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Designer Genes For ‘I‘iwi?

The effects of climate change are manifesting themselves sooner and more devastatingly than anything predicted even a decade ago, and the mosquitoes that spread the disease to ‘i‘iwi and other endangered and threatened forest birds are encroaching on their habitat at a rapid pace.

In this light, the work done by scientists at the USGS’ Pacific Islands Ecosystem Research Center in Volcano and colleagues in Wisconsin addresses an important first question:

Supposing that ‘i‘iwi could be re-engineered to make them invulnerable to malaria, would it be possible to establish these resistant birds in the wild?

It’s way too early to know if malaria resistance could be imparted to the birds at all, but to have a thumb’s-up answer on the question whether ‘i‘iwi with this quality might be successfully established in the wild clears the way for further work.

IN THIS ISSUE

Can Genetic Engineering Save the ‘I‘iwi? Scientists in Volcano Weigh the Odds

Temperatures are rising. And as they soar, so, too, do the mosquitoes that carry the parasite that causes avian malaria, fatal to so many of the native Hawaiian forest birds.

For years, scientists and biologists concerned with the health of forest bird populations have struggled to address the problem of avian malaria, a major factor in wiping out most native birds from lowland forests. But now, as the impacts of global warming accelerate, the forests that have become refugia for ‘i‘iwi and other native birds that are extremely vulnerable to malaria are in danger of losing that status. Warmer conditions will allow mosquitoes to invade mid- and high-elevation forests, resulting in the spread of malaria infection to the last remaining populations of many of the most threatened bird species on the planet.

To address this, current approaches include reducing mosquito habitat through fencing and the removal of feral animals that create wallows where mosquitoes can breed and efforts to infect male mosquitoes with a strain of the Wolbachia bacterium that makes them infertile when they mate with females in the wild.

But what if the birds could be made resistant to malaria through genetic engineering?

That was the question that scientists from the University of Wisconsin-Madison and the U.S. Geological Survey’s Pacific Island Ecosystems Research Center in Volcano addressed in research that they described in a paper published in the journal *Biological Conservation* in January.

The scientists – Michael Samuel and Wei Liao, from Wisconsin, and Carter T. Atkinson and Dennis A. LaPointe from the USGS – simulated what might occur if ‘i‘iwi (*Drepanis coccinea*) that had been genetically engineered to resist malaria

Continued on Page 5

PHOTO: USFWS – PACIFIC REGION

‘I‘iwi

Environment Hawai'i
Volume 30, No. 9 March 2020

NEW AND NOTEWORTHY

Delay in Ohi'a Rust Rule: Last August, after many years of delay, the state Department of Agriculture finally approved rules to ban the importation of plants in the Myrtaceae family from other states, in hopes of protecting ohi'a from a devastating rust.

As of late February, the rules were still sitting, unsigned, on the desk of Gov. David Ige.

Meanwhile, the U.S. Department of Agriculture has proposed a rule that would do much the same thing with respect to international imports. Comments on the draft rule were due February 24.

The governor's office was asked to explain the delay, but had not responded by press time.

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According to information from the Department of Land and Natural Resources' Division of Forestry and Wildlife, the federal rule is somewhat contingent on the state taking action, so it is important that the state rule be adopted soon.

Pepe'ekeo Point Changes: The construction of a large house on coastal property about seven miles north of

Rebar at Pepe'ekeo Point in 2014.

Hilo is still stalled, but the transfer of ownership of the company – Hilo Project LLC – that holds title may mean changes are coming. The entity is now managed by SJSU Tower Real Estate Fund, LLC, affiliated with San Jose State University in California.

Bert Kobayashi, Jr., an attorney representing Hilo Project, informed the subdivision's management agent of the changes. The former owners – Gary Olimpia and Scott Watson – and their attorney, Steven Strauss, "are no longer affiliated with HPL and the property and do not speak for and/or represent HPL."

In future communications, Kobayashi wrote, "do not provide any information as to the property to anyone" other than Kobayashi or HPL spokesperson Leslie Rohn, "and specifically not to Olimpia, Watson, or Strauss."

Meanwhile, Hilo Project has obtained a county permit to drain standing water in the unfinished swimming pool and remove rusting rebar from areas where construction had begun years ago. The contractor, Big Island Mechanical and Construction, is being paid more than $40,000 for the emergency work.

Quote of the Month

"People have been trying to develop a malaria vaccine for over 50 years and we still don't have anything that is completely effective. The parasite is well adapted to evading the immune system."

— Carter Atkinson, USGS

Rat Lungworm Corrections: Last month we incorrectly identified Dr. Alfred Mina, a Hilo veterinarian, in an article on rat lungworm.

Also, Dr. Argon Steel set us straight on his testing of bleach and chlorine as possible washes to remove slugs and snails carrying the parasite from produce. The 25 percent bleach solution that Steel used "was 25 percent dilution of household bleach, which is about 6 percent, so the dilution I was using was actually 1.5 percent," Steel informed us. Also, the chlorine he was testing was actually chlorine dioxide.

We apologize for the errors.

Appellate Court Overturns Award Of Damages to Bridge 'Aina Le'a

Chalk one up for the state. A big one.

A three-judge panel of the 9th U.S. Circuit Court of Appeals has shredded the takings claims of Bridge 'Aina Le'a, LLC, over the state Land Use Commission's decision in 2011 to revert 1,060 acres of land in the Big Island district of South Kohala to the Agricultural District. Bridge had sought more than $30 million in damages as a result of the LUC action.

The appellate ruling, issued on February 19, not only nullified a nominal damage award of $1 that had been ordered by Judge Susan O. Mollway of the U.S. District Court in Honolulu following a jury trial, it also deprived Bridge of its status as prevailing party – which would have allowed Bridge to sue the state for the costs of litigating the matter. Now that the state is the prevailing party, it has a green light to go after Bridge for costs. (After the District Court decision, when Bridge was still the prevailing party, it submitted a motion to the court seeking attorney fees and costs of around $725,000.)

Bridge could still appeal. It could ask for a rehearing by the full bench of the 9th Circuit. And it could ask the U.S. Supreme Court to consider the case. Attorney Bruce Voss, who argued the case before the appeals court, told *Environment Hawai'i* that his client would be doing just that.

"This Ninth Circuit opinion effectively makes it almost impossible to prevail on a temporary takings claim. We will be petitioning for a writ of certiorari, to see if the U.S. Supreme Court wishes to use this extraordinary case to make clear that a government's taking of property still requires just compensation under the Takings Clause of the U.S. Constitution," Voss said in an email.

Years in the Making

The case at issue goes back to 2011. That year, the Land Use Commission voted to revert Bridge's 1,060 acres of land in the Big Island district of South Kohala to the Agricultural District. The move came some 22 years after the land had been placed into the state Urban District. Over that time, several owners had come and gone without having fulfilled the conditions the LUC had attached to its approval of the initial, 1989 redistricting petition – conditions that had been amended several times over the same period in favor of the landowners.

Bridge sued the LUC and won a favorable ruling from the 3rd Circuit Court in 2012, overturning the reversion. In 2014, the Hawai'i Supreme Court upheld most of the lower court ruling. It agreed that the LUC did not follow the procedures it should have followed when it voted to downzone the land and the reversion was nullified, leaving the land in the Urban District. Following that, a federal lawsuit alleging unconstitutional takings and violation of due process moved forward in U.S. District Court in Honolulu.

> *"At the time of the reversion … only sixteen affordable housing units existed – and thus Bridge could have had no reasonable expectation of making the 20 percent annual return on the total investment."*
>
> **— 9th Circuit Court of Appeals**

For a while, the state and Bridge – which sought somewhere in the neighborhood of $30 million in damages from the state – were in negotiations. The outcome was an agreement for the state to pay $1 million and be done with it. The Legislature balked and did not approve the payout, and so the lawsuit went to trial.

In March 2018, after an eight-day trial, the jury found that Bridge had suffered damages under two different legal analyses. The first, the so-called *Lucas* standard, applies when a landowner is deprived of all economically beneficial uses of its land. The second, the *Penn Central* standard, applies when regulation has had a negative economic impact and has interfered with "distinct investment-backed expectations."

Bridge also sought to have the federal court determine that it was not fairly treated by the state – that it was denied due process and equal protection, inasmuch as of all the LUC dockets where developers have not built projects in accordance with LUC conditions, Bridge was the only one that was subjected to the harsh penalty of reversion. The federal district court rejected the claim, noting that it had already been litigated (and denied) in state court.

The Appeal

The appellate court disagreed with the lower court on the matter of the takings. Regarding the claim of a *Lucas* taking, the court found, "the state's core challenges to that finding are that the land retained substantial residual value in its agricultural use classification and that this classification still allowed Bridge to use the land in economically beneficial ways. We agree…"

First, the court went on to say, the "permissible uses of land classified as agriculture reinforce our conclusion that the reversion did not completely deprive Bridge of all economically viable uses of the 1,060 acres as a matter of law." The court took note of the state law permitting "unusual and reasonable uses within agricultural" districts. "Although Bridge offered evidence suggesting that many of the statutorily permitted uses would not have been economically feasible, Bridge did not address all of the state's permitted uses or account for any of the uses for which the commission had granted special permits in the past, such as a sewage treatment plant or rock quarrying. Some of the specially permitted uses may

Continued to page 4

have been especially suitable for this land. Bridge intended to place a sewage treatment plant on the adjacent 2,000 acres of agriculturally zoned land. Bridge's own witnesses also recognized that the land was 'good for growing rocks.'"

The *Penn Central* theory of taking was also dismissed by the appellate judges. Bridge's appraiser, Steven Chee, testified that on April 30, 2009, when the LUC voted to require Bridge to show cause as to why the land should not be reverted, the land value dropped 83.4 percent (from $40 million to $6.36 million). The judges disputed his assumption that the drop in value took place in 2009 and not 2011, when the reversion vote occurred. While the order-to-show-cause vote may have cast a "dark cloud" over the project, the court found, it went on to note, citing to past precedent, "[m]ere fluctuations in value during the process of governmental decision-making, absent extraordinary delay, are incidents of ownership. They cannot be considered as a taking in the constitutional sense."

In any case, the diminished value of the land was of short duration. "The reversion lasted roughly a year, from the reversion order's issuance in April 2011 until the Hawai'i state circuit court's judgment vacating the order in June 2012. When we account for the reversion's actual one-year duration, Bridge's damages are at most $6.72 million if we use the higher 20 percent rate of return that Bridge hoped to receive on its total investment… Bridge's loss thus amounts to an approximately 16.8 percent diminution in value, a number far lower than the 83.4 percent figure on which it relied at trial. This economic impact weighs against the conclusions that the reversion constituted a taking," the judges concluded.

Bridge's *Penn Central* taking argument was also supported by its claim that the reversion disrupted its sale of part of the land to DW 'Aina Le'a, with which it had executed an agreement of sale. But, the court noted, "There is a fundamental problem with using the claimed disruptions to the … sale agreements as evidence of the reversion order's economic impact." First, "DW's contractual default under the February 2009 agreement … occurred some two years *before* the 2011 reversion order's issuance. …. Moreover, the record otherwise shows that Bridge's focus on the disruptions to these agreements overstated the reversion's impact on its contractual relationship with DW. After the Hawai'i Supreme Court's decision, DW agreed to pay Bridge $14 million more than the previously agreed upon $40.7 million to purchase the land. Thus, the contractual defaults during the reversion's temporary duration do not affect our economic impact analysis."

Finally, looking to the extent to which the LUC action interfered with "any reasonable investment-backed expectations," which is another factor considered in the *Penn Central* analysis, the court found that Bridge could not have expected any profit from its purchase of the land "unless and until the commission amended" the 1991 condition it placed on the landowner to have 20 percent of all residential units built be qualified as affordable. (It did so in 2005.)

"Bridge also did not expect that an amendment to the affordable housing condition would translate into immediate profits," the court found. "Indeed, Bridge represented to the commission that $86 million in initial infrastructure costs and over $200 million in total development costs had to be spent before the construction and sale of any housing units could begin. At the time of the reversion, the project was nowhere near this level of investment – indeed only sixteen affordable housing units existed – and thus Bridge could have had no reasonable expectation of making the 20 percent annual return on the total investment at that time."

The court also dinged Bridge for what it did *not* acknowledge. "Bridge expressly committed to build 385 affordable housing units as part of the [2005] amendment to the order governing the land's conditional urban use classification," the court found. "Based on Bridge's representations to the commission, the 2005 order required Bridge to build these units by November 2010. *At no point in arguments before us does Bridge acknowledge this deadline, let alone Bridge's and DW's repeated representations to the commission as part of seeking the OSC [Order to Show Cause] rescission that they would complete the 385 affordable housing units"* (emphasis added.)

The judges continue: "The operative conditions in place at the time of the OSC and the reversion order, and Bridge's failure to meet them, dispel the notion that Bridge could reasonably expect that the commission would not enforce the conditions."

After eviscerating Bridge's arguments on taking, the judges reversed the lower court's denial of the state's motion for judgment as a matter of law: "We vacate the judgment for Bridge and the nominal damages award and remand with instructions for the district court to enter judgment for the state."

—Patricia Tummons

For Further Reading

Environment Hawai'i has reported extensively on the ups and downs of the 'Aina Le'a development. For further background on this litigation in particular, see:

- "Award of $1 in Damages to Bridge Is Subject of Appeal to 9th Circuit Court," and "A Short History of 'Aina Le'a Development," March 2019;
- 'Aina Le'a Controversies on Three Fronts: Federal Court, Bankruptcy Court, and County," May 2018;
- "$1 Million Settlement of 'Aina Le'a Case is Rejected in Final Days of Legislature," June 2017;
- "After Years of Delay, LUC Revokes Entitlements for Bridge 'Aina Le'a," June 2009.

'I'iwi from page 1

were released into wild, non-resistant populations. Although 'i'iwi are highly sensitive to malaria, with more than 90 percent of those infected succumbing to the disease, they are still relatively abundant on the Big Island.

The computer models assumed that one of the chief obstacles – the development of a population of 'i'iwi that do not just tolerate malaria, but are actually able to resist infection – was an accomplished fact and that this trait would be passed on to offspring. (The authors noted that even if malaria-tolerant 'i'iwi populations could be established, the birds would still serve as "an important disease reservoir for other Hawaiian species that currently exist only in high elevations with low malaria risk.")

Simulations were run to look at the effect of the release of these resistant birds into the wild at various times and in various numbers under three climate change scenarios, as modeled by the Intergovernmental Panel on Climate Change.

"We are just working through all the options that are out there," LaPointe said as he and Atkinson discussed the article in an interview last month with *Environment Hawai'i*. Both took pains to stress that they were not recommending this as an option, but rather just putting it out there for consideration.

With all the recent advances in genetic engineering that have occurred over the last couple of years, LaPointe added, he and his co-authors were exploring what might be required if it were possible to "modify an organism to save it from the brink of extinction.

"Could we find, or could we modify, a honeycreeper so that it is actually resistant to malaria, and not just tolerant? And if we could do that, is there time to put it in the environment and actually have it propagate through the environment and rescue the birds from an otherwise certain path to extinction?"

The article, "Facilitated adaptation for conservation – Can gene editing save Hawai'i's endangered birds from climate driven avian malaria?" – concludes that this "may be a useful alternative or additional strategy if control of malaria transmission by mosquitoes is not successful or proves too costly."

As recently as 2017, the same four authors – Liao, Atkinson, LaPointe, and Samuel – suggested that mosquito control strategies could be the best way to ward against malaria transmission at high elevations and, combined with other approaches, help protect native birds at mid-level elevations. (See their paper, "Mitigating Future Avian Malaria Threats to Hawaiian Forest Birds from Climate Change," *PLOS/One*, January 6, 2017.)

To date, however, research into mosquito control on a landscape scale – the scale needed to meaningfully address the threat of avian malaria – has not borne fruit. Since 2016, the state has supported efforts to infect *Culex quinquefasciatus* mosquitoes, which carry the malaria parasite to birds, with a variety of Wolbachia bacteria that will make the males infertile with wild female mosquitoes and suppress wild populations if sufficient numbers of males are released. A related approach with Aedes mosquitoes is being used in other parts of the world, but with these mosquitoes, infection with a new strain of Wolbachia can actually prevent the mosquitoes and their offspring from transmitting human pathogens such as the Dengue virus. Whether something similar could occur with Culex and avian malaria is still unknown. Despite additional funding in 2017 and 2018 from both state and federal agencies, "the project still did not result in the development of a Wolbachia infected *C. quinquefasciatus* mosquito, due to the complexity of methodologies and technical specialization required for such an undertaking," according to a report on the project submitted to the Legislature by the state Department of Agriculture in December.

> *"I was kind of incredulous about the whole idea of genetically engineering a bird that is resistant to malaria."*
> **— Carter Atkinson, USGS**

But in any case, if genetically modified 'i'iwi resistant to malaria are able to be developed and then released in sufficient numbers to mate with wild birds, mosquito control would actually work against the goal of developing a malaria resistance in the wild population.

Absent the malaria-carrying mosquitoes, the resistant 'i'iwi would have no evolutionary advantage. That is, non-resistant birds are just as likely to survive and reproduce as the resistant ones. To ensure that the genetic ability to resist malaria becomes dominant over time, sufficient selection pressure favoring resistance – in the form of disease – needs to be present. No mosquitoes means no such pressure.

For now, though, said LaPointe, "the focus is on mosquito control with existing technology… In 20 years, if we find that that doesn't work, and the technology exists for developing a resistant 'i'iwi and it's acceptable to the public, then is this" – release of malaria-resistant 'i'iwi – "an option, at that time?"

Under the scenarios described in the *Conservation Biology* article, however, the sooner the release of resistant birds occurs at mid-elevation forests, the better. "When releases of resistant 'i'iwi were 3 birds per square kilometer (1,311 total birds during 1-2 years) between 2030 and 2050," the authors write, "we predicted high population levels (more than 800 'i'iwi per square kilometer) of malaria-resistant 'i'iwi could be established by 2100" under the most dire climate model (RCP8.5).

"Overall earlier release of more resistant birds in mid-elevation forests meant that 'i'iwi populations recovered sooner and achieved higher population levels. Resistant 'i'iwi dominated the total 'i'iwi population within 20 to 30 years after release and were more abundant than the predicted 'i'iwi density without the release of resistant birds," they found.

Another option considered in the paper was that of releasing resistant 'i'iwi on islands such as O'ahu, where the natural populations have been severely reduced or have died out altogether. "You could establish a population on an island where there are currently no birds, so you could generate enough birds in the wild, and then be able to draw birds from that island

Continued on next page

Hawai'i County Asks LUC to Declare That Farm Dwellings Can't be Vacation Rentals

Last month, Hawai'i County asked the state Land Use Commission (LUC) to rule that transient vacation rentals aren't allowed in farm dwellings within the state Agricultural District.

In November 2018, the county adopted Bill 108, which regulates short-term vacation rentals on the island. The bill defined where they would be allowed, how they would be regulated, and established a process for owners of existing rentals outside the permitted zoning district to apply for a nonconforming use certificate that would allow them to continue that use.

In the flood of applications for nonconforming use certificates that followed, the county discovered that a number of the rentals were on lots in the Conservation District, where such use is prohibited. It's referred those cases to the Department of Land and Natural Resources' Office of Conservation and Coastal Lands, which has successfully pursued significant penalties in recent months for the illegal operations. (See our related Board Talk column.)

The county has also denied outright dozens of applications from those whose properties lie in the Agricultural District, but many of them have asked the Board of Appeals for a contested case hearing.

So on February 13, the county filed a petition with the LUC for a declaratory order that "farm dwellings" — which, since 1976, are the only kind of dwellings allowed in the Agricultural District — may not be used as short-term vacation rentals under state law.

The appeals board has consolidated the contested case requests for 19 of the properties — which are mainly scattered throughout Kailua-Kona, Kamuela, and Captain Cook — but the case has been stayed pending a declaratory order from the LUC.

The properties range in size from one acre to more than 18, and in tax assessed value range from about $400,000 to more than $3.4 million. Most have pools; some have jacuzzis, game courts and/or saunas, as well. Only one of them actually received a county tax exemption last year for farming.

The county stated in its petition that Bill 108 and the Planning Department's implementing rules prohibit the issuance of nonconforming use certificates to rentals on lots created after June 4, 1976, in the Agricultural District. That's because any existing short-term vacation rentals of farm dwellings were illegal under the state land use law, Hawai'i Revised Statutes Ch. 205, the county argued.

HRS Ch. 205 requires a farm dwelling to be exclusively occupied by a single family that gets its income from agricultural activities on a farm that the same family holds in fee or leasehold, the petition stated.

Bill 108, however, defines a short-term vacation rental as a "dwelling unit of which the owner or operator does not reside on the building site, that has no more than five bedrooms for rent on the building site, and is rented for a period of 30 consecutive days or less. This definition does not include the short-term use of an owner's primary residence as defined under section 121 of the Internal Revenue Code."

"Under any circumstances, the purpose of a farm dwelling is to be used in

Continued on next page

'I'iwi from page 5

when you're ready to release them on the other islands," Atkinson said.

The authors simulated population growth of resistant 'i'iwi after the release of 30, 40, or 50 birds in an area where 'i'iwi are no longer found: "Our results showed that populations of more than 2,000 malaria-resistant 'i'iwi could be achieved within 30 years of introduction from the release of 30 birds and somewhat sooner for initial releases of 40 or 50 birds."

The development of a resistant 'i'iwi is still a moon shot, they both admitted. When he was approached about the idea, Atkinson said, "I was kind of incredulous about the whole idea of genetically engineering a bird that is resistant to malaria. It will be extremely difficult to do. The immune response to malaria is so complicated. We don't really understand exactly how it works even in human malaria. To think you can modify maybe one gene to make a bird resistant or refractory is being really optimistic."

Even if all the technical obstacles can be overcome, there remains the matter of possible cultural resistance. "The application of gene editing to conserve wildlife populations is a controversial issue," the authors observe, although in the case of last-ditch efforts to save high-value endangered species, public acceptability is "significantly higher."

"In traditional Hawaiian culture, native plants and animals are often viewed as the manifestation of gods or ancestral spirits," they note. "Proposed genetic modification of the Hawaiian staple crop, taro, met with such resistance from Hawaiian cultural practitioners that a statewide ban was enacted in 2009. 'I'iwi and many other native forest birds may be 'aumakua, family gods, or spiritual guardians and as such would be considered sacred. Consideration of the traditional beliefs of Hawaiians would be an important first step before any genetic modification of 'i'iwi is attempted."

Even assuming that cultural considerations are satisfactorily addressed, how likely is it that the technical competence to develop a malaria-resistant 'i'iwi will be achieved and a sufficiently large captive population will be developed and released in time to save the species?

"I tend to be pessimistic about that, that it's going to be anytime soon. I don't think I'll be around to see it if it happens," LaPointe said. "But the pace of these things is unpredictable in my mind. All it takes is identifying the right gene and somebody who wants to invest in the effort."

"Malaria is a really difficult problem to solve," Atkinson added. "People have been trying to develop a malaria vaccine for over 50 years and we still don't have anything that is completely effective. The parasite is well adapted to evading the immune system."

—Patricia Tummons

BOARD TALK

Land Board Fines Two More Owners For Illegal Vacation Rentals in Kona

At its February 14 meeting, the Board of Land and Natural Resources continued to levy fines against landowners in Kona who had been using their houses in the Conservation District as vacation rentals.

The board fined Sheri Parish-Hamilton, who owns a beachfront home on kuleana land in Honaunau, $10,000, which is $5,000 less than the Department of Land and Natural Resources' Office of Conservation and Coastal Lands (OCCL) had recommended.

The OCCL had also recommended fining her $15,000 for building a single-family residence in the Conservation District without a permit and another $15,000 for constructing the home within the standard district setback of 15 feet on all sides of the property. The Land Board ultimately voted to reduce the former fine to $1,000 and eliminate the latter fine altogether.

In total, the board fined Hamilton $13,000, including $2,000 in administrative costs.

Hamilton's attorney, Onaona Thoene, had argued that the home the OCCL claimed was built without a permit actually existed on the property before Hamilton bought it from her cousin in 2003. She had sought to expand the house in 2005, which would have required a Conservation District Use Permit (CDUP), but later decided simply to repair the existing home.

Thoene also pointed out that the house existed before the establishment of county or state setback rules, and was, therefore, a nonconforming structure.

With regard to the OCCL's proposed $15,000 fine for the illegal vacation rental, Thoene argued that only owners who have had to apply for and receive a CDUP would be barred from such use.

"Because the restriction against transient rentals apples to a 'permittee' and Ms. Hamilton's nonconforming use does not require a CDUP, it is improper for the Board to impose a fine based on a violation of a permit condition that Ms. Hamilton is not subject to," Thoene wrote in testimony to the board.

Land Board member Chris Yuen noted that in the OCCL's report, the photo of the original house shows it was pretty run down. "Was it habitable?" he asked.

Hamilton said it was and that it had been used as a transient rental.

Yuen asked whether the house was demolished to build the current house, noting that a surveyor Hamilton had hired years ago called the structure a shack.

"We actually used each wall. We reused the same materials in that house. Windows, trim. We used a lot of it. We slowly repaired it, but did not demolish," she replied.

"Is the house of the same design?" Yuen asked.

"Pretty much," Hamilton said.

Land Board chair Suzanne Case asked whether the house was there in 1964, which is when a structure had to exist to be considered nonconforming.

"It looks like it could have been there since 1864," Yuen joked.

Maui Land Board member Jimmy Gomes seemed skeptical that all Hamilton did was repair and replace things on the house. "Looking at this new home, it's completely revamped. