



FRIENDS

OF HAKALAU FOREST NATIONAL WILDLIFE REFUGE

President's Perch

As we approach the 30th year since the establishment of the Hakalau Forest National Wildlife Refuge, our Friends organization is moving forward with a bold plan to establish a land management endowment that will perpetually assist the Refuge in controlling invasive species. It is hoped that the endowment fund will eventually grow large enough to contribute \$100,000 to Refuge management each year. This additional source of funding will help sustain ongoing programs to maintain or establish fence lines, control ungulates, and remove invasive plant species that adversely affect forest regeneration and recovering native bird habitat.

In the future, we will be posting information on how to contribute to the endowment fund. We sincerely hope that all of you will help fund this very worthwhile endeavor. So far we have been able to secure the money needed to establish the endowment and are currently completing the paperwork that will formally establish it.

The Board has been busy with several other projects. In August, we will be sponsoring a talk by Michelle Reynolds, PhD, concerning research and efforts to assist several native bird species in the Northwest Hawaiian Islands. The talk will be held at the Mokupāpapa Discovery Center on Tuesday, Aug. 25, from 7 to 8 pm. The Center is located at the bottom of Waianuenue Avenue in downtown Hilo. Dr. Reynolds is a researcher with the USGS Pacific Island Ecosystem Research Center and is currently studying Laysan ducks and other bird species found in the Northwest Hawaiian Islands.



Photos of Open House by
Rob Shallenberger

The Refuge is currently planning another public open house at Hakalau Forest NWR. It is tentatively set for Saturday Oct. 10, 2015. Further information on this event will be posted on our Friends website in the near future. The event is sponsored by the Refuge as part of their public outreach. However, our Friends group has always participated by providing volunteers and funding to purchase miscellaneous items. If you wish to volunteer for the event please contact the Refuge office at (808) 443-2300.

Layne Yoshida, President, Friends of Hakalau Forest NWR

Newsletter #19

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Open House

The Hakalau Forest National Wildlife Refuge is open to the general public for special tours only twice each year, spring and fall. On Saturday, April 18, 2015, a total of 324 visitors made their way to the Refuge to attend the Spring Open House event and celebrate Earth Day. Weather was clear and dry for most of the day. Visitors were met at the Pua Akala barn by U.S. Fish and Wildlife Service staff and volunteers. This group provided information about refuge management practices and displayed educational exhibits in the barn. A record number of refuge volunteers (57 individuals) were on hand to organize educational games for children, direct traffic, secure gates, and offer assistance to guests. Refuge staff and volunteers guided rainforest hikes to observe rare and colorful native plants and birds. More than 107 individuals toured the



refuge greenhouse to view rare and endangered plants rescued from the brink of extinction and learn about current restoration efforts. The 130-year-old koa cabin at Pua Akala was visited by 132 people. A volunteer guide was on hand at the building to share its history and relate stories about the area. Self-guided walks, through a portion of high elevation forest, were available for more independent individuals. The Friends of Hakalau Forest assisted refuge staff with planning and conducting the open house event. Volunteers with this group contribute time and monetary donations and participate in fundraising efforts to help support the mission of Hakalau Forest NWR. The Friends group operated a booth at the Open House event, selling T-shirts, recordings of bird calls, snacks, bottled water, and other items. All income from the sales and monetary donations from public help fund programs and management efforts at Hakalau Forest NWR. The event was a great family oriented outing. It was an opportunity to visit the refuge, meet the staff, and examine management practices and cooperative reforestation efforts currently under way.



Jon Giffin, Friends of Hakalau Forest NWR Board Member



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Twenty Years of Forest Regeneration

One of the greatest conservation success stories over the past few decades in Hawai'i has been the purchase, fencing and removal of cattle and pigs within mauka areas of Hakalau Forest NWR. Over 150 years of grazing by cattle, and more recently, rooting by pigs, had left the understory and mid-canopy layers of the vegetation at Hakalau greatly altered. One of the main goals with fencing and ungulate removal was to allow the forests to recover, thereby increasing habitat for the native bird community. Has this worked? Has the forest begun regenerating? And if so, what are the patterns of this regeneration? As a graduate student at Hakalau in the mid-1990's, I mapped, tagged, and measured over 7,000 trees at Hakalau within 200 30m diameter plots. These trees were revisited 10 years later to get information on growth rates, age, and mortality rates of these trees. Then, in 2015 we finished a second resurvey of these trees, but this time tagging all new trees (>5cm diameter at breast height) that had sprouted up in the plots since the original survey 20 years ago. This allowed us to get a 20-year snapshot of the growth rates, death rates, and regeneration of the forest since removal of cattle and pigs. And the news is generally good! Overall abundance of the seven major tree species, including 'Ōhi'a, Koa, Kāwa'u, Kōlea lau nui, 'Ōlapa, Pilo, and Pūkiawe has increased from approximately 7000 to 11,000 trees in the plots (which scales up to a back-of-the-envelope estimate of 11 million trees currently on the refuge). 'Ōlapa has increased by 800%, Pilo by approximately 500%, Kāwa'u by 400 %, and Koa by approximately 250%. There has also been an increase in tree basal area of about 2.3m² per Ha, which indicates a significant change in the amount of living above-ground biomass over the past 20 years.

