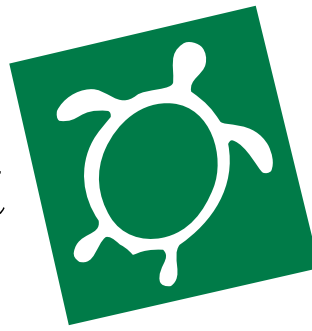


Environment



Hawai'i

a monthly newsletter

Gone with the Wind Farms

There's little doubt that the 69-megawatt wind farm at Kawailoa, on O'ahu's North Shore, plays an important role in moving the state forward toward its ambitious renewable energy goals.

There's also little doubt that it does so at the cost of Hawai'i's hoary bat, the 'opé'ape'a.

To mitigate this loss, wind farms, like all other activities that impact endangered or threatened species, need to operate with officially approved habitat conservation plans, which describe measures that the project will take to offset or compensate for the anticipated losses.

But how does the state balance the need for protection, on the one hand, against the need for renewable energy, on the other? That question rose to the fore as the state's Endangered Species Recovery Committee weighed the latest mitigation plan of Kawailoa Wind.

Wind Farm Barely Gets Preliminary OK To Kill 160 Additional Endangered Bats

"We're not happy," Lisa Spain told the room after casting the deciding vote to approve an amended Habitat Conservation Plan (HCP) that would allow the state's largest wind farm to kill 160 more endangered bats than the 60 it was originally allowed to.

The 4-1-1 vote, held at the state Endangered Species Recovery Committee's meeting on July 25, was a necessary step in finalizing an amended plan and incidental take license/permit for Kawailoa Wind, LLC, which owns a 69-megawatt wind farm on O'ahu's North Shore. The facility, which started generating power in November 2012, has been operating in breach of its license for more than a year, having directly or indirectly killed as many as 69 bats as of December 2017. As of March 31, there was a high likelihood (80 percent) that the facility had killed as many as 87 bats, according to a report by the Department of Land and Natural Resources' Division of Forestry and Wildlife (DOFAW).

(Had four favorable votes not been obtained for the amended HCP, the plan

would not have received the support of a majority of the seven-person Endangered Species Recovery Committee and would not have been recommended for eventual approval by the state Board of Land and Natural Resources. In that event, under Section 95D-121 of Hawai'i Revised Statutes, the plan would not be subject to Land Board approval and would instead have to receive a two-thirds majority vote of both houses of the Legislature.)

In addition to any pressure committee members might have felt to support a project that helps the state meet its goal of producing 100 percent of its energy from renewable sources by 2045, they also had to face another hard fact: In December 2016, while it did not take an official vote, the committee had expressed its general support of a proposal to consider Kawailoa's financial assistance in the state's purchase of lands at Helemano as mitigation for the take of an additional 55 bats. With some fanfare, the Department of Land and Natural Resources acquired the 2,900

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PHOTO: H.T. HARVEY & ASSOCIATES



An endangered Hawaiian hoary bat.

Environment

Volume 30, No. 2



Hawai'i

August 2019

NEW AND NOTEWORTHY

Kekaha Violations: A federal judge has found that the state Agribusiness Development Corporation has been violating the Clean Water Act for years, as the century-old drainage system it owns discharges millions of gallons a day into the Pacific Ocean along the west coast of Kaua'i. The discharged water includes pesticides, sediment, and heavy metals that run off the 7,000 acres of former sugar plantation land that the agency licenses to large farms, piggeries, and other agricultural operations. It also likely includes seepage from a nearby landfill and domestic cesspools.

The law firm Earthjustice sued the ADC in 2018, on behalf of Na Kia'i Kai, the Surfrider Foundation, and Pesticide Action Network. Last month, Judge Derrick K. Watson determined that the agency has been violating federal law every day since it allowed its national pollutant discharge elimination system (NPDES) permit to expire in 2015.

The state claimed that no NPDES permit

was required, arguing that the discharges fell under a 2008 exemption called the Water Transfer Rule (WTR). But Judge Watson agreed with the plaintiffs that the exemption doesn't apply if the water contains pollutants, as the Kekaha drainage system water clearly does.

Watson was unmoved by what he called the "parade of horrors" put forward by the state should the court find in the plaintiffs' favor. "ADC claims that 'should the water transfer cease, the Mana Plain would be inundated with water, causing extensive adverse effects to the Pacific Missile Range Facility, Kekaha town residences and commercial businesses, and agricultural and other uses on the plain.' ... Of course, Plaintiffs do not ask the court to enjoin ADC's discharge of water from the system; they ask only that the court require ADC to obtain an NPDES permit to do so."

The ADC is now required to obtain and comply with a new NPDES permit.

The plaintiffs had also asked the judge to find that the ADC had violated the public trust in its discharges of polluted water to the ocean. Judge Watson did not uphold that claim.

Waikoloa Reversion: More than 11 years after the state Land Use Commission placed 731 acres near Waikoloa Village, on the Big Island, into the Rural land use district, the LUC officially reverted the land back to the Agricultural District, its prior status.

The LUC had given the landowner, Waikoloa Mauka, LLC, 10 years from the date it approved the redistricting petition – June 10, 2008 – to develop 398 lots, with associated roads, infrastructure, and utilities. With the deadline approaching last spring, and with no visible progress made toward the proposed subdivision, the LUC ordered the owner to show cause as to why the land should not be reverted to its earlier status.

After a series of hearings last fall, the LUC voted in November to approve the reversion and ordered its staff to prepare a draft findings of fact, conclusions of law, and decision and order – the formal legal document that gives effect to the LUC vote.

Drafting the order took months, but it finally came before the LUC at its meeting on July 10 in Kona. Since 2014, ownership of the land has been held by Waikoloa Highlands, Inc., but the ultimate ownership still remains vested in the same person, Vitaly Grigoryants, who owned it since the original redistricting petition was filed in 2006.

In July, the attorney for Waikoloa Highlands, Steve Lim, raised objections to the commission's proposed reversion, with most – if not all – being objections he has raised as the LUC considered the question over the last year. Commissioners were unswayed. At the conclusion of the July 10 meeting, the vote was six to one in favor of the reversion. Only commissioner Lee Ohigashi, of Maui, voted against the reversion order, while two commissioners were not present.

An Amendment: In our June 2019 article on the Western Pacific Fishery Management Council's June 2018 meetings on Maui, we reported that the council paid for 48 rooms, yet the list of people who were provided accommodations totaled only 45. According to council communications officer Sylvia Spalding, "Three council members were inadvertently omitted from the list of persons who lodged at the Marriott during the June meetings and was provided in response to your FOIA request. The Council in fact paid for 48 rooms for 48 persons."

Environment Hawai'i

190 Keawe Street, Suite 29
Hilo, Hawai'i 96720

Patricia Tummons, Editor
Teresa Dawson, Managing Editor

Environment Hawai'i is published monthly by Environment Hawai'i, Inc., a 501(c)(3) non-profit corporation. Subscriptions are \$65 individual; \$100 non-profits, libraries; \$130 corporate. Send subscription inquiries, address changes, and all other correspondence to

Environment Hawai'i
190 Keawe Street, Suite 29, Hilo, Hawai'i 96720.
Telephone: 808 934-0115.
E-mail: ptummons@gmail.com
Web page: <http://www.environment-hawaii.org>
Twitter: Envhawaii

Environment Hawai'i is available in microform through University Microfilms' Alternative Press collection (300 North Zeeb Road, Ann Arbor, Michigan 48106-1346).

