better understanding of the natural history and population trends of the birds and the threats that they face. As a result, KFBRP has been able to pivot to conservation and adaptive management starting with egg collection and captive breeding and eventually responding to rodent predation threats by deploying over 400 rat traps.

The forest has changed since Cali arrived when you could still find puaiohi and 'akikiki on the boardwalk. New threats like Rapid 'Ōhi'a Death (ROD) and increasing populations of disease-spreading mosquitos have now come into focus. Our research has led us to a greater understanding of the obstacles we face, but also gives us hope as we develop strategies to address the threats and protect the forest.

A short interview with "Cali" about her 10 years with KFBRP can be found on our YouTube Channel: https://youtu.be/EnNk7KEynP0

Cornucopia of New Papers Spawned during Covid-19

The Covid-19 lockdowns deterred neither forest bird nor KFBRP scientist. In fact, KFBRP and partners have never been more productive. During this time, our research has resulted in plethora of new papers. Our field assistant, Abby Kreuser, is responsible for two of these, and our principal, Lisa "Cali" Crampton, was even more prolific. Here is a summary of the latest papers to come out of our recent research. A full list of titles is available on our website for your reading pleasure at: https://kauaiforestbirds.org/reports/.

Do the Remains Remain? The Fate of Rat & Bird Carcasses in a Hawaiian Rainforest - Kreuser, et al.

Rodents pose a grave threat to Kaua'i's forest firds. To combat predation of nests and brooding females, KFBRP deployed 425 A24 rat traps at two field sites on Kaua'i. One site is fenced to exclude invasive ungulates. KFBRP conducts routine trap checks where 0-3 rodent carcasses are typically found, but in November 2018, we found a dead bird under a trap at the fenced site. We assume that traps kill more animals than indicated by carcass counts, because trap counter tallies exceed carcass counts. Thus, we hypothesize that some carcasses are scavenged or decompose between trap checks and we are underestimating target species counts and failing to detect non-target species. At the unfenced site, five types of scavengers were detected by our cameras. Pigs fully scavenged five carcasses on camera and were found to be the most interactive scavengers at the unfenced site. As a result of scavenging, carcasses were slightly less likely to be detected at the unfenced site. We also found both rat and bird carcasses to have similar scavenging and decay rates. At the end of survey period, the majority of carcasses could still be easily detected, suggesting that we are detecting most carcasses after the four-month trap servicing interval unless they are scavenged. Furthermore, our findings suggest that we would detect non-target mortality if it was prevalent.

Summary of new papers continued

Using Camera Traps and AI to Improve Efficacy and Reduce Bycatch at Goodnature A24 Rodent Traps in Hawaii -Crampton et al.

Camera traps provide an unobtrusive means to monitor wildlife, yet there is a steep learning curve associated with their deployment. In each of our trials we amassed thousands of photos, of which only 6-20% were target animals. The application of artificial intelligence (AI) to digital image datasets can greatly increase efficiency, but few existing algorithms have been trained on small animals. Our camera trapping project assessed interactions of target (rodent) and non-target (bird) species with GoodNature A24 rat traps deployed on Kauaʻi with the long-term goal of improving efficacy and minimizing bycatch.

Key takeaways: Without careful planning, a lot of time can be wasted. Key planning needs to recognize the costs of data management, storage, and model development. Techniques of camera positioning need to be considered and more expensive cameras proved to perform better in a wet, inaccessible environment. Our Database Assistant took a key role in this project to centralize data flow. Involving partners with different expertise in coding and databases was a game-changer. Working with the NRDS database was another critical decision that greatly improved data management. NRDS may also prove to be a great user interface for the AI once it is fully developed. If all these aspects are considered prior to camera deployment, camera trapping can be used to great advantage to enhance pest control and management.