One characteristic of Hakalau that makes it so important to many of the native birds is its high density of large (>50 cm diameter) old-growth 'Ōhi'a and Koa trees. How have these trees fared over the past 20 years? The 20-year mortality rate for the 365 large 'Ōhi'a that were measured in our plots has been only 10.4%. Unfortunately, the mortality rate for Koa has been much higher, with approximately 33% of the 110 large trees dying over a 20-year period. Past work on the refuge has shown that Koa grow on average at least 4-5 times as fast as 'Ōhi'a, meaning that for large Koa and 'Ōhi'a of the same size, the 'Ōhi'a may be 4-5 times older than the Koa. This slow growth, long life strategy may be the reason why large 'Ōhi'a forests have persisted on the refuge in the face of over a century of grazing by ungulates, whereas large Koa were likely much more abundant than they are now. Our early surveys from the 1990's detected only a handful of young Koa trees (<25cm DBH) in the plots (young Koa are particularly tasty to cows!). With few saplings to replace the rapidly falling large trees, Koa may have disappeared from the refuge within decades. However, our most recent surveys show that young Koa trees have increased by over 1,500%! These trees should quickly reach large size and reach the canopy. This is good news for the birds and another success story in the ongoing management of Hakalau!

Patrick Hart, Department of Biology, University of Hawai'i at Hilo, Friends of Hakalau Forest NWR Board Member

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Celebrating Success ----- Confronting Challenge

2015 marks the 30th Anniversary of the Hakalau Forest National Wildlife Refuge. There are very good reasons to celebrate our accomplishments:

- Acquisition of 38,033 acres of native forest in two units
- Planting of more than one half million native plant seedlings
- Construction of more than 60 miles of fence to control pigs, cattle and sheep
- Outstanding collaboration with landowners, agencies and academic institutions
- Contribution of volunteer support valued in excess of \$100,000 per year
- Creation of an exceptional youth education program
- Formation of the non-profit Friends of Hakalau Forest NWR

Success in achieving our primary conservation mission is best demonstrated by the fact that Hakalau Refuge is the ONLY forest in Hawai'i where native forest bird populations are stable or increasing.

Our success notwithstanding, we are faced with enormous challenges:

- Pigs and invasive non-native plants are extremely difficult to control
- Fences are in disrepair and invasive plants are spreading
- Effective forest management is very costly and labor intensive
- Shifting budget priorities have seriously impacted the restoration effort
- Staffing shortfalls have resulted in substantial vandalism of fences and equipment

We are very pleased to report that in recent months the Refuge has received three substantial grants to accelerate fencing and control invasive weeds. Yet, to make a lasting difference, management MUST be aggressive and sustained. We believe that a dependable source of outside funding will be necessary to maintain this management momentum in the face of fluctuating Federal budgets. We propose to address the funding challenge head on, through creation of a land management endowment that will eventually provide consistent funding of approximately \$100,000 per year. The Friends of Hakalau Forest National Wildlife Refuge will formally launch the endowment project in October 2015, to coincide with the Hakalau Refuge Open House.

Rob Shallenberger, Friends of Hakalau Forest NWR Board Member

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Rapid 'Ōhi'a Death Threatens Big Island Forests

Forests across Hawai'i Island are being threatened by a new disease called 'Ōhi'a Wilt or **Rapid 'Ōhi'a Death**. The disease, as the name implies, causes rapid mortality in 'ōhi'a trees, with healthy trees succumbing within a few weeks of showing symptoms. Scientists have discovered that a new strain of the vascular wilt fungus *Ceratocystis fimbriata* causes the disease, but it is unknown how the disease reached Hawai'i. The center of the infestation is in lower Puna, where thousands of acres have been affected. The disease has also reached Hilo, and infected trees have been found as high up as 3,500 feet elevation along the Wailuku River, quite near to the Refuge. It is currently unknown how the disease spreads, but it could be spread by people moving wood, live plants, or even soil on shoes or vehicles. Wisely, the Refuge grows all its own 'ōhi'a plants and management is being extra careful in mandating sanitation measures for people and vehicles coming to the Refuge. Visitors and volunteers are asked to wash dirt or mud off the undersides of vehicles and disinfect tools and boots with 10% chlorine bleach, 70% isopropyl alcohol, 90% ethanol, or Lysol (R) (4 oz. / gallon water). It may also be that the cooler temperatures higher on the mountain will slow the growth of the fungus. For up-to-date information on the disease see www.ohiawilt.org.



Photo by J. B. Friday

J. B. Friday, Friends of Hakalau Forest NWR Board Member

Refuge Manager's Update

Concern about potential risks from 'ōhi'a wilt disease or Rapid 'Ōhi'a Death to the refuge's native forest is high on our list these days as awareness grows and new information comes out. Fortunately an interagency Rapid 'Ōhi'a Death Working Group, chaired by Dr. Ric Lopez of the U.S. Forest Service is now meeting monthly to compare notes, along with Friends Board member Dr. J. B. Friday who is at the forefront of the issue for the University of Hawai'i.

The Service's Pacific Islands Refuges and Monuments Office (PIRAMO) Administrative Team met on the Big Island during the week of July 6 and visited the refuge on July 8 for a tour.

We were also visited by Principle Acting Deputy Assistant Secretary for the Department of Interior (DOI), Kris Sarri from Washington, DC on July 15. Ms. Sarri was given a refuge tour by Hakalau Forest NWR staff and was accompanied by Matt Brown and Susan White, Monuments Supervisors for the PIRAMO office. She was in the islands to promote youth in the outdoors initiatives and other Departmental priorities, including visiting Hakalau Forest and Hawai'i

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Volcanoes National Park to see firsthand some of the conservation areas covered in DOI's "Island Forests at Risk" land acquisition proposal. The proposal includes the 2012 expansion plan for Hakalau, now the top acquisition funding priority for refuges.

Local education groups from the Teaching Change program visited the refuge May 12-13 and May 20-21, while 'Imi Pono no ka 'Aina (www.facebook.com/imi.pono.no.ka.aina) visited on July 3rd. A student group from the Miami University (Ohio) returned to Hakalau Forest NWR for the 3rd year. They are affiliated with the Project Dragonfly field program a collaborative conservation effort with many zoological institutions. (<http://gfp.projectdragonfly.org/>)

Special Note: Several volunteer groups have been cancelled in recent months and we apologize for any inconvenience this has caused as we value all of our volunteers and we know the refuge would simply not be the place it is today were it not for the thousands of days of effort contributed by them. Many are also Friends members. We ask for the continued patience of everyone involved as we adjust to the times and find the appropriate balance for the staff. We expect to reduce the number of volunteer weekends and because we have been booked for years in advance that will require more cancellations. **Mahalo to all our volunteers for your past service and for your understanding.**

Progress: Fence Construction (Phase II) work began on the lower section of the Kona Forest Unit under contract with L&J Construction and is expected to be completed by the end of September.

Challenges: Access to the Kona Forest Unit was temporarily interrupted in early May by a landowner changing the gate/lock arrangement. This act eliminated the refuge lock in violation of the access easement agreement negotiated as part of the previous Kona Forest lawsuit settlement in 2007. DOI Solicitors and the United States Attorney's office in Honolulu have been asked to intervene in order to assure restoration of the refuge lock. This is necessary to provide unencumbered access to refuge land for staff, contractors and our conservation partners to get conservation work done

The Pacific Region NWR program is currently undertaking a workforce planning exercise that will allow for adjusting to our changing budget and staffing situation in a strategic way. Staffing levels nationwide have been impacted already. Some 430 positions have been lost already since 2010 and the National Wildlife Refuge System budget has been reduced by \$29 million. We estimate it would take an increase of \$10-15 million each year just to keep pace with inflation so you will understand why we are sharing staff across multiple stations, declining or severely limiting new projects, cutting out certain programs entirely and reducing others to restore balance to our operations. However, the Refuge is currently in the process of reviewing applicants for two current Pest Control Worker vacancies and we hope to have decisions made by the end of August.

Jim Kraus, Refuge Manager, Hakalau Forest NWR