Production: Tim Officer

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ISSN 1050-3285

Directors

Patricia Tummons, President and Treasurer

Deborah Chang Teresa Dawson
Vice President Secretary

Valerie Monson, Director

Quote of the Month

*"A number of acres
gives you a bat?
Doesn't make any
sense to me."*

—James Jacobi

NMFS Heeds Council Recommendation On Turtle Take Limits for Swordfish Trips

Did it fall short, or go too far? The National Marine Fisheries Service's recently completed biological opinion (BiOp) for the Hawai'i swordfish longline fishery would allow individual vessels to hook more endangered loggerhead and leatherback sea turtles in a given year than would have been allowed under a draft opinion released months earlier.

Among the conservation measures proposed in the draft BiOp was an annual vessel limit of two leatherbacks. The measure was aimed at targeting those vessels that seemed to be hooking a disproportionately large number of turtles compared to the rest of the fleet. It also reflected the turtles' imperiled state and declining population.

Fishery representatives claimed such a low limit would cause vessel owners to forgo targeting swordfish altogether and focus only on bigeye tuna. And scientists advising the Western Pacific Fishery Management Council argued that establishing a trip limit instead of a vessel limit would provide a better incentive for fishermen to try to avoid turtles.

The council recommended that NMFS scrap the vessel limit and instead go with a trip limit of five loggerheads and two leatherbacks.

The final BiOp decided to combine the proposed measures. If the opinion is adopted, a vessel will be allowed to take up to four leatherbacks — two takes each in two trips — before being sidelined from the swordfish fishery for the rest of the fishing year. Likewise, vessels may take up to ten loggerheads over the course of two trips.

Each time a vessel hits its trip limit, it must return to port in Honolulu for five days "while NMFS evaluates vessel and turtle interactions to identify any problems and determine if guidance can be provided

to the vessel to reduce the interactions," the opinion states.

Vessels that hit a trip limit for either species twice in one year will be subject to a vessel limit of two leatherbacks or five



PHOTO: NOAA

Endangered leatherback sea turtle.

loggerheads for the following year.

Fleet-wide, the fisheries service stuck with its proposal to cap leatherback takes at 16, but removed the measure that would have required the fishery to shut down for the year if it had 36 loggerhead interactions, which is equal to the estimated number of annual interactions set forth in the opinion's incidental take statement.

It's unclear whether or not the owners of vessels that target swordfish will support the final BiOp. In March, Hawai'i Longline Association (HLA) president and former council chair Sean Martin said the vessel limits proposed in the draft BiOp were unlawful although he could accept a leatherback trip limit of three. And HLA executive director and former council policy coordinator Eric Kingma noted that even the draft BiOp determined that it was unlikely the fishery would significantly affect the leatherback population.

Kingma did not respond to a request for comment on the final BiOp by press time.

Attorneys for Earthjustice, however, were not thrilled with either the draft or the final BiOp. The firm represents the Center for Biological Diversity and Turtle

Island Restoration Network, which have sued NMFS for allowing what they believe is excessive take of the rare turtles.

Attorney Leina'ala Ley argued in an email to *Environment Hawai'i* that NMFS has ignored data implicating a few vessel operators as the culprits for most of the turtle takes. "Four operators accounted for 82 percent of turtle interactions in a three-month period during winter 2017-2018," she noted. "After having originally suggested an annual per-vessel limit of two leatherback turtle interactions and six loggerhead sea turtles, NMFS inexplicably changed course to let a few bad actors exponentially increase the number of interactions between turtles and the shallow-set longline fishery," she wrote.

On August 8, via web conference, the council was scheduled to vote on whether it would stick with its March recommendations or accept NMFS's tweaks. It will also make a recommendation on whether or not to set a hard interaction limit for loggerheads at 36.



Device Could Potentially Cut Gear From Turtles

One of the terms and conditions in the shallow-set fishery BiOp requires NMFS to conduct a workshop with fishermen, observers, relevant experts and NMFS' Protected Resources Division staff to "determine whether there are more effective methods for removing more fishing gear from leatherbacks to increase their chance of survival after interacting with longline gear. ... This workshop should be repeated as necessary and findings should be incorporated into the annual Protected Species Workshops given by NMFS [Sustainable Fisheries Division]."

The opinion cites an estimate from Wespac's Asuka Ishizaki that leatherback deaths could have been reduced by about 20 percent from 2004-2018 by reducing trailing gear.

Continued on next page

"Identifying and incorporating such measures through the workshop may help to reduce the adverse effects of fishery interactions with leatherback sea turtles," it stated.

Enter Caleb McMahan, former federal fishery observer and current media and marketing director of Hawaiian Fresh Seafood. For the past few years, he has been spearheading a local effort to develop a device that can slide down the branch lines of longline gear, and then clip the lines as close as possible to incidentally caught animals. Conceivably, it could even remove the hook as well, he said in an interview.

His current iteration, which is still being developed in cooperation with Makai Engineering, builds on a design he developed with a machinist from Mapunapuna. That design itself was based on a prototype developed with federal grant funding on the East Coast.

In testing his first device, a clunky stainless steel contraption that cost \$3,000 to make, he found it was able to release hooked blue sharks with only a few inches of line remaining. With satellite tags provided by Melanie Hutchinson, a bycatch researcher with the Pacific Islands Fisheries Science Center, he was able to see that the sharks survived more than 30 days after being released.

Earlier this year, McMahan received grant funding that allowed him to work with Makai Engineering to improve the device.

"The new generation of the concept blows the other one out of the water. We're talking about a piece of equipment now much more capable of doing the job," he said.

"We have designs of a line-cutting device capable of cutting through the hook, the wire, and the leader. This thing can crawl down the line in case of an obstruction or sag. You can put a camera on this thing," he continued. It looks a little like a football, with the moving parts encased inside.

If McMahan wins enough grant funding to complete a successful prototype, he said vessels could conceivably start using the device within one year.

He said the device will definitely work best with an animal hooked onto a single line and not entangled with any other

gear. While it could apply to false killer whales, which can be hooked by longline vessels targeting bigeye tuna, McMahan said mitigation for that species has focused mainly on ways to get the whales to free themselves.

Some people involved in mitigation discussions for that species "don't even want to look at trailing gear," he said.

For now, the device is being considered primarily as a way to minimize trailing gear on sea turtles, especially those hooked by the Hawai'i swordfish fishery. He said he's also awaiting grant funding to work with the same engineering company on designing satellite tags so that the device can deploy them on leatherback turtles.

Earthjustice attorney David Henkin told *Environment Hawai'i*, "If such a device could minimize harm, that would, of course, be wonderful, but I'm not getting my hopes up until it proves itself in action."



Council Backs Off Threat Against NMFS Administrator

At its March meeting, the council threatened to complain to NOAA brass that Mike Tosatto, director of NMFS' Pacific Islands Regional Office (PIRO), might not be the best man for the job if his office did not complete by the council's June meeting consultations for U.S. fisheries in the Pacific that interact with oceanic whitetip sharks. The species was federally listed as threatened last year.

