



'ELEPAIO

Journal of the
Hawaii Audubon Society
For the Protection of
Hawai'i's Native Wildlife

VOLUME 80, NUMBER 1

JANUARY / FEBRUARY 2020

Invasive Insect Is Rapidly Spreading Across Hawai'i and Threatening Naio Plants at Freeman Seabird Preserve

Myoporum thrips (*Klambothrips myopori*) are dark brown to black, elongated, 2-2.5 mm (1/20 in) small insects and were first detected on O'ahu in November of 2018.

Causing extensive damage on the ornamental Myoporum species along the California Coast since 2005, they were accidentally introduced to Hawai'i by the horticultural trade. The pest was first found on cultivated trees in resorts of the northwestern part of Big Island in December of 2008. By that time, wind had probably already spread the thrips to native forests, where resulting damage has been devastating for one important plant.

The Hawaiian common name "Naio thrips" refers to their exclusive diet here in Hawai'i, the native Naio (*Myoporum sandwicense*, false sandalwood). The gall-inducing Tasmanian natives ravage the plant by sucking the sap out of young leaves, resulting in defoliation, dieback, and eventually killing the plant. They have no known local natural enemies, and there are no effective pesticide treatments available so far.

Naio plants are widely distributed across most of the Hawaiian Islands, from the coastlines high up the mountain slopes of Haleakalā and Mauna Kea. Naio is culturally (the wood is used for construction of homes, craft, etc.) as well as ecologically important. This extremely versatile and wind, salt, and drought hardy plant is not only vital to prevent erosion, but also provides shelter and nest sites for



HAS Board member and Freeman Seabird Coordinator (FSP) Alice Roberts shows the tiny Naio thrips on an affected plant, photo credit Alice Roberts.

Healthy Naio plant with clay modules for the birds in March 2019 (top) by the gate of SFP and same Naio (bottom) infested with thrips and starting leaf curls and folds in mid-November 2019, photo credit Alice Roberts.

indigenous birds like Palila, Laysan Albatross, or Wedge-tailed Shearwaters.

By November 2018, thrips had found their way to O‘ahu, where they were first detected in the Kapālama/Kalihi area. A DLNR news release from February 15, 2019 <https://dlnr.hawaii.gov/blog/2019/02/15/nr19-034> reported about the confirmed sighting:

“...A quick response was mounted, thanks in great part to an Early Detection and Rapid Response Plan. In 2014 the Hawai‘i Invasive Species Council (HISC) provided funding to DLNR’s Division of Forestry and Wildlife (DOFAW) to draft the plan in cooperation with HDOA and O‘ahu Invasive Species Committee (OISC). Meetings to address the infestation included representatives from Joint Base Pearl Harbor-Hickam, O‘ahu Army Natural Resources Program, Bishop Museum, Honolulu City & County Botanical Gardens, the Honolulu Zoo, Kamehameha Schools, U.S. Fish and Wildlife Service, O‘ahu Invasive Species Committee (OISC) and several private citizens. They each surveyed naio on lands under their control and OISC surveyed other properties. Of the 619 plants surveyed, only 42 showed signs of *Myoporum* thrips at ten different locations around O‘ahu. Seven locations have been treated which includes cutting down infested trees, spraying them with insect killing soap, tarping them, and then disposing them away from the property. Yesterday, DOFAW and OISC crews with the help from a couple of university interns finished removing ten trees from the Honolulu Forest Reserve in the Moanalua area...”

Despite these quick and manifold efforts, thrips spread out further, and by October 2019, they reached the State Kalanimoku Building native garden (DLNR news release from October 2, 2019 <https://dlnr.hawaii.gov/blog/2019/10/02/nr19-170/>):

“..They’ve been removed by O‘ahu Invasive Species Committee (OISC) staff. The crew clipped off the infested ends, removed entire plants and transported them to H-Power to be burned. A few months ago, thrips were also discovered in DLNR Chair Suzanne Case’s yard. Landscaped naio will provide a jumping off point for these insects and help them spread to important wild spaces like Ka‘ena Point, the Kaiwi Shoreline, the National Wildlife Refuge at Kalaeloa and the offshore islets. Removing infected landscape naio is the best way to preserve O‘ahu’s wild naio for future generations...”

Until this year, Naio bushes on Freeman Seabird Preserve (FSP) protected Wedge-tailed Shearwaters chicks and adults from the elements and were an important part of the

preserve’s landscape.



Breeding Wedge-tailed Shearwater parent under a Naio at FSP, photo credit Alice Roberts.

At the beginning of 2019, dedicated volunteers were trimming Naio plants as part of the annual habitat restoration and did not detect any signs of the pest during this process. In summer 2019, thrip infestation was reported in the nearby Diamond Head area, and alarmed by having this insect pest on the doorstep of the preserve, the plants were closely being monitored.

Shortly after the annual egg count in mid-July, the first heavily infested plant had to be removed by an OISC representative. On either side, he additionally trimmed two Naio that showed first signs of thrip infestation.



OISC representative treating the infested Naio at FSP, photo credit Alice Roberts.

He double bagged the cut up branches, sprayed them and left the bag in the sun heat to kill the thrips. This initial spot treatment was necessary to prevent endangering the hundreds of birds, who were still occupying the preserve. Unfortunately, it did not eliminate the threat and the OISC’s next step is to remove all Naio plants as soon as the Wedge-

tail Shearwaters have left for the winter months and replace them with another native shrub.



Initial treatment of the infested Naio plant by OISC, photo credit Alice Roberts.

Possible replacement options should shed not too many leaves, provide shelter for the birds, and be drought resistant; some considered suitable include Hao, ‘A‘ali‘i, or Pōhinahina. First replanting of Hao (plant of the milkweed family, which also includes Plumeria) took place in September 2019.



Newly planted Hao as replacement for Naio, photo credit Alice Roberts.

Invasive Species Awareness Week

The last week of February is National Invasive Species Awareness Week. Check <https://www.nisaw.org/> for events that put the focus on preventing and managing damage caused by the invasion of non-native animals and plants. According to the DLNR, invasive species are defined as “(1) harmful to the environment, economy, and/or human health, and (2) not native to Hawaii (i.e., species that were

introduced by human assistance rather than by their own means of introduction)”; for more details go to <https://dlnr.hawaii.gov/hisc/info/>.

Birds listed as invasive by the DLNR include, e.g., Barn Owl, Red-masked Parakeet, Red-whiskered Bulbul, and Rose-ringed Parakeet.

The State Legislature states in SB871 that, “...the invasion of Hawai‘i by insects, disease-bearing organisms, snakes, weeds, and other pests is the single greatest threat to Hawai‘i’s economy and natural environment and to the health and lifestyle of Hawai‘i’s people...”. This most recent incident shows again how devastating the accidental (or deliberate) introduction of invasive species can be for native fauna and flora alike.

The OISC calls for your help. If you would like to assist with thrip control, participate in ADOPT-A-NAIO, a program to encourage the public to monitor and report thrip infestation on Naio plants. You may see Naio at a beach park, in the grocery store parking lot, around your school or at your workplace, or on hikes in the forest. To report thrips on Naio contact: oisc@hawaii.edu, (808) 286-4616, or visit <https://www.oahuisc.org/naio-thrips/> for more information.

School Trip Reflections

On November 4, 2019, HAS Board member Yvonne Chan took some students of her ‘Iolani Senior class on a field trip to FSP. As part of the Environmental Science course, they learned all about Wedge-tailed Shearwaters and got up close to this year’s fledglings just before they left their nests to return in spring.

It remains to hope that this next generation will have the insight and opportunity to take better care of our planet than the ones before and be able to stop the current environmental atrocities on time. One of the students, Annie Heinze, reflects on her visit:

“I’m glad that we had some background on the Wedge-tailed Shearwaters before visiting the nature preserve. I am also glad that I ended up learning more about them. I learned that Shearwaters typically dive for around thirty seconds, with the deepest dive at around ten meters. I also learned that the Shearwaters tend to vomit when being handled and that their vomit is used by researchers to see what the gizzards of a Shearwater cannot break down. Sadly, most Shearwater chicks have ingested plastic, but they do not ingest as much plastic as albatrosses do. The Hawaii Audubon Society creates safe spaces and homes for the Shearwaters to reside

in. The survival challenges that the Shearwaters usually face are minimized at the Freeman Nature Preserve. Precautions are taken to ensure that predators and humans are not as great threats to the Shearwater population at the preserve.

I was already pretty aware of the biodiversity crisis and how it is especially threatening to native Hawaiian species. This visit definitely acted as a reminder on how important it is to preserve native species everywhere, especially because most are disappearing at an alarming rate due to inhospitable conditions. I did not know seabirds were at such great risk, but after learning about how slowly they reproduce and how difficult it is to do so, I understand now that even animals that one may not expect to be at risk are at risk.

This visit caused me to look at seabirds differently. Like I mentioned earlier, I did not really think that seabirds were at risk because I assumed they would be able to migrate to other places that are more hospitable. However, we are running out of places in the world that are hospitable to all animals. Additionally, before this visit to Black Point, I did not really know much about the nature preserve or the Hawaii Audubon Society. This visit was important to me because I feel more educated and inclined to take more action towards wildlife conservation.

This simple visit moved me. I could see that the people there were dedicated to their work, and I think more visits like these for students would be extremely beneficial to the community and to the bird population. Now that I am more aware of the status of these Shearwaters, I feel motivated to do things that will continue the protection of these birds (and animals around the world). I want to volunteer to work at the preserve before going off to college, because I think getting members of a community involved in the protection of endangered species and the maintenance of areas that protect them is very important.”

Hawaii Audubon Society Board of Directors 2020

Mahalo nui loa to all our Board members for your ongoing efforts! Re-elected for a two-year term are:

Linda Paul (President), **Yvonne Chan**, **Rich Downs**, **Elizabeth Kumabe-Maynard** (Vice President), **Wendy Kuntz**, **Susan Scott**, **Kaily Wakefield** (Secretary)

Continuing to serve as Board members will be:

John Harrison (Treasurer), **Pat Moriyasu**, **Alice Roberts**

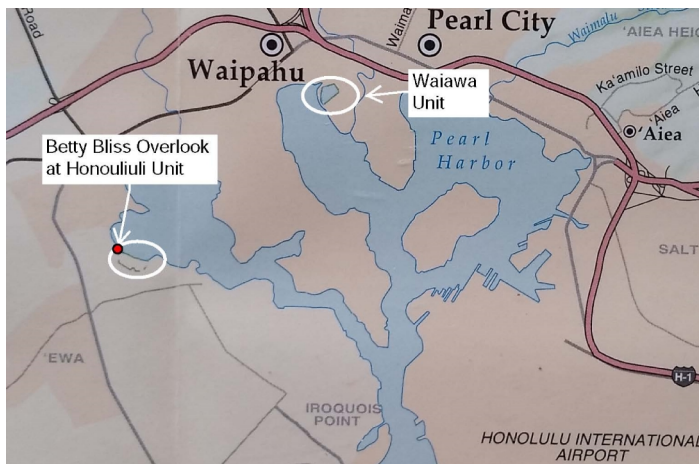
Welcome our newest Board member, **Colleen Soares!**

Colleen will be serving a one-year term.

In addition to joining the HAS Board of Directors 2020, Colleen has been an active Sierra Club Outing leader for ten years and a volunteer Chair of the O’ahu Group Outing Committee. She has led many service trips and hikes on O’ahu and organized and participated with DLNR in service trips to Mt. Ka’ala and Ka’ena Point Natural Area Reserves. She has also led tours at James Campbell National Wildlife Refuge and a tour of the Pacific Rim Conservation Bird Relocation (PRCBR) project. She further volunteered at the Army Natural Resources Program OANRP, at Christmas Bird Counts, at Freeman Seabird Preserve, and at the PRCBR project at James Campbell NWR.

Betty Nagamine Bliss Memorial Overlook

The overlook is located on the Honouliuli Unit of the Pearl Harbor National Wildlife Refuge (PHNWR). It was opened in 2016 and offers great views of Pearl Harbor’s West Loch and the refuge. It is a memorial to Hawaiian environmentalist Betty Nagamine Bliss (1931-1996), former HAS member and advocate for creating PHNWR as mitigation for the destruction of wildlife habitat caused by the construction of the Honolulu Airport’s Reef Runway. Read about HAS’s position on the runway issue in the ‘Elepaio 33:2. The Honouliuli (36.5 acres) and Waiawa (24.5 acres) wetlands offer a sanctuary for migratory shorebirds and Hawaiian water birds alike, including four of Hawai‘i’s endangered species: A’eo (Hawaiian stilt), ‘Alae Ke’oke’o (Hawaiian coot), ‘Alae ‘Ula (Hawaiian moorhen), and Koloa Maoli (Hawaiian duck). HAS is planning a trip to the Betty Nagamine Bliss Memorial this year, check the HAS website for regular updates.



For more information about the refuge go to https://www.fws.gov/refuge/Pearl_Harbor/wildlife_and_habitat.html

Honolulu Seabird: The Manu-o-Kū

“Hey! What’s that pigeon doing?”
“That’s no pigeon, it’s a manu-o-Kū!”

By Kim Kessler

This article is about the manu-o-Kū, an endemic threatened seabird, named after a Hawaiian deity. These birds are important to the Hawaiian people at least in part because the manu-o-Kū guides Hawaiian voyagers safely back to land. It will give exposure about the manu-o-Kū to Honolulu’s visitors and local people. With more awareness, we can help conserve this important bird.

Seabird of Gods

The White Tern (*Gygis alba*), otherwise known as manu-o-Kū (pronounced mah-NOO oh KOO) is a pure white native seabird with large dark eyes. In the Hawaiian language, manu means bird and Kū is one of the principal Hawaiian deities. Manu-o-Kū catch fish at sea and are sometimes seen carrying fish to land to feed their chick. Traditional Hawaiian voyagers rely on sightings of these birds as a sign that land is near.

Urban Occupants

Although manu-o-Kū are found in Hawai`i’s Northwestern Hawaiian Islands, a growing number are choosing to nest in downtown Honolulu. Known to breed year round, the peak breeding season on O`ahu is during the winter months. Fledging, the time the egg has hatched to the time the chick leaves the natal tree, can take as many as four months.



Manu-O-Kū egg, photo credit: Kimo Stowell.

The first manu-o-Kū nest site was documented at Koko Head near a popular hiking trail in 1961.

Presently, Honolulu manu-o-Kū numbers have increased to about 2,500 birds. “No one knows why they choose trees on busy streets to raise their young,” says manu-o-Kū expert, Rich Downs. “We suspect there are fewer predators in urban settings. All the tree trimming that happens in town improves the breeding habitat for these birds.” Formerly, it was thought best not to trim trees with nesting manu-o-Kū or chicks, however, there is now evidence both nesting manu-o-Kū and chicks can tolerate tree trimmers as long as they are cautious when working near nest sites and are careful where branches fall. Terns are better off with trimmed trees, so they have ample space between branches for chicks to fledge and less cover for predators. Some predators of the manu-o-Kū include rats, feral cats, mongoose, and barn owls, of which there are few, on the busy streets of Honolulu.

No Nest Needed

Another unusual trait of the manu-o-Kū is these birds lay a single egg in the cup of a tree branch, without building a nest. Manu-o-Kū prefer tall trees with rough bark and angled branches, including monkeypod, kukui, and mahogany trees, making the egg stable and giving the chick something to hold on to. The birds’ large partially-webbed and clawed feet help keep them securely in the tree even in strong winds. The female often lays her egg in the same tree knot each year.



Manu-O-Kū chick, photo credit: Kimo Stowell

Both male and female take turns sitting on the egg. Eggs are occasionally and briefly left unattended.

What Comes First? The Construction Project or the Egg?

Both! The manu-o-Kū is a protected species and considered “threatened” in the state of Hawaii. Under state law, it is illegal to conduct activities which will disturb a protected species without a permit from the Hawaii Department of Land and Natural Resources. While they primarily nest in downtown trees, sometimes manu-o-Kū will lay an egg on a human structure.

Due to their protected status, when a manu-o-Kū lays an egg, care must be taken to ensure the nesting spot is not disturbed. Due to their tolerance for human activity, it is possible to preserve their breeding habitat while developing our urban space. For example, during construction of the new International Market Place in Waikiki a few years ago, a commitment was made to preserve the huge iconic banyan tree the manu-o-Kū had long used for breeding.

As a result of that dedication to tern-sensitive development, the Manu-o-Kū continued to lay eggs and raise chicks in that tree during construction. Today, the International Market-place offers some of the best opportunities for viewing manu-o-Kū breeding behavior in the entire breeding range.



Manu-O-Kū parent and chick, photo credit: Kimo Stowell.

Tie A Blue Ribbon around the Manu-o-Kū Tree

The Hawaiian word “hui” means club, association, or society. Hui Manu-O-Kū, found at www.whiteterns.org, is a dedicated group of Hawai‘i conservationists, who observe, protect, and raise awareness about manu-o-Kū. Members of Hui Manu-O-Kū monitor areas where these birds

congregate and place blue ribbons around trees known to have active nest sites. The blue ribbon serves to alert tree trimmers to the presence of nesting terns and has a phone number to call, in case a person finds a chick which has fallen from the tree.

If possible, Hui Manu-O-Kū will return each uninjured fallen chick into the tree from which it fell. Chicks which cannot be reunited with their parents are turned over to the Hawaii Wildlife Center for rehabilitation and then to the Honolulu Zoo for release back into the wild. Hui Manu-O-Kū offers regular White Tern walking tours to view nest sites, which are posted on the Hawaii Audubon Society website at www.hawaii-audubon.org.



Manu-O-Kū fledgling, photo credit: Kimo Stowell.

Official Bird of Honolulu

The manu-o-Kū is the official bird of Honolulu and is revered by residents and visitors alike. With more awareness, we can protect manu-o-Kū by monitoring nest sites and protecting the trees they return to each year to breed. So if you are visiting Honolulu or if you live here, watch for a blue ribbon tied around a tree and look up to see a beautiful manu-o-Kū!

Acknowledgments

I would like to thank Rich Downs, Glenn Metzler, and Susan Scott for improving this manuscript.

About the Author

Kim Kessler is a Bird Keeper at the Honolulu Zoo, and helps with monitoring manu-o-Kū nest sites, while working on her Master’s Degree in Biology.

Hawaii Audubon Society Membership/Donation Form

The mission of the Hawaii Audubon Society (HAS) is to foster community values that result in the protection and restoration of native wildlife and ecosystems and conservation of natural resources through education, science and advocacy in Hawai'i and the Pacific. Founded in 1939, HAS is an independent non-profit 501(c)(3) organization and does not receive dues paid to the National Audubon Society. Thank you for supporting your local Hawaii Audubon Society.

- \$25 Hawaii Audubon Society Regular Member
 \$15 Hawaii Audubon Society Student Member
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Email: hiaudsoc@gmail.com <http://www.hawaiiaudubon.org>

Mahalo for your concern and commitment to protecting Hawai'i's native wildlife and ecosystems.

Upcoming Events and Field Trips

Visit our website for details and regular updates

<http://www.hawaiiaudubon.org/get-outside>

Waikamoi Preserve

February 6, 2020

This hike will be in cooperation with The Nature Conservancy Maui Program. HAS and TNC waivers need to be signed. Maximum number of participants is **12**.

Total hike time: 3 to 5 h depending on participants' abilities

Total hike distance: 3 ¼ miles

Total elevation descent/ascent: 700 ft.

This hike is rated between **moderate and strenuous** for some at the 6400ft elevation. It leads to an area of intact native forest with native bird viewing. A detailed description of the hike and important information about Rapid 'Ōhi'a Death (ROD) will be available closer to the date.

Please note the protocol for ROD: NO GEAR that has been to Hawai'i Island and/or in natural areas on O'ahu and Kaua'i within past six months of entering the Preserve.

RSVP: hiaudsoc@gmail.com

White Tern Walk

January 18, 2020, 9am to 10:30am

Meet behind the stage at the base of the big banyan tree at the Royal Hawaiian Center on Kalakaua Avenue at 9am

Leader: Rich Downs (HAS Board Member)

RSVP by text to 808-379-7555

Symphony of the Hawaiian Birds - Kaua'i Edition

Now partnering with the Kaua'i Forest Bird Recovery Project, the UH at Mānoa Wind Ensemble will be performing this special Symphony on Kaua'i for the first time.

Public Concert: February 23, 2020 at 4pm

School Concert: February 24, 2020 at 9am and 11am, free for school children, sign-up required

Please visit <http://www.symphonyofhawaiianbirds.com>

'Elepaio ISN 0013-6069

Managing Editor: Susanne Spiessberger

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The 'Elepaio is printed on recycled paper and published six times per year.

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'ELEPAIO · 80:1 · JANUARY / FEBRUARY 2020

Table of Contents

<p style="text-align: center;">VOLUNTEER OPPORTUNITY</p> <p style="text-align: center;">Fieldwork Habitat Restoration</p> <p>When: January through March, Saturdays from 8:30am to 11:30am</p> <p>Where: Freeman Seabird Preserve, located in Southeast O'ahu at Black Point. Meet at Paikau St side of Fort Ruger Park (Triangle Park) at 8:15 am near Diamond Head Road and 22nd Ave to carpool to the Preserve.</p> <p>While the migratory Wedge-tailed Shearwater birds are absent from the Preserve, volunteers are needed for habitat restoration. Activities include maintenance of native plants and artificial land-scape features, and removal of invasive plants, trash, and debris. Please bring drinking water, sun and rain protection, gloves, weeding tools, clippers or loppers, if you have them. We also have gloves and tools to share.</p> <p>RSVP: Contact Alice at 808-864-8122 in advance to participate. Text or leave voicemail.</p>	<p>Invasive Insect Is Rapidly Spreading Across Hawai'i and Threatening Naio Plants at Freeman Seabird Preserve 1</p> <p>Invasive Species Awareness Week 3</p> <p>School Trip Reflections 3</p> <p>Hawaii Audubon Society Board of Directors 2020 4</p> <p>Betty Nagamine Bliss Memorial Overlook 4</p> <p>Honolulu Seabird: The Manu-o-Kū 5</p> <p>Upcoming Events and Field Trips 7</p>
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