2018 Kauaʻi Forest Bird Population Estimates and Trends -Paxton et al.

Kauaʻi's forest birds have experienced steep declines since the beginning of systematic surveys in 1981, and declines have accelerated in recent decades. New 2018 survey results indicate that long-term trends continue to show sharp declines for all native honeycreeper species with the exception of ʻapapane. Kauaʻi ʻelepaio continued to decline in the outer portions of its range but increased in the core areas of its range. Abundance estimates indicated a relatively stable period from 2012–2018, and a pause from the rapid declines seen in earlier periods. Many native species now exist in very low numbers, and variation in estimates from survey to survey will increase. Periodic surveys of forest birds help managers assess the response to conservation actions and determine which species are most in need of targeted actions. New population estimates for Kauaʻi's forest birds can be found in this publication by clicking on the linked title or visiting our REPORTS webpage.

Field Trials to Test New Mosquito Trap Technology and the Efficacy of Biopesticide Vectomax® FG for Mosquito Control -LaPointe et al.

In the past decade, populations of endemic forest birds on Kauaʻi have experienced steep declines due to an increase in the transmission of mosquito-borne avian malaria. For short-term mosquito control at remote sites on Kauaʻi's Alakaʻi Plateau, we tested the efficacy of biopesticide VectoMax® FG against *Culex quinquefasciatus* (CQ) larvae. We also tested the efficacy of different traps and attractants for the capture of adult CQ mosquitos in Hawaiian rain forests and monitored adult mosquito populations at the Kauaʻi field site.

VectoMax® FG appears to be an effective and safe biopesticide for the local control of CQ larvae in forest bird habitat and may be a viable, short-term strategy to reduce the transmission of avian malaria. As formulated, a relatively small amount of VectoMax® FG is needed to treat the average-sized pool. Equipped with a small bag of VectoMax® FG and a few additional supplies, resource managers could potentially treat mosquito positive pools as encountered during routine activities on-site. Local control of mosquitoes with biopesticides in breeding territories may protect remaining populations of endangered forest birds from further declines and buy time for development of technologies for landscape level mosquito control.

More Papers in the Pipeline

KFBRP is continuing to conduct research and produce publications with nearly a half dozen papers still in the pipeline. Stay posted and visit our Reports & Publications page on our website. Full versions of the papers summarized above (including authors & complete title information) can be accessed by clicking on the titles, or visiting our Reports & Publications page on our website at:
https://kauaiforestbirds.org/reports/

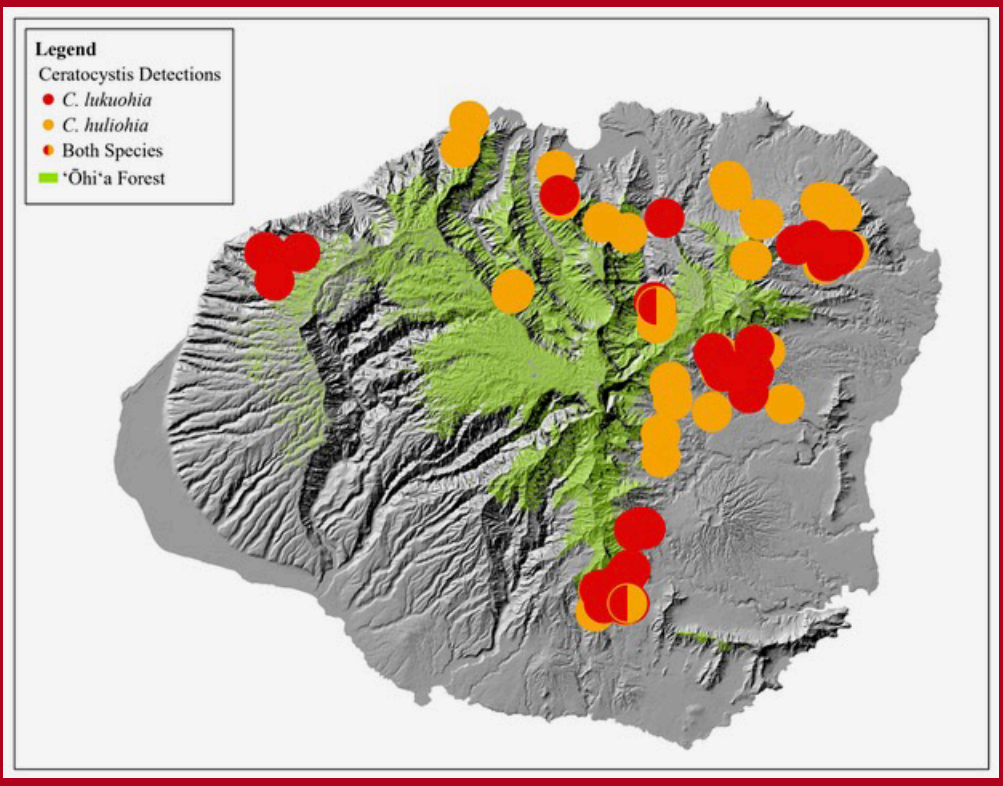
An Update on Rapid ʻŌhiʻa Death

by Kim Rogers, Kauaʻi ROD Outreach Specialist

The Kauaʻi Rapid ʻŌhiʻa Death Rapid Response Team continues to survey Kauaʻi forests for ʻōhiʻa trees suspected to be infected with a virulent fungal pathogen known as *Ceratocystis lukuohia*. ʻŌhiʻa is a keystone species in the native Hawaiian forests, providing nourishment and habitat for numerous fauna, including native forest birds, insects, and snails. They also help create an ecosystem conducive to native flora and together help replenish Kauaʻi's aquifers. A healthy native forest works to prevent erosion during heavy rainfalls, keeping our streams, river, and ocean reefs healthy.

Unfortunately, ʻōhiʻa have tested positive for *C. lukuohia* in new areas on Kauaʻi, including Kōkeʻe. Once a tree has been infected, there is no known cure. To date, approximately 250 trees have tested positive for one of the two fungi leading to Rapid ʻŌhiʻa Death. The disease has not yet been detected in the Alakaʻi Plateau.

For more information, please visit www.kauaiisc.com.



Spring Outreach

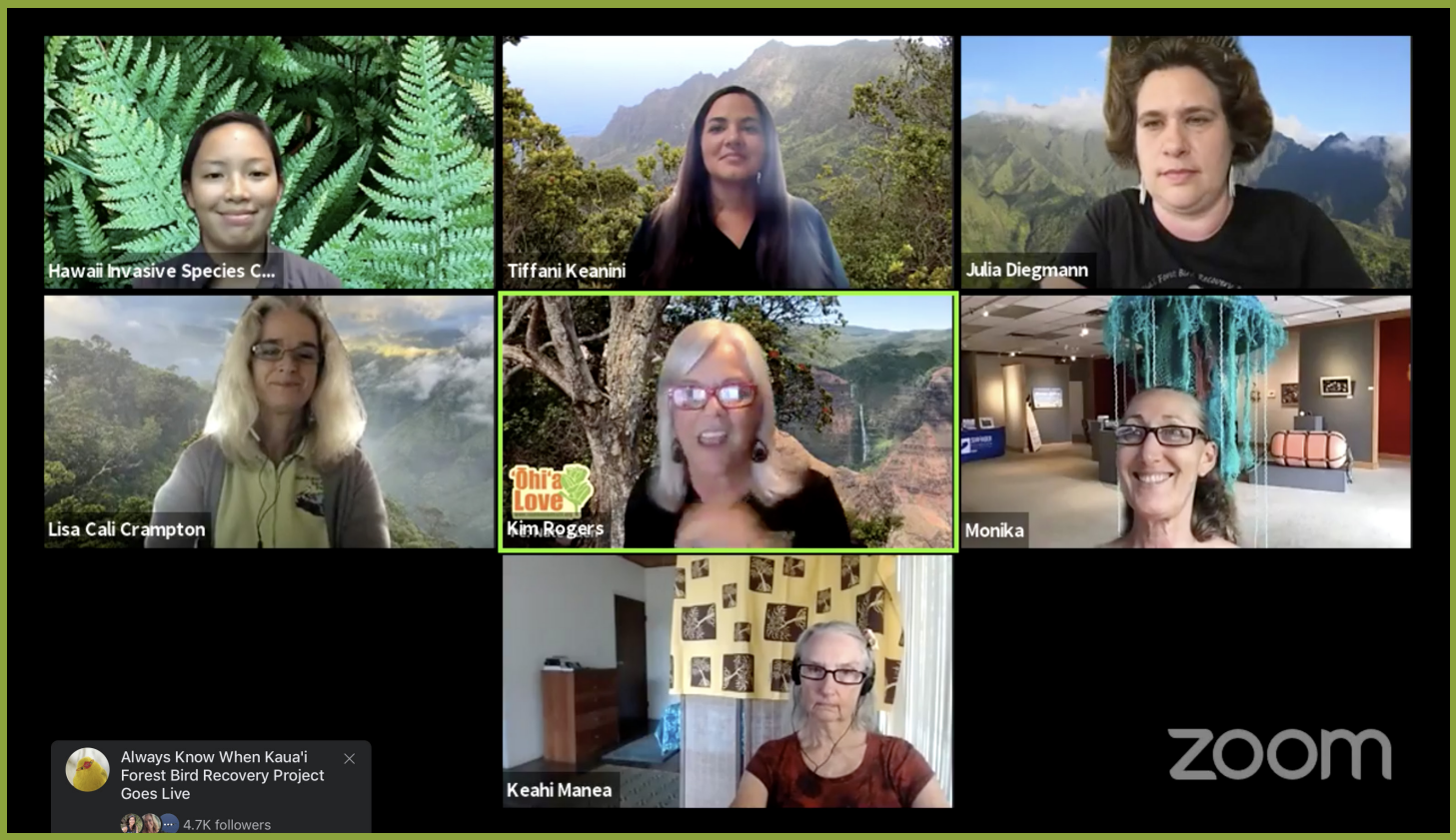
The Kaua‘i Forest Bird Recovery Project (KFBRP) along with our partner, the Kaua‘i Invasive Species Committee (KISC), are proud to announce a series of video presentations and live zoom conversations covering current and pertinent information as it relates to Hawaiian forests. Every first Friday of the month, the consortium will host a series of short videos and interactive Q&A with scientists, cultural practitioners, and conservation leaders. This is a unique opportunity to discover what is happening in the forest with regards to conservation, research, and cultural practices.

