Semi Annual Report | Fall 2016

Kiwikiu news

The Buzz on Hawaii's Vanishing Birds

It's hard to avoid the current buzz. We have been inundated by the media about mosquitoes and the diseases they carry (e.g. zika virus). In Hawaii, we are not immune from these threats, but humans are not the only ones struggling with mosquito vectored diseases. Hawaii's native honeycreepers have been dealing with it for almost a century.

Mosquitoes are not part of Hawaii's native ecosystems and have had a significant negative impact on Hawaii's native bird populations. There were once > 50 species of Hawaiian honeycreepers, found nowhere else in the world; now only maybe 17 species survive. Their decline has been linked to a range of factors; habitat loss, predation, competition, and disease. The most harmful of these is avian malaria, a disease which transmits a parasite through mosquito bites. With no natural immunity, Hawaii's honeycreepers are highly susceptible, making the disease typically fatal. Cool temperatures at high elevations limit the spread of mosquitos as well as the parasite. These upper elevations are the last disease-free hold-outs for honeycreepers. *Culex quinquefasciatus*, the southern house mosquito, is the only species in Hawaii that spreads avian malaria. Addressing avian malaria is critical to the survival of these highly valued birds. Unfortunately, typical control methods for these mosquitoes are not appropriate or feasible on a landscape scale and there are no vaccines available for the birds.

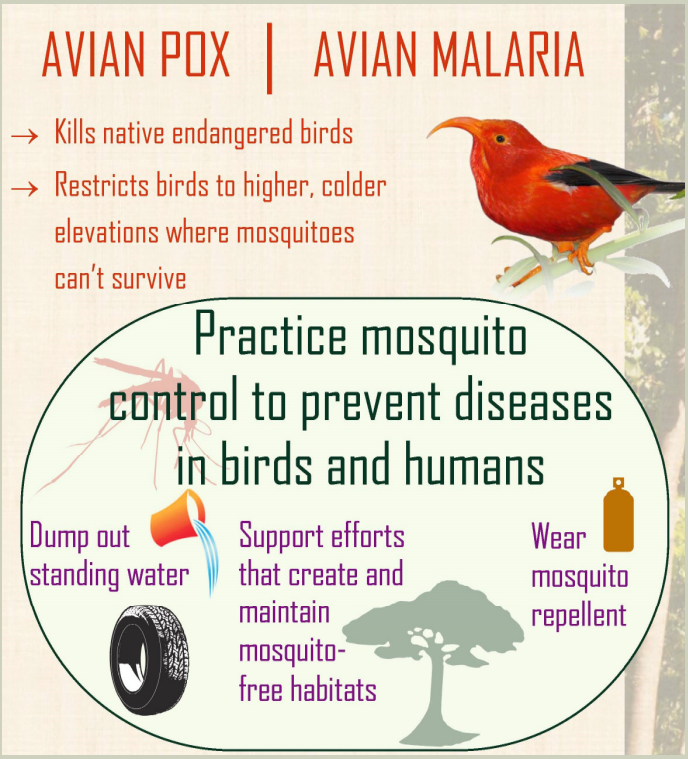
Recent publications (see Paxton et al. 2016 and Fortini et al. 2015) have highlighted a new urgency to deal with this situation in light of projected climate change. As the climate warms, the parasite and mosquitos will be able to move into higher elevations. These papers found rapid range contraction in many bird species. By the end of this century, there may be less than 100 km^2 of disease-free habitat available for most species.

Fortunately, in the last decade we have seen significant advances in mosquito control. These technologies can be grouped into two broad categories: the sterile insect technique (SIT) and the population replacement technique. SIT is when a system is flooded with sterile males that mate with wild females resulting in non-viable eggs. This approach is being applied elsewhere and the initial data look promising. The population replacement approach is when genetically modified mosquitoes are released into the environment. These mosquitoes can be designed to spread specific, beneficial genes throughout a population that may confer disease inhibition to or eliminate a population.

The advantages of these techniques are that they do not involve chemicals, are species-specific, can achieve landscape-scale control, can be self-limiting, and are especially effective against dispersed targets. Neither technique poses any risk to humans.

US Fish and Wildlife Service, Hawaii Department of Land and Natural Resources, and others are engaging potential partners that have a mandate to address avian malaria. There are specific challenges and questions that will have to be answered for these applications to be successful in Hawaii. With climate change predictions, there is an urgency to find solutions that work for people, our native forest birds, and Hawaii's native ecosystems as a whole.

Written by Joshua Fisher, US Fish and Wildlife Service



MAUI FOREST BIRD RECOVERY PROJECT—2465 OLINDA ROAD MAKAWAO, HI 96768
www.mauiforestbirds.org
office: 808.573.0280
info@mauiforestbirds.org

Avian Research & Management *Update*

During the spring, we continued monitoring avian demographics in Nakula Natural Area Reserve with point count transects and mist netting efforts.