Earthjustice, on behalf of the Conservation Council for Hawai'i and Kona resident Mike Nakachi, had earlier this year sent to Tosatto's office a notice of intent to sue over the agency's failure to complete the consultations in accordance with the timeline set forth in the Endangered Species Act.

When the council met in June, some of the consultations still weren't finished. Instead of following through on its threat against Tosatto, however, the council voted to simply direct its staff to meet with PIRO's Sustainable Fisheries Division staff after each council meeting to "review actions, develop timelines, set priorities, and agree to plans to complete tasks."

"Staff and I can figure it out ... so you and I have nothing to do with it," council executive director Kitty Simonds told Tosatto.

The council also recommended that PIRO complete the consultations for the Hawai'i deep-set longline and American Samoa longline fisheries by September 1, and the one for the U.S. tropical purse seine fishery by October 1, in accordance with the office's own projections.

Finally, the council directed its staff to keep NOAA assistant administrator for fisheries Chris Oliver apprised of the consultation status and asked that Oliver "continue to provide oversight to ensure expeditious completion of high quality consultations."

The fact that the consultations were still not complete "put the region's largest domestic commercial fisheries at risk of litigation," the council stated.

On June 26, NMFS did complete its consultation for the Hawai'i shallow-set longline fishery. The agency's biological opinion (BiOp) and incidental take statement says that the fishery would likely catch 102 oceanic whitetip sharks in a given year, killing 32 of them.

No annual caps were set on the number of animals that could be taken by the fishery, but the statement requires NMFS's Sustainable Fisheries Division to develop measures (i.e., trip limits or limits on the number of sharks that can be taken before a vessel is required to fish elsewhere) to reduce the bycatch and increase survivability of the sharks, as well as giant manta rays, which are also federally listed as threatened.

The BiOp states that NMFS expects climate change will pose a minimal threat to the sharks, since they can adapt to habitat modifications and shifts in ocean currents, temperatures, and food web dynamics "by transiting to areas favorable to their biological and ecological needs."

That conclusion doesn't exactly jibe with a recent rapid vulnerability assessment of marine species throughout the Pacific. That more recent work determined that oceanic whitetip sharks were highly vulnerable to climate change effects that will occur in the next few decades. Lower surface oxygen, high sea surface temperature, and ocean acidification were the three factors that had the most impact. —T.D.

Maui Study Finds Bat Core Ranges Are Larger Than Previously Thought

At the state Endangered Species Recovery Committee (ESRC) meeting last month, members debated the best way to mitigate the effects wind farms have on endangered Hawaiian hoary bats, which are being killed at a rate much higher than expected when the farms were originally permitted.

A few years ago, the committee developed a bat guidance document that included recommendations on how much wind farms should pay for mitigation and how large of an area mitigation actions should cover, among other things.

Without really knowing how to increase bat populations or to produce even a single bat, the committee decided that protecting or enhancing 40 acres of habitat for every bat death covered by an incidental take license or permit was a good place to start.

Since then, however, the U.S. Fish and Wildlife Service has decided that projects could commit to mitigation areas as small as 20.3 acres (see cover story).

But new research by H.T. Harvey & Associates of bats on Maui suggests that core use areas may be exponentially larger than both the ESRC's and the FWS's minimum standards, both of which were based on studies of bats on Hawai'i island. And the areas used are often outside the forests, where most bat mitigation activities have focused.

The handful of bats tracked used grasslands, gulches, and low-density development areas mostly, and spent most of their time there foraging, they found.

They believe the bats frequent those habitats because their openness allows them to easily locate and catch prey, and because they're also warm areas with a lot of flying insects.

The researchers tagged 16 bats, but were only able to track some of them. They found that the bats regularly foraged over a large area. They spent half their time on areas that, on average, were 2,967.5 acres.

One male consistently used a small, seven-acre hole in a gulch, where he scooped out what he needed, principal investigator David Johnston said at the Hawai'i Conservation Conference in July. Another young male was all over the island, spending 50 percent of his time in an area spanning 16,000 acres, he said.

Because of the short battery life of the trackers, the study could not determine how the bats move across seasons. Johnston said he hopes new technologies will soon allow for year-round tracking.

"One hypothesis was bats would move upslope in the winter, like they've been observed on the Big Island. They didn't do that. On any given night, it could go upslope and circle the crater, and come back the same night," he said.

He continued that the size of the core use area, which has been so important in directing management and mitigation efforts, may actually be less important than the habitat quality and the available prey.

The Hawai'i island studies upon which the minimum mitigation area sizes are based were conducted in largely native forest areas, whereas the Maui study areas were mostly disturbed, he said.

"Even with all those data, we cannot predict a given place and given time will have a higher level of [bat] activity. Why is that? ... If you were to go at a time of year where you think there would be a lot of bat activity, it could be that a termite or beetle [they like to eat] chose not to go there," he said.

At an ESRC meeting in January, Kristin Jonasson of H.T. Harvey said, "Bats don't need pristine forest that is completely removed from humans. If we can get them the food resources, bats are effective in fragmented landscapes, a huge advantage that we have. We need to think about the ephemerality and abundance of insects, how they aren't constant but occur in blooms,

and the bats' diets need to encompass a variety of insects that occur in different habitat types at different times of the year and different times of the night."

"I can't emphasize enough the importance of knowing what bats eat and where they eat it," Johnston said at the January meeting adding that work is being done on analyzing the insects extracted from the bats' guano.

Committee member Kawika Winter asked Johnston whether the bats showed any preference for native or non-native insects.

"We don't have any data to address that yet. Chris Todd did his Master's thesis on that, and it doesn't look like bats have a preference. These species have evolved to eat certain groups of insects, and we may think this is simple, but they have very complex natural histories. Some moths can hear a hoary bat and they have a number of defenses. One is to fly away from the bat as soon as they hear the bat, and if the bat is very close, it will start flying erratically. Some moths produce sounds that can jam the bat's sonar. You can probably predict, by family, which species or groups the bats are going to eat, as opposed to native or non-native," he replied.

"What about termites?" Winter asked

"Bats love termites," Johnston said.

With regard to the bats' roosting habits, Jonasson said that half of the bats tracked "roosted in people's yards next to streets in fairly disturbed areas, and the other half roosted in forests or gulches that were inaccessible to us."

Johnston added that the bats can't roost in just any tree. "Often they like to roost in trees with clusters of leaves. But they're looking for free space underneath them where they can take off. In a dense forest they may not be able to see," he said. — T.D.