The presentations will also include a brief segment titled: “Faces of the Forest”. This segment may highlight one individual species found in the forest, or an individual working to protect forest resources.

Anyone with an interest is welcome to join the conversation by attending the zoom presentation. Signing up for email alerts will also allow interested parties to receive notification of the monthly topics to be covered.

The first Forest Friday debuted on March 5th, 2021 at 5PM HST. Recorded presentations can be found on our website, our partner websites, and our YouTube Channel. The next Forest Friday event takes place on April 9, 2021 at 4:00pm HST.

FOREST FRIDAYS: A New Way to Participate in Conversations about Hawaiian Forest Ecosystems



NEW MULTIMEDIA EDUCATION RESOURCES

Hawai‘i’s Forest Birds: Maui & Kaua‘i Edition

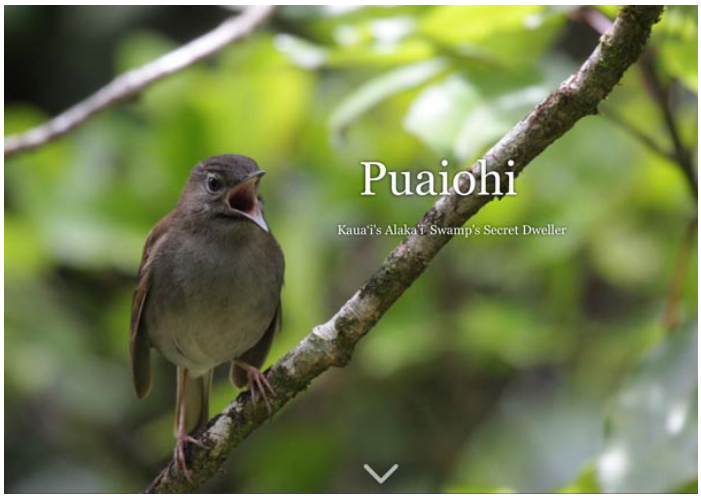
We are excited to announce that our partners at Hamline University just released an amazing new resource for learning about Hawai‘i’s forest birds. This new material comes in the form of a robust Multimedia Gallery, where students can explore interactive learning modules that include: short videos and narratives, reading materials, sound clips of bird calls, and even a quiz to test your knowledge. Hamline University hopes to engage teachers, students, and families across the globe with this new learning tool.