~800 hours were dedicated towards banding this season. In Nakula, 251 birds were banded, including 47 Hawaii Amakihi and 53 Apapane. We had several recapture birds from last year and re-sights, which are used to calculate survival estimates.

Some of the banding effort was for a study with Smithsonian Institute and US Geological Survey. The goal was to characterize the genetic changes that are involved in the resistance and/or tolerance to avian malaria in Hawaii Amakihi and other species. See Spring 2016 newsletter. Over 140 RNA samples were collected from Kula Forest Reserve, Nakula NAR, The Nature Conservancy's Waikamoi Preserve, Garden of Eden, and Waihee Ridge Trail. Samples were sent to a lab for testing and results should shed more light on the evolution of disease resistance.

Next spring we will be partnering with several organizations and volunteers to complete the Hawaii Forest Bird Surveys on East Maui.

Photos: Top: Apapane. Bottom: Hanna Mounce giving presentation at IUCN World Conservation Congress.

Hawaiian Birds at the Crossroads

The International Union for Conservation of Nature (IUCN) held the 6th World Conservation Congress in Honolulu from 1–10 Sept. Over 10,000 people attended the various sessions, organized around the theme of "Planet at the Crossroads" which is particularly relevant for Hawaii's birds. Thanks to the efforts of local conservationists, IUCN recognized the urgent needs here and passed a motion recommending additional resources and actions to protect Hawaiian birds. One area where it had immediate results was the American Birding Association finally including Hawaii – increasing the awareness and support for our state's birds.

American Bird Conservancy organized and participated in several sessions focused on Hawaii's birds. One series of talks focused on local actions and successes with seabirds and forest birds – including a talk about Kiwikiu from MFBRP's Hanna Mounce. Another set examined the conflicts and communication problems faced in addressing feral cats, rodents, ungulates, and climate change to protect Hawaiian birds. The last two examined the possibility of biotechnology to save Hawaii's honeycreepers from avian malaria, or protect islands from rodents or halt rapid ohia death.

The conference was an intense whirlwind of conversations and connections, that everyone will be acting on over the coming months and years, to help save Hawaii's native species.

Written by Chris Farmer, American Bird Conservancy

New Publications
Visit mauiforestbirds.org to access all MFBRP publications.

- Ganaden, S. Fight or Flight. Flux Magazine Hawaii Summer 2016.

Holiday Gift Ideas for all Ages!!!!

Stuffed singing toys of your favorite birds, Akohekohe and Kiwikiu are for sale. Visit our website to order!

Nakula Forest Restoration *Update*

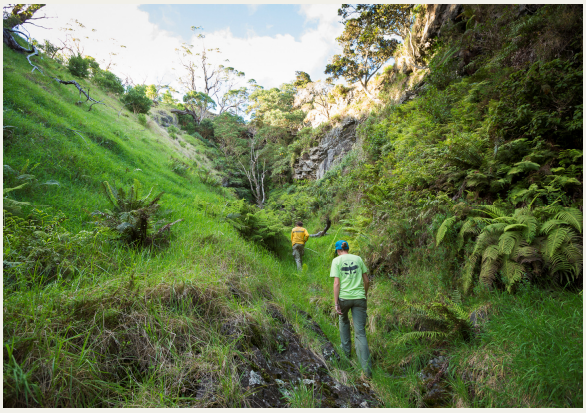
MFBRP is busy working on forest restoration in Nakula Natural Area Reserve on leeward east Maui. In addition to bird surveys and banding, we also planted a variety of native plants. By January 2017, we will have planted 43,000 seedlings over three years. We are completing a technical report on the result of experimental restoration trials we conducted over the past three years. Look out for this report soon!

From January-September, staff and volunteers worked over 3,300 hours in Nakula! This year, 602 seedlings were sponsored from our Plant a Tree program. Thank you all so much for this wonderful support!

Additionally, we are controlling non-native grasses. From our research, we learned that natural regeneration of aalii and koa seedlings can be increased rapidly by exposing bare soil. We have been busy weed whacking lines across the landscape to encourage this natural growth. Plots already have seedlings growing! The US Geological Survey is also monitoring these plots to learn more about these microhabitats.

Photos: Top: Aalii seedlings naturally growing in a weed whacked plot. A planted akala grows nearby. Below right: A gulch where MFBRP surveys for mosquitoes. Bottom left: Traps used to collect adult mosquitoes in The Nature Conservancy's Waikamoi Preserve.

Investigating for Blood-Suckers



Mosquitoes were introduced to Hawaii and spread avian disease. Having little or no resistance to these diseases, most native Hawaiian honeycreepers are restricted to high elevation forest, above ~4500 ft, where cooler temperatures prevent mosquito and disease development. Climate change could increase the range at which mosquitoes and avian disease are found due to warming temperatures and less rain flushing out stagnant pools of water where mosquitoes breed.