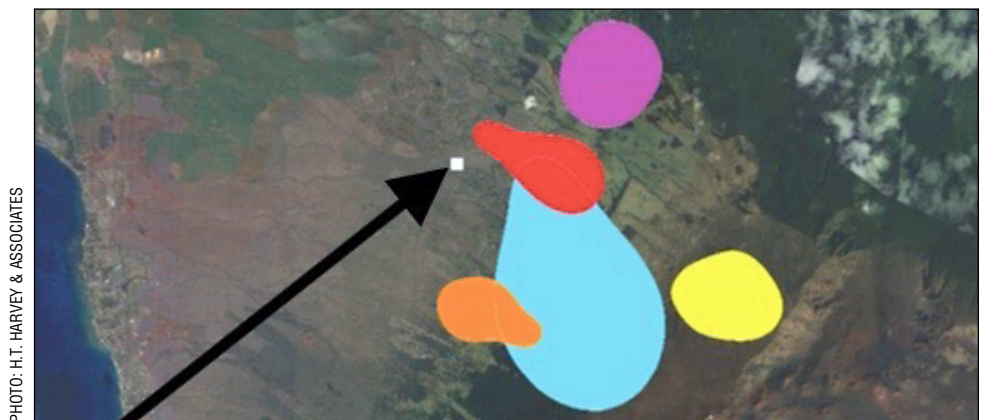


PHOTO: H.T. HARVEY & ASSOCIATES

Arrow points to a small white square that represents 40 acres, which is what the state bat guidance document recommends as the minimum area necessary to mitigate the loss of one bat. Colored shapes indicate where Maui bats tracked in a recent study spent 50 percent of their time.

Bats from page 1

acres from Dole late last year for about \$15 million, with \$2.75 million of that coming from Kawaihoa Wind.

The sale closed one month after Michelle Bogardus of the U.S. Fish & Wildlife Service and DOFAW administrator Dave Smith sent letters to Kawaihoa Wind concurring with the company's approach toward offsetting the take of 55 bats.

Until the July meeting, the ESRC chairman had been Scott Fretz, DOFAW Maui branch manager. Fretz had been highly critical of a draft plan that Kawaihoa had proposed last September and which the company had later revised in response to concerns voiced by him and other committee members.

But in the days leading up to the July meeting, Fretz was removed as chair by DLNR director Suzanne Case. Replacing him was DOFAW administrator Smith.

When it came time to vote, Smith repeatedly pressed members for a motion that none of them seemed eager to make in light of the continued uncertainty over how many bats live on the island and whether mitigation measures will actually produce enough bats to help offset the hundreds that may be killed by current and future wind farms.

Rocky Start

Kawaihoa's September draft HCP proposed allowing the take of an additional 205 bats — not 55 — through 2032, when its take license expires. The plan would have added three new tiers to the facility's three-tier mitigation strategy. The proposed Tier 4

action would be the Helemano acquisition as mitigation for the take of 55 bats. Tier 5 action, which would be triggered once take reached 75 percent of the total authorized take limit for Tiers 1-4 (86 bats), would be some kind of habitat protection (i.e., easement or acquisition) and/or habitat restoration/land management. The action for Tier 6, which would be triggered if and when 123 bats were killed, would be the same as for Tier 5.

The plan also included a "reversion trigger" that would allow Kawaihoa to roll back some of its take minimization measures (i.e. feathering turbine blades, using acoustic deterrents) if annual take stayed below 60 percent of the annual average take allowed for in the plan.

At the committee's meeting last October, members questioned the extent to which the facility should receive mitigation credit for the Helemano lands. In addition to receiving credit for the take of 55 bats by helping purchase the lands, Kawaihoa proposed that any future financial contributions it makes to DOFAW to manage the area be considered mitigation for the take of up to 150 more bats. As alternatives, the plan proposed funding of habitat management in native forest in Waimea or some other area acceptable to DOFAW and the U.S. Fish and Wildlife Service.

Committee member Michelle Bogardus, representing the FWS, said her agency supported the land purchase as mitigation for the take of 55 bats. However, member Kawika Winter, as well as Mililani Brown-ing of Kamehameha Schools, questioned

the approach. They noted that some of the lands purchased were already protected by their Conservation District status and that DOFAW would be the agency managing the lands for bats, not Kawaihoa.

Spain expressed concern that treating the Helemano acquisition and management as two separate mitigation measures seemed like double-counting.

Fretz later added in written comments that the assumption that the Helemano acquisition would offset the take of any bats, let alone 55, was uncertain, as was the assumption that the proposed habitat improvements or protections proposed for Tiers 5 and 6 would produce 150 bats.

"The conservation biology and recovery needs of HHB [Hawaiian hoary bats] are poorly known. The factors and threats that limit populations are not known, it is not known whether suitable habitat is a limiting factor, and there are no published studies or data on HHB that have demonstrated that restoration of habitat resulted in an increase in HHB populations," he wrote.

He also complained that the plan did not require the use of deterrents, even though technologies were available that had "a reasonable likelihood of success in reducing take and yielding essential information needed to improve the effectiveness of available methods."

Fretz recommended a total take of less than 265 bats and that the proposed reversion trigger be deleted.

In response to the ESRC's comments, Kawaihoa submitted a revised draft plan in June, which reduced the proposed total take from 265 bats to 220, removed the reversion trigger, clarified its adaptive management strategy and added sections on the bat population, cumulative impacts, and monitoring.

The company also installed acoustic deterrents on each of its 30 turbines.

Brita Woeck, Kawaihoa's environmental compliance manager, informed the committee at its July meeting that the facility is now the first in the nation to install acoustic deterrents commercially. Each turbine has been fitted with several speakers that emit a sound that interferes with the bats' ability to navigate. The sound extends only as far as the length of each blade, theoretically allowing bats to still forage below and above the hazardous zone.

The installation was completed on June 7. Woeck reported that no bat fatalities had been discovered since then, but could not yet say how the bats were reacting to the deterrents.

Continued on next page



Helemano Wilderness Area

"We're really hopeful this is a trend we're going to start seeing," she said.

Kawailoa expects the deterrents to reduce bat fatalities by 25 percent, hence the reduction in the requested take.

"We want to be realistic. We don't want to come with a fake number. We feel this is the most realistic number," she said.

The final plan did not identify specific mitigation projects for Tiers 5 and 6, but did propose riparian restoration in parcels managed by the Ko'olau Mountain Watershed Partnership.

"To mitigate for 85 bats in Tier 5, Kawailoa Wind would target a 1,725-acre area to fund management activities, a 406-acre area would be targeted for Tier 6," the plan stated. Those numbers are based on using a minimum of 20.3 acres to offset one Hawaiian hoary bat. The 20.3 acres reflects the median core use area of about two dozen bats on Hawai'i island tagged in a 2015 foraging and range study by U.S. Geological Survey bat expert Frank Bonaccorso.

Woeck acknowledged that Kawailoa needs to start implementing a new mitigation measure soon because it has already reached its trigger for Tier 5.

20 vs. 40

While all of the commission members seemed to acknowledge the fact that no one knows how many acres of enhanced or protected habitat it takes to produce a bat — or even if mitigation should be tied to a particular acreage — some of them expressed concerns over Kawailoa's use of 20.3 acres/bat rather than the 40 acres/bat recommended in the committee's 2015 bat guidance document, which was based on the same Bonaccorso data. (The 40 acre number was arrived at by simply rounding down and doubling the 20.3-acre median core use area.)

The guidance document actually points out that Bonaccorso himself "noted that the mean core use area was approximately 65 acres and suggested that agencies should use this value" — rather than the median — "as the acreage for bat mitigation."

A recent study by a team of researchers with H.T. Harvey & Associates of about a dozen Maui bats suggests that the guidance document is in dire need of revision. The team found that the bats' core use area — where it spends 50 percent of its time (also known as the 50% kernel) — could be as small as seven acres to as many as 16,000. The average 50% kernel size was nearly 3,000 acres, they found.

At the Hawai'i Conservation Conference in June, principal investigator Dave

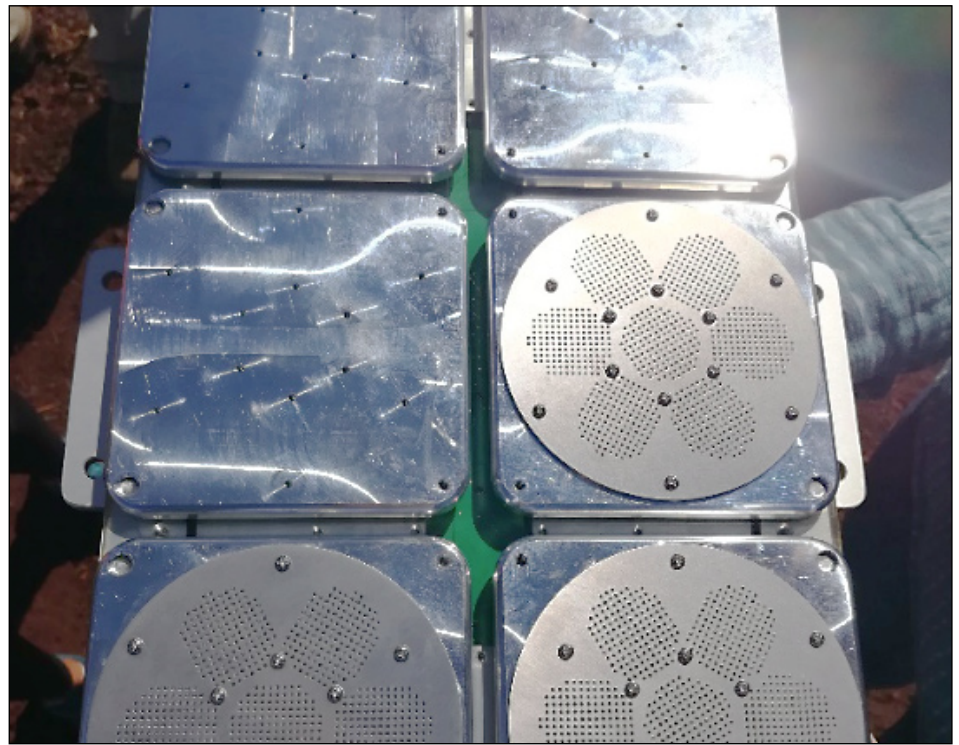


PHOTO: ENDANGERED SPECIES RECOVERY COMMITTEE

Kawailoa Wind installed these acoustic bat deterrents on all of its turbines earlier this year.

Johnston stressed in his presentation on this research that the species should be managed on an island-by-island basis, since the animals are doing different things on different islands.

In light of the Maui study, some committee members were particularly concerned about Kawailoa's decision to stick with 20.3 acres per bat for mitigation.

"Just like the last time we met, I still disagree with that," committee member Loyal Mehrhoff said. He said he wasn't so concerned with that rate being applied to the Tier 4 mitigation, since the Helemano lands would more than accommodate mitigation for 55 bats at 40 acres per bat. He worried about Tiers 5 and 6, however.

Woeck called the 40 acres/bat standard arbitrary and said there was no scientific justification for it. She also explained that habitat restoration benefits will extend beyond the acres managed.

In rebuttal, committee member and USGS biologist Jim Jacobi pointed out that with regard to using the median core use area identified in Bonaccorso's study, the USGS has "commented several times that is not the appropriate use of that information for calculating that."

Jacobi then questioned whether a lack of forest cover was actually a limiting factor for bats. "By having more forest, does it give you more bats?" he asked. Bats have been tracked foraging over pasture lands and along gulches and roads.

Woeck said habitat complexity and

improving foraging habitat is more important.

The existing information on core use area is challenging given the wide variation among individual bats, Bogardus said. "It's not an easy data set to make big broad assumptions about habitat. My read is acreage is not the thing we should necessarily use to determine the adequacy of mitigation. ... I don't have a quick and easy metric of what that looks like, which is challenging for all of us. I can't say 40 acres equals a bat or 20 acres equals a bat ... or 100," she said.

Her agency, at least, has determined that 20 acres is the baseline. From there, facilities have to justify how the mitigation package as a whole will be successful, she said.

Later in the meeting, Mehrhoff made a final pitch against the 20.3-acre standard.

"One of the leading bat biologists says you should be looking at 60 acres-plus. I don't see anything that leads me to cut that expert's opinion down to 20 acres," he said.

Net Benefit

In addition to disagreeing with the method being used to determine suitable mitigation areas, Mehrhoff, at least, thought Kawailoa's estimate that there were at least 2,000 bats on O'ahu — and could, therefore, support the cumulative level of take by wind farms on the island — was way off base.

Kawailoa's HCP suggests that even if all of the wind farms on O'ahu killed a total

Continued on next page

of 15 bats/year, that would impact less than one percent of the population. Using two separate approaches, the plan estimates that O'ahu may support between 2,000 and 9,200 bats and that the population is stable to slightly increasing.

Method 1: The plan assumed that 30 percent of the island — 115,000 acres — is occupied by bats. Based on Bonaccorso's core use area data from Hawai'i island, the plan estimated bat density. "O'ahu could conservatively support 2,000 (115,000 acres/58 acres) to 7,200 (115,000 acres/16 acres) individuals," the plan states.

Method 2: Studies show that bats occupy more than 50 percent of the island. Excluding developed lands to be conservative, Kawailoa determined that bats occupied 147,500 acres (half of all undeveloped lands). Applying the same range of densities, the company came up with a minimum population ranging from 2,500 bats (147,500 acres/58 acres) to 9,200 bats (147,500 acres/16 acres) on O'ahu, the plan states.

The plan also states that bats have a high reproductive capacity (twinning is common), that more than 90 percent of females are expected to breed in any given year, and that they have high juvenile survivorship.

Even so, Mehrhoff said at the July meeting, "I don't think there's 2,000 bats on the island, personally, when I look at the data. ... I don't think you've got much more than 1,000." Mehrhoff is a former field supervisor of the FWS's Pacific Islands Office.

Noting that acoustic data shows there has been no decline in bat activity, Woeck said

there is no indication the island's population is declining.

To which Jacobi pointed out that bat detectors are now more sensitive than they used to be, hinting that the level of bat activity may actually have decreased even as detections remain steady. He also asked what Kawailoa's estimate was of the probability that the population is not declining.

Woeck said a study will determine that.

Given that there's no evidence the population is stable or declining, to say definitively that it's not declining is "a very strong statement," Jacobi said.

"This is our best attempt to respond to your request," Woeck said.

In any case, mitigation is intended to increase carrying capacity on the island, she said.

Under state law, HCPs must be designed to result in "an overall net gain in the recovery of Hawai'i's threatened and endangered species." Committee member Winter complained that there are so many unknowns in the proposed Tier 5 mitigation that it was impossible to determine whether it would provide a cumulative net benefit.

To this, Woeck replied that the law does not require Kawailoa to produce a specific number of bats, but merely requires the plan to result in a net environmental benefit. "The fact that we're a renewable energy project needs to be taken into account. ... It's not about creating one bat. We don't know how to do that," she said.

Deputy attorney general Linda Chow clarified that the law requires HCPs to provide a net environmental benefit, as

well as an overall net gain of threatened and endangered species.

"To put it simply, endangered species should be better off with this in place," Winter said, adding that the committee should have some confidence that the plan actually does that before approving it.

Smith countered that the committee also needed to consider "intangibles," such as the benefits renewable energy brings.

Mehrhoth agreed, but questioned how that is supposed to be done. "This is uncertainty central," he said.

Regarding net benefits, he said he believed Kawailoa's estimates of adult mortality were low, and in his analyses, the island's bat population could not support a take of 220-300 individuals by the various wind farms (total authorized take for the farms on the island would be 307, if the Kawailoa plan is approved). If the population is stable, the population will decline without compensatory measures with that level of take, he said. Even if the population is slightly increasing at a rate of one percent per year, the level of take can only increase if compensatory actions work, and "we have no indication of that," he said.

Take needs to be down in the realm of 10 bats a year, Mehrhoff said. The average total take of O'ahu wind farms is anticipated to be 15 per year. "That's why I'm uncomfortable with Tiers 5 and 6," he added.

Smith, however, sided with Kawailoa. "We're actually implementing more deterrents. Our expectation is our take rate is going to go down. ... We don't have evidence the population is declining," he said.

Mehrhoth replied that there's a big difference between saying there's no evidence of decline and saying the project is okay.

An exasperated Woeck asked the committee how they could find some middle ground. "We're looking at the same information. ... How do we get to acknowledging the uncertainty ... No one is right and no one is wrong?" she asked.

"That's what everyone is going to have to decide," Mehrhoff replied.

Jacobi added that more wind farms have been proposed for the island, which "brings another challenge in terms of how to proceed."

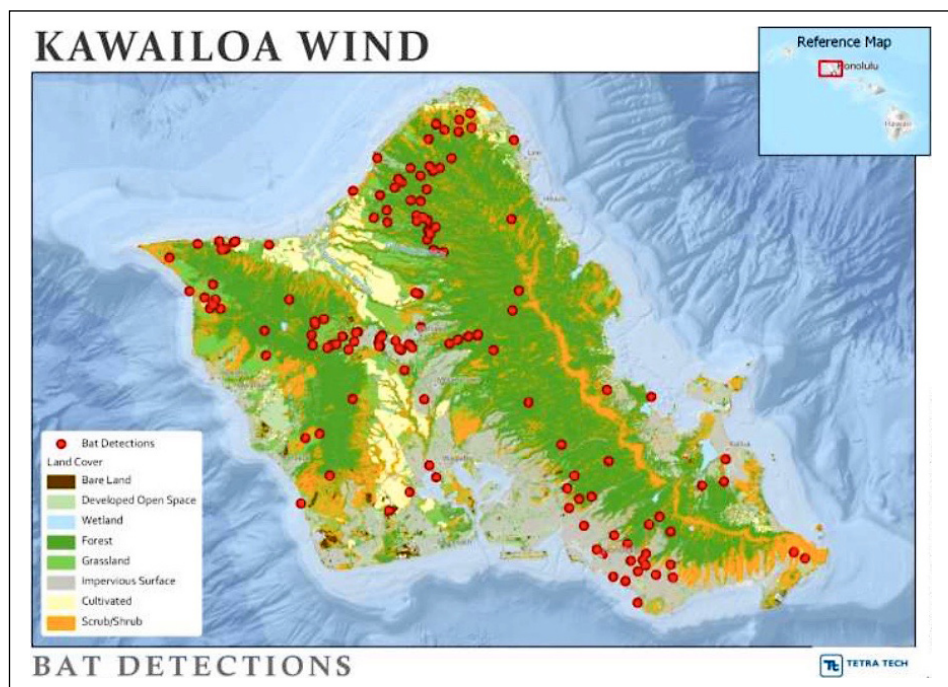
Anyone?

After even more discussion on bats as well as seabirds (see sidebar), Smith asked the committee if it wanted to entertain a motion.

The committee responded with a long silence. Smith then called for a short break.

In the minutes before the committee

Continued on next page



The red dots indicate detections of the endangered Hawaiian hoary bat.

Bats from page 8

reconvened, Tetra Tech, Kawailoa's consultant, and Kawailoa staff conferred on possible changes they could make to help close the deal.

When the meeting resumed, Woeck said Kawailoa was willing to 1) commit to a specific management action for Tier 5 2) clarify language in the plan's section on petrels to reflect the opinions of bird experts who believe the birds — perhaps genetically distinct from those on Kaua'i — are breeding somewhere on the island, and 3) prepare a brief addendum to Tier 5 that specifies success criteria.

After Winter got some clarification on how Kawailoa arrived at its bat population estimate, Smith asked again for a motion and was again met with silence. The committee members sat looking at each other for a while. After several beats, Spain moved to approve the plan with the three amendments Woeck proposed. Bogardus seconded the motion.

Mehrhoft let it be known he wouldn't be voting in favor. "The take is too high," he said.

"I'm also uncomfortable with the take level in the higher tiers," Jacobi added.

While he said he thought Kawailoa's proposed changes were reasonable, he still didn't buy the plan's population estimate. "There are no foundations for those [numbers]. A number of acres gives you a bat? Doesn't make any sense to me," he said.

Even so, he voted with Bogardus and Smith in support of the motion, so long as it was understood that there would be a clear effort to involve the committee in adaptive management planning and actions.

Spain did not join them, at first.

"I'm stewing," she said before finally voting to support her motion.

Mehrhoft voted against the motion; member Winter abstained.

Afterward, Spain explained her reticence. "I think all of us are extremely challenged by the number of bats [to be taken]. ... We're very much hopeful the deterrents will be successful," she said.

She then urged the committee to update its bat guidance document. "It says 40 acres and we're being drawn into 20 acres. We need something feasible for us to be pointing back to," she said.

Bogardus then thanked Kawailoa's representatives at the meeting for being responsive to the committee's concerns.

The plan now goes to the Board of Land and Natural Resources, which will ultimately decide to approve it or not.

— **Teresa Dawson**

Are Petrels Breeding On O'ahu?

Kawailoa Wind, LLC is near the end of a four-year effort to amend its Habitat Conservation Plan (HCP) so that it allows the additional take of endangered Hawaiian hoary bats. In the course of that effort, it also became clear that the company needed to add a new species to the list of those covered by its incidental take license/permit.

On July 21, 2017, a Hawaiian petrel, or ua'u, was found dead at the wind farm. The species was not included in the facility's original HCP because the bird wasn't thought to regularly occur on the island.

The new plan acknowledges that a 2017 study of bird calls "documented that Hawaiian petrels may occur on portions of O'ahu more than previously expected; however, surveys to date have not provided evidence that breeding colonies are present on the island."

The plan asks for authorization to take as many as 19 adults and five chicks over the 20-year term of the incidental take license, which expires in 2032.

"The total population of Hawaiian petrels is estimated between 19,000 and 52,000 individuals. The take authorization request ... is between 0.126 percent and 0.046 percent of the total estimated population," the plan states.

Modeling suggests there is an 80 percent chance the wind farm has killed up to 3 Hawaiian petrels.

To mitigate its requested take, Kawailoa plans to fund predator control and burrow monitoring at the Hanakapiai and Hanakoa seabird colonies within the Hono O Na Pali Natural Area Reserve on Kaua'i next year. The plan estimates the colonies will see an increase of 21.3 adult petrels and 71 chicks as a result.

At the Endangered Species Recovery Committee meeting in July, where it voted to approve the plan, member Kawika Winter took issue with the plan's suggestion that the birds weren't breeding on O'ahu.

He said that every ornithologist he spoke to at the recent Hawai'i Conservation Conference was sure there were breeding colonies on the island. Citing written testimony submitted by University of Hawai'i biology professor Sheila Conant, he added that the plan does not include any data from studies in 2018 that he said "indicate very strongly there is a breeding population."

He said that a downed bird found in Waikiki had a patch on its body indicating it had been sitting on an egg and genetic

testing suggested it might be from a different gene pool from petrels on Kaua'i.

Given that, he said it would be appropriate for the plan to focus on research to get a better understanding of the O'ahu population.

"I don't know if our pocketbook is the



PHOTO: NATIONAL PARKS SERVICE

Hawaiian petrel (ua'u).

tool to answer these questions," Kawailoa's Brita Woeck replied.

"What's more important? Trying to work through where are they on O'ahu, trying to keep them alive on O'ahu or doing something to contribute to the recovery of the species?" asked member Michelle Bogardus, the U.S. Fish and Wildlife Service's representative on the committee.

She said her agency discussed the new information with local bird experts to identify what the best mitigation option would be. "We very specifically talked about whether to do it on O'ahu or do more money into research," she said. Their conclusion was that efforts on O'ahu were less important than the work on Kaua'i right now, she said.

Dave Smith, administrator for the Department of Land and Natural Resources' Division of Forestry and Wildlife, said he's been looking for the petrels on O'ahu his entire career. "We're finally getting to the point we're maybe homing in on something but we're not there yet," he said, suggesting that mitigation on O'ahu could be a part of a future HCP amendment.

"Regardless of this HCP ... we're going to continue looking for them. I guarantee you, when we find them we're going to manage it," he said.

The committee voted to approve the plan with the addition of language acknowledging the experts' opinions that the birds are breeding on the island. Winter abstained from voting. — **T.D.**

Auwahi Wind Farm Inches Closer To Permit Allowing Higher Bat Take

On July 25, the state Endangered Species Recovery Committee approved an amended Habitat Conservation Plan for Auwahi Wind Energy, LLC's 24-megawatt wind farm at Ulu-palakua Ranch on Maui.

If the plan also receives approval from the Board of Land and Natural Resources, the facility will be authorized to kill or injure 140 endangered Hawaiian hoary bats over the course of its incidental take license, which expires in 2037.

The company's original plan and take license, approved in 2012, allowed the facility to take only 21 bats. By the end of 2016, however, the wind farm was estimated to have directly and indirectly killed as many as 38. By June 30, 2018, that number had grown to 46.

To minimize its bat take, Auwahi expanded its practice of slowing its turbines during low wind (known as low wind speed curtailment or LWSC). It had already instituted a practice of starting turbines at night only when wind speeds exceeded 5 meters/second. Starting in 2018, for the months of August through October, that minimum wind speed, or cut-in speed, was increased to 6.9 m/s.

Historically, 78 percent of observed fatalities at the site occurred during those

months. Based on reductions in bat take seen on the mainland with a 6.9 m/s cut-in speed, Auwahi's regime would result in an estimated 59 percent reduction in its take rate, the plan states.

However, because it's unclear how much the 6.9 m/s cut-in speed will reduce take of Hawaiian hoary bats, the HCP assumes the LWSC regime will only reduce take by 30 percent.

An earlier draft of the plan estimated that there were 7,200 bats on the island, but after receiving some criticism from the ESRC about the method used to arrive at that number, Auwahi switched to an approach similar to the one used for the Kawaihoa wind farm HCP amendment (see cover). The resulting estimated population range is now 1,400 to 5,200 bats.

Assuming that Auwahi and the two Kaheawa wind farms on the island take as many as 11.4 bats per year, their combined impact would not endanger the island's population, the plan suggests.

"There is no published or reported information which suggests that either the Maui or statewide population is decreasing," it adds.

Even so, Auwahi plans to implement mitigation measures as soon as the plan

is approved. It's already selected a 1,752-acre area that "consists primarily (more than 95 percent) of sloping open grasslands, interspersed with gulches, and a few forested patches and hedgerows," the plan states.

To enhance foraging and roosting habitat, the company will plant more hedgerows, using native vegetation, on the pasture lands, and add water features.

The hedgerows and water sources will be located near day roosting habitat so the bats don't have to expend as much energy traveling between foraging and drinking areas and day roosting habitat.

If and when Auwahi's take exceeds 66 bats, the company will initiate Tier 5 mitigation measures (i.e., planting native trees, adding water features, removing invasive species) at Kamehamehenui Forest, which is proposed for acquisition by the Department of Land and Natural Resources. If the take exceeds 106 bats, Auwahi will be required to conduct Tier 6 mitigation in the forest, which is located on the north slope of Haleakala.

Assuming it takes 20.3 acres to mitigate for each bat taken, "Auwahi Wind would improve 690 acres of habitat in Tier 5 and 508 acres in Tier 6," the plan states.

20 vs. 3,000?

At the ESRC's meeting on July 25, Auwahi's Marie VanZandt reported on all of the tweaks the company made to its draft in response to comments from the ESRC and others. The changes include a commitment to adaptive management of its LWSC scheme and to acoustic deterrents if its LWSC strategy fails, an expanded section on the net benefit of mitigation, an acknowledgement of ESRC bat guidance recommendations, and the incorporation of a new research project: a one-year, landscape-scale bat occupancy study on leeward Haleakala.

She said that Auwahi has found that more than 90 percent of bat activity occurs at the site during the first six hours of night, that 84 percent of bat fatalities occur between May and October, and that more bats are killed at turbines 1-4 compared to turbines 5-8.

If Auwahi determines that the current LWSC approach needs improving, it may expand the months during which



Auwahi wind farm on Maui.

cut-in speed is 6.9 m/s and/or extend the LWSC curtailment nights for turbines 1-4.

With regard to the acoustic deterrents, VanZandt said she was interested in seeing the results from those that were implemented at the Kawaihoa wind farm on O'ahu earlier this year. She said she was optimistic, but hoped they won't negatively impact other wildlife.

Committee member Loyal Mehrhoff said those were nice additions to the plan, but added that he was still concerned about Tiers 5 and 6 and the use of 20 acres/bat as the basis for mitigation efforts. Forty acres — which is what is called for in the committee's bat guidance document — is more appropriate, he said.

He pointed out that a recent study by H.T. Harvey & Associates of bats on Maui found that they spend 50 percent of their time foraging in areas that have an average area of 3,000 acres (see article on Page 5 of this issue). And the plan didn't even mention this, he noted.

Member Kawika Winter wanted more than just a mention, but a "justification of why you don't want to use it."

While H.T. Harvey representatives did give the ESRC a presentation on its work in January, VanZandt said there is no formal report on the results.

"From the standpoint of the ESRC, we're supposed to be using the best available science. This is the best available science. We've known about for eight months. [We] need to know why applicants chose to ignore it," Winter said.

"Just how, if at all, it changed their mitigation strategy," member Michelle Bogardus added.

"I see pathways forward. I just don't want to pretend it doesn't exist," Winter said.

By incorporating some kind of reference to the work, "it makes it appear you looked at the research. ... It should be on peoples' minds and should help inform the adaptive management process," Mehrhoff said.

VanZandt committed to incorporating a reference to the H.T. Harvey study and to describe "how it fits into this broader picture."

In addition to objecting to the 20 acres/bat standard being used for mitigation, Mehrhoff also said he thought the plan's schedule for evaluating take minimization measures was insufficient.

Instead of once every five years, he preferred once every three years.

As written, "you won't get to deterrents until 2030," he complained.

VanZandt explained that the plan included regular check-ins that occurred at sooner intervals, and those 5-year evaluations would only hold if data in the interim suggested that everything was fine.

The committee went round and round on the plan's timeline for a while.

At one point, Bogardus said, "We're going down a crazy rabbit hole."

But Mehrhoff, former head of the FWS Pacific field station, was adamant that the plan be clear on what's required and when.

"It's happened more than once: people leave and it goes back to the words in the HCP. ... I've been on this train before. Not with you guys. It comes down to what's written in there and what's required. ... I think [five years] is too long to wait when you're talking about 130 bats," he said.

Division of Forestry and Wildlife administrator Dave Smith, who chairs the committee, favored the five-year interval. If evaluations occurred every three years, there would be less confidence in whatever data was collected in that time because it's so short, Smith argued.

In the end, the committee approved the plan with the inclusion of a reference to the H.T. Harvey study and a "contextual clarification around the adaptive management dates."

Mehrhoft was the only dissenter.

— T.D.

For Further Reading

Environment Hawai'i has written extensively on wind farms over the years. The following articles are available at www.environment-hawaii.org.

- "BLNR Moves to Buy Dole Land At Helemano, 'Warts and All,'" October 2018;
- "North O'ahu Wind Farm Wins License To Incidentally Kill Protected Bats, Birds," June 2018;
- "Recusal Debate Delays Conclusion Of Contested Case for O'ahu Wind Farm," March 2018;
- "Wind Farm Plan to Protect Rare Bats Is Inadequate, Hearing Officer Finds," December 2017;
- "Rise in Wind Farm's Bat Takes Spurs Environmental Review," (Board Talk), November 2017;
- "Data Gaps Confound Efforts to Limit Harm to Bats Posed by Wind Farms," and "Wind Farms to Fund 'Research Push' On Endangered Hawaiian Hoary Bats," February 2017.



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In 2019, Invasive Species Measures Caught Attention of Legislature

Now that the deadline has passed for Gov. David Ige to issue his vetoes, it's possible to give a final accounting of the environmental bills that made it through to acts in the 2019 legislative session.

Three of the bills that became law deal with invasive species.

Act 13 (Senate Bill 464) gives private property owners the right to cut down or trim albizia trees on adjoining vacant properties if a certified arborist has determined that the albizia pose a hazard to the owners' health or property. Entry is authorized if the owners have "unsuccessfully made two or more reasonable attempts within the previous 30 days to contact the owner of record of the adjacent property via telephone or registered mail" and have provided written notice to the adjoining property owner.

"The unfortunate thing about the bill," says Springer Kaye, manager of the Big Island Invasive Species Committee, "is that we really hoped it would help community/non-profit groups that are working together to treat dense stands of small, non-hazardous albizia on lots belonging to absentee landowners. The final language requires them to consult with a certified arborist to be protected under the law. Well, that introduces a few issues, including the cost of a highly certified expert, and the low chance that such an arborist is willing to risk incurring liability by assessing a job he or she is definitely not going to be hired for. Regardless, it is very nice to see the Legislature set expectations for a higher bar for personal responsibility in land management over private property rights."

Act 197 (House Bill 201) clarifies that

agents of the state or counties do have the right to enter private property to control invasive species, even if they don't have proof that the species is actually there. Surveying for the presence of invasives had not been specifically called out in the law, even though it is a prerequisite to controlling any pest. The clarification could be important when attempting to eradicate species like little fire ant or diseases such as dengue (which requires controlling mosquito breeding sites). In each case, physical access is required to confirm that the species is present, even when common sense would indicate it was there, such as the presence of a little fire ant infestation on neighboring property.

Pamela Miedtke-Wolf, of Save an Animal, stated in her testimony, "DO NOT allow for someone to come onto private property, ever, without permission! EVER! Please do not take away my privacy nor my rights in allowing who comes onto MY land and when. ... Are you kidding! Almost everything in Hawai'i is invasive! Humans being number one!"

Elaine Anderson, whose group KARES supports a feral cat colony at the Mauna Lani resort, said she was opposed to the bill "because it includes eradication of 'invasive species,' which includes feral cats, many of which have been humanely sterilized at the expense of several non-profit animal welfare groups. There is no need for blatant eradication of these animals."

A similar view was expressed by Cathy Goeggel of Animal Rights Hawai'i.

As a result, the House Committee on Agriculture and Environment included language that clarifies that the measure "is not intended to enable entry onto private

property to eradicate non-prohibited pet animals."

Act 147 (House Bill 1548) appropriates \$750,000 to the Department of Land and Natural Resources for research, surveys, and outreach related to Rapid 'Ohi'a Death. When introduced, the bill sought an appropriation of \$2 million for not just these three activities, but also for ungulate removal from fenced areas on Hawai'i island and Kaua'i, "to help reduce the wounding of healthy trees."

Act 213 (House Bill 1261) makes permanent a law passed in 2016 that requires final decisions in contested case hearings that are appealed be heard directly by the state Supreme Court. This allows for expedited judicial review of contested case outcomes from the Land Use Commission, the Board of Land and Natural Resources, the Commission on Water Resource Management, the Hawai'i Community Development Authority, and the Public Utilities Commission.

Act 5 (House Bill 2), the state budget bill, also adds funds for invasive species control. The Department of Land and Natural Resources' native resources and fire protection program received an additional \$1 million in both fiscal years 2019-20 and 2020-21. Half of that is to go to the several invasive species committees. To control the little fire ant on Maui, the Legislature appropriated \$61,200, and for control of coqui on Maui, it appropriated \$83,000 in the current fiscal year and \$63,000 in the next one. Nearly \$600,000 over the two years was appropriated for biocontrol of four invasive plant species. For development of "landscape-scale mosquito control technology," the appropriation was \$100,000.

In addition, the Big Island Invasive Species Committee received a grant-in-aid for \$300,000, for mitigation of albizia on Kahakai Boulevard, a major road in the Puna District. — **Patricia Tummons**