Hawai‘i’s Forest Birds: Maui & Kaua‘i Edition is produced by the Center for Global Environmental Education, the Maui Forest Bird Recovery Project and the Kaua‘i Forest Bird Recovery Project. The site is a collaboration among a variety of organizations who are working to save these birds from extinction.

The resource is free and available to all at the following link: https://cgee-hamline.org/MMGWeb/HIFB/

Hawai‘i’s Forest Birds: A Learning Resource

Puaiohi & Mosquito Study Story Maps



Two additional multi-media resources called Story Maps were recently created by KFBRP’s in-house staff members, Allison Cabrera and Dana Courtney.

Allison’s Story Map is a detailed account of mosquito studies that were conducted in the fall of 2020 and includes videos, photographs, charts, and the results of the study. Students can learn how mosquitos affect bird populations while investigating beautiful imagery and detailed maps. Students can also learn all about the birds from both biological and cultural accounts.

Dana’s Story Map focuses on the rare and endangered Puaiohi. Students can explore beautiful maps that include a wealth of multimedia information about the Puaiohi’s habitat, their life history, threats, and recovery efforts.

These Story Maps are hidden gems for teachers and homeschooling parents. They are free and easy to access using the following links:

Mosquito Study Story Map by Allison Cabrera:
https://arcg.is/1uCX1P

Puaiohi Story Map by Dana Courtney:
https://arcg.is/0zTfHy

In the Words of Jim Denny: It's Sad Like a Funeral

by Dana Courtney

I was recently blessed to preview a group of videos of bird biologists and enthusiasts interviewed by the Kauaʻi Forest Bird Recovery Project (KFBRP). KFBRP spoke with the people who knew many of our Hawaiian forest birds before they were no longer with us and with those who spent an innumerable amount of hours studying and watching and getting to know the forest and its inhabitants. One of those videos was of an interview with Jim Denny, a devoted birder and photographer of Hawaiian forest birds...and of all birds that can be found on Kauaʻi.

Jim Denny spoke about the differences in the native forest from when he first started going in to photograph the birds and the forest today. The forest he was referring to is off of the Pihea Trail that eventually winds its way into the Alakaʻi Wilderness, which is essentially home to all of the remaining native forest birds. Not only has the vegetation changed significantly due to invasive plants outcompeting native vegetation, but the sound is different. Thirty years ago it was a cacophony of sound. A chorus. The name "Pihea" itself means cacophony. Each person that was interviewed spoke of this. According to Jim, the number of birds that were there 30 years ago is "indescribable and a thing not to be forgotten". I had more than a tinge of jealousy hit me when I heard that. Because now, well now - in Jim's words, it's sad and depressing to even go to those same places anymore.

Why? Because it's gone. That sound. That cacophony. That chorus. The birds are gone from there. Jim referred to something Andrew Berger, a renowned ornithologist, said about a forest devoid of birds. "All you hear is the wind and the trees and the water dripping off of the leaves." And Jim describes, that is how it became on Kauaʻi. Fellow bird enthusiast and recorder, David Kuhn, describes the forest as "lonely" now. Jim is noticeably sad in his interview as he ponders the change he has seen in his lifetime. "It's sad. Sad like a funeral," he says with tears in his eyes.

We lost ʻōʻū, ʻōʻō, kāmaʻo, and very likely, nukupuʻu. Now we focus our efforts on critically endangered ʻakikiki, ʻakekeʻe, puaiohi, and the threatened ʻiʻiwi.

Image: John Gerrard Keulemans

And despite Jim's sadness for all those we have lost, he has hope. And there is hope.

There are ongoing efforts to prevent extinction and hopefully lead to recovered populations of all four species in addition to improving conditions for their feathered friends the ʻapapane , ʻelepaio, and ʻanianiau. We know more about avian malaria and pox and the birds who fortunately seem to have some resistance. We may have figured out an ingenious way to stop the spread of avian diseases by using a naturally-occuring intracellular bacteria called *Wolbachia* (more info on our mosquito FAQ page). Rats and cats are actively kept from ruining nests or killing fledglings through predator control practices. Invasive plants are being removed to make way for the native vegetation that provides food, habitat, and nesting resources to these birds. Education and outreach efforts are informing people about Rapid ʻŌhiʻa Death (ROD) and how to stop the spread. And like the ʻalalā on the Big Island, three of the four species have been or are currently a part of a captive breeding program to include reintroduction.

You may be wondering how you can help these Kauaʻi birds and no matter where you live, you CAN help. Much of the loss of good habitat for the forest birds is due to a change in climate. Mosquitoes now thrive at higher elevations than they have in the past, making it difficult to impossible for birds to be out of range of the vectors of avian malaria and pox. For a list of ways that you can help, please visit our website: https://kauaiforestbirds.org/bird-friendly-actions/

Mostly, I encourage you to learn and to care about these Hawaiian forest birds that may not be with us for long despite our best efforts. Extinction happens a little at a time but just like time passes from year to year, it can happen quickly. The native forest birds are part of a culture and a history that are also fighting to survive against many of the same types of elements - introduced populations, competition for resources, a smaller and changed habitat. Even though these birds are harder to find, harder to get to know, and may take some effort to appreciate, now is the time to know them, help them, do your part - before it's too late.

The Cultural Component of Conservation

Blessing request and history:

In 2012, Dr. Lisa 'Cali' Crampton asked members of Ka 'Imi Na'auao o Hawai'i Nei Institute (Ka 'Imi) to do a Hawaiian blessing for the Kaua'i Forest Bird Recovery Project's spring research season. Researchers were poised to release 22 captive-bred critically endangered native Puaiohi into the forest in Kōke'e State Park and wanted to do everything possible to help them survive and thrive. She also wanted to introduce the research staff, many of whom were raised and educated in the Continental United States, to Hawaiian cultural protocol.

Ka 'Imi is a non-profit organization founded in 1977 whose mission is to "search for the truth of the Hawaiian culture. Through hula, to help restore the culture to its original dignity and teach how to understand, enjoy and appreciate the medicine, science, art, language, crafts, philosophy and religion of the Hawaiian people." Development of an appropriate program to be held in the forest for forest workers benefitted both organizations. Ka 'Imi kumu hula (teachers) and haumāna (students) used the opportunity to learn more about Kōke'e's endangered birds and were inspired to create an appropriate program mixing traditional and new oli (chant), mele (song) and hula (dance) honoring the goals of the researchers for the spring season.

Forest protocol – hula style:

In 2008, Ka 'Imi secured an agreement with the Hawai'i Department of Land and Natural Resources to mālama (care for) a section of the Kōke'e forest known as Pōhaku Hula. In the mid-70s and early 80s, our Kumu Hula, Roselle Bailey, used this site to teach haumāna where and how to gather lei materials and care for forest plants. Weed clearing and native planting at this site developed into a continuous service project for Ka 'Imi and included collaboration with the Kōke'e Resource Conservation staff's weed eradication work. It was therefore appropriate that the KFBRP blessings were held at Pōhaku Hula. After the blessing, conservation staff helped clear invasive blackberry, ginger, and guava from the site.

Ka 'Imi members were inspired to use Kumu Bailey's teachings of appropriate oli, mele and hula to energetically support KFBRP while the conservation organizations helped work in the physical ecosystem. With KFBRP's encouragement, kumu, haumāna and conservation organizations, including the Kaua'i Invasive Species Committee, grew the collaboration each year, engaging more organizations and individuals in an annual event. In 2019, the spring event engaged four conservation organizations with more than 30 individuals participating.