MFBRP has been surveying for mosquitos in Nakula over the past two years. We survey for both adults and larvae twice per season (winter, summer, and fall) each year. To do this, we follow three different gulches (or streambeds) searching for pools of water to inspect for larvae. Mosquito larvae are collected in vials and later identified by genus under the microscope. To catch adults, we use two kinds of traps that are set up in five locations. One trap has a bucket full of water to attract females wanting to lay her eggs. The other trap uses dry ice (which emits carbon dioxide) in a cooler to attract females seeking a blood meal. In both traps, a fan blows them into a net where they stay overnight. In the mornings, we check the nets, collect the adults, and later identify them by species. We then send them to a lab for disease testing. We hope to learn more about the mosquito distribution and disease occurrence in Nakula. Adult surveys are also being conducted in The Nature Conservancy's Waikamoi Preserve.

THANK YOU!

Thank you to our restoration volunteers who have helped in Nakula July-October: Chase Alexander, Cody Lang, Zach Pezzillo, Eli Rose, Tracey Borneman, Jacob Drucker, Jenna Bogen, Kurt Adams, Lawrence Warnock, Yarrow Flower, Greg Kostanoski, Liat Portner, Christa Seidl, Justin Varaljay, Nils Eckart, Stephanie Yelenik, Lucas Fortini, Michelle Smith, Stacy Montemayor, Justin Watts.

Project Support & Partnerships

Aloha from Nā Koa Manu President

My name is Bryan Berkowitz; I am a founding member and President of Nā Koa Manu Conservation, Inc. (NKMC). NKMC is a newly formed Maui based non-profit organization which has been created to protect and recover native Hawaiian bird populations, implement on-the-ground conservation management strategies, support/initiate forest and watershed restoration efforts, design and implement public education to gain support for the recovery of native Hawaiian birds and their habitat.

NKMC is the brainchild of our Executive Director, Hanna Mounce, and was formed to serve the role as a fiscal sponsor to MFBRP and other like-minded conservation groups. Other board members include Sarah McLane Bryan (Vice President & interim Secretary), Russell Adkins (Treasurer), and Pualani Enos. We were incorporated on May 22, 2015 and recently received our 501(c)3 federal tax status.

You can learn more about us at nkmconservation.org and sign up for our email list at nkmconservation.org/list. Feel free to email me at bryan@nkmconservation.org. We look forward to serving you.

EVENTS

► **For a full list of events, including past ones, see our website.**

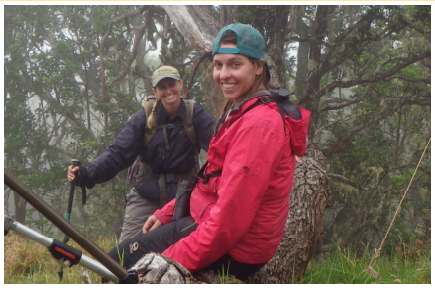
► **Give Hawaiian Airlines Miles.** Hawaiian Airlines matches up to a half a million miles. Donated miles are used for necessary travel. Saves project funds for work in the field.

Kokua our Seabirds

Seabirds nest in burrows from March-November. These birds spend most of their life at sea and only come to land to lay their eggs and raise their chicks. Adults come to land only at night and return to the same burrow with the same mate every year. Both parents incubate the single egg and feed the chick. The chicks depart burrows from October-November at night, being drawn out over the sea by the light of the stars and the moon. Unfortunately, some of them are distracted by electric lights, especially lights with high blue content. They circle the lights and become exhausted, landing or crashing on the ground. Once the fall out occurs these birds are in danger from pets, feral animals, and vehicle strike. If you find a seabird, wear gloves or use a towel to place the bird in a well ventilated box. Do not give it food or water and immediately **call 573-BIRD**. A wildlife specialist will determine when and where it's best to release the bird.

Take action this fall out season: Now – December

- Learn what a seabird looks like
- Call 573-BIRD if you find a grounded seabird
- Keep your dogs leashed & cats indoors
- Support seabird friendly lighting for public roads & local businesses
- Shield outdoor lights, face them down, use a timer or turn them off
- Avoid collapsing burrows by only walking on designated pathways
- Learn more at Maui Nui Seabird Recovery Project.



Aloha to our Field Associate, **Bob Taylor**, 2016 Kupu AmeriCorps, **Ariana Loehr,** and Kāpili ʻOihana intern, **Chase Alexander**.

E Komo Mai to our new Restoration Assistants, **KJ Passaro and Elyssa Kerr**, and 2017 Kupu AmeriCorps intern, **Zach Pezzillo**.

Mahalo to all our volunteers, donors, and supporters.