Inspiration for participants:

Keahi Manea, kumu: "we are hula people and our attention had mostly been on lei plants. Our forest work focused on clearing weeds and replacing them with native plants for hula. Before this collaboration, some of us didn't know much about the native birds, especially the ones that are critically endangered. The collaboration has inspired us do research in order to haku (compose) new oli and mele, choreograph and perform new hula expressing the relationship of plants and birds and their environment. All of these endeavors reflect and perpetuate the teaching of our kumu about science as a vital part of Hawaiian culture. www.kaimi.org

Louise Arakaki, haumāna: I feel so fortunate to be a part of a vibrant, living culture. I have always admired my kumu for their ability to take Kumu Roselle's teachings and pass them on as well as creating new oli and choreography, enhanced by their deep study of the Hawaiian language. When we started working in the forest, to me it was a blending of my love of gardening and my love of the forest, and to do it with my hula sisters was an extra bonus. But when we began our relationship with KFBRP it seemed that things just jumped a level. Our kumu used their knowledge base as a foundation to explore new territory and we became active participants in a larger community of people who, in their own ways, were also caring for the 'āina and I felt the power of that growing relationship and larger vision.

CONTINUED

Penny Prior, haumāna: going into the forest in Kōke'e has always been a magical and wonderful experience.

As a hula dancer it is important to tune into the forest and learn about the plants and wildlife. Learning more about the native birds through the KFBRP has been special and rewarding. The program is heroic and it is good to meet the people who are so dedicated to saving the our endangered birds. It feels good to be a part of blessing their work.

Pat Finberg, Ka 'Imi Treasurer: as a member of Ka 'Imi exploring and learning about the Kōke'e forest for over 4 decades, the birds have always been a highlight. We've learned oli and hula about what once was a flourishing population of native birds and plants which were sustainably used, enjoyed and cared for. It's so sad to witness how the forest has dramatically changed in a relatively short time ... fewer native birds are sighted or heard, invasive plants strangling native plants, and wildlife destroying the natural habitat of the birds. My involvement in the seasonal blessing introduced me to KFBRP and their dedication and invaluable work for the survival of forest birds. Their effort is raising awareness and making a difference in the survival of the diminishing native bird population. Their work inspired me to become more active in forest preservation and conservation and in turn, others become involved. It is so important to know our history, increase cultural awareness and be active stewards of the forest and all its treasures… Mahalo to KFBRP, their staff, volunteers and supporters! Imua!

Kaua'i Forest Bird Recovery Project

For more information about our projects, please contact us or visit us on the web.
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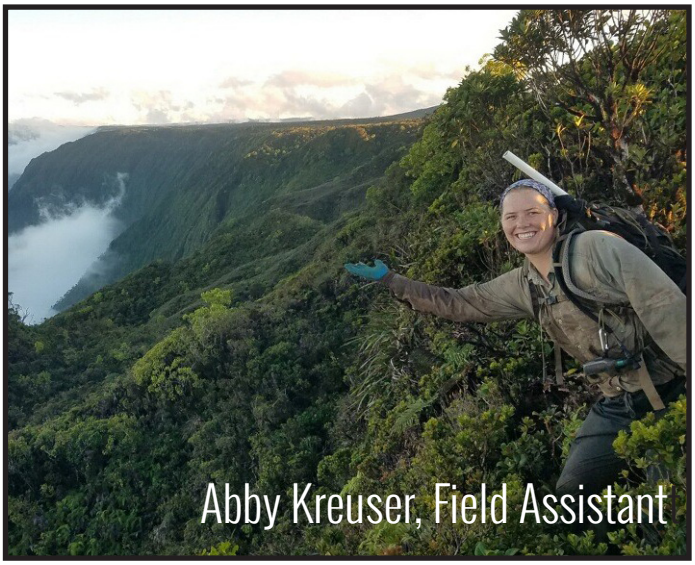
Our Nonprofit Partner:
Garden Island Research Conservation and Development

NEW FACES

Abby's first introduction into the bird world was participating in undergraduate research projects on the cooperatively breeding Brown-headed Nuthatch at Tall Timbers Research Station while studying biology as an undergraduate at Florida State University. Abby moved to Kauaʻi in 2018 to work as the Americorps Kupu Service Member for KFBRP. After finishing her term, she immediately began working for Kauaʻi Endangered Seabird Recovery Project for the 2019 season. In 2020, she authored two papers on the decay of rats in the Alakaʻi with data collected during her term to give KFBRP insight into how long rat carcasses could remain under an A24 trap (refer to page 1). Abby is stoked to research and hang out with the native birds of the Alakaʻi once again.



Abby Kreuser, Field Assistant

Kate Maley, Field Assistant

Kate discovered a love of birds and field work while attending the University of Wisconsin – Madison. Since then, she has been fortunate enough to work with birds ranging from Northern Saw-whet Owls in her home state of Minnesota, to Canada Warblers in the southern Appalachians, to Greater Anis in Panama. She is excited to learn more about tropical ecology this season and to experience all that Kauaʻi and the forest birds have to offer.

Clairice Drexler, Field Assistant

Originally from Connecticut, Clairice graduated from Marist College with a B.S. in Environmental Science and Policy. She has always had appreciation and enthusiasm for nature and grew up spending as much time as possible outdoors. Her passion for wildlife conservation was sparked while working with Blanding's turtles and American glass eels in the Hudson Valley. In 2020, she had the opportunity to work with the Kauaʻi Endangered Seabird Recovery Project and loved it! Now, Clairice is excited to be a part of KFBRP and helping protect the beautiful endemic songbirds of Hawaiʻi. In her free time, Clairice loves to sing and enjoys cracking open a good book at the beach!

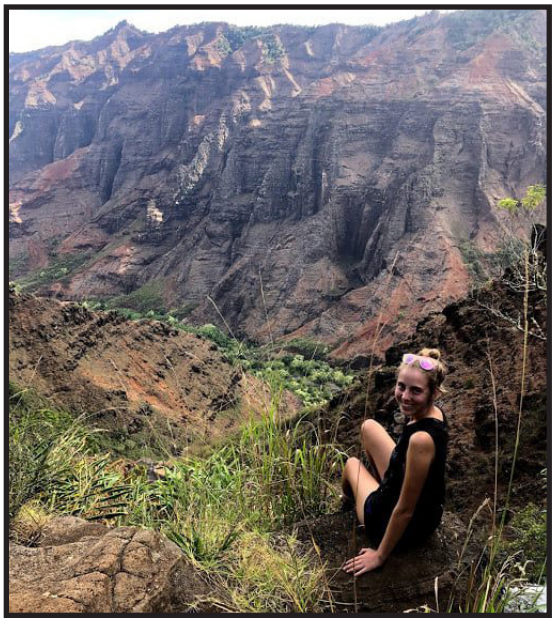
Melissa Simon, Field Assistant

Melissa's fascination with avian ecology began in her undergraduate ornithology course at LSU, where she developed a passion that has fueled almost five years of seasonal fieldwork. Upon graduating with a degree in Conservation Biology, she spent three consecutive summers in the Sierra Nevada monitoring Willow Flycatchers, banding breeding songbirds, and falling in love with the itinerant field tech lifestyle. She has also worked at migration banding stations in Maryland and Louisiana, as well as on Southeast Farallon Island surveying a vast array of wildlife.

This is Melissa's first season with KFBRP, and she is thrilled to have the opportunity to spend time in the Alakaʻi getting to know the flora and fauna.

Kurt Ongman, Field Assistant

Kurt's early curiosities in wildlife and natural history led him to attend Humboldt State University where he graduated with a BS in Wildlife Management and Conservation in 2014. Since then, he has worked numerous avian field positions for federal, military, and tribal agencies, in addition to academic institutions. His experiences have ranged from studying Andean foothill bird communities, monitoring migrant landbirds on Southeast Farallon Island, leading bird banding operations in Yosemite National Park, and conducting ten seasons of owl monitoring across the Western US. Kurt is an avid birder and loves to travel, fish, and spend any opportunity in the outdoors.



Katie van Dyk, Field Assistant

Katie grew up in the beautiful state of Oregon where she earned a B.S. in Environmental Science from Linfield University. Her interest in birds sparked while she was attending graduate school at the University of Hawaiʻi at Hilo. There, she studied the feeding preferences and seasonality trends of nectarivorous Hawaiian forest birds. Upon completing her M.S. in Tropical Conservation Biology and Environmental Science, Katie served as a Peace Corps Volunteer working in coastal resource management in the Philippines. She returned to Hawaiʻi in 2020 to work with the Kauaʻi Endangered Seabird Recovery Project and is excited to now be part of KFBRP. In her free time, Katie enjoys hiking, scuba diving, and playing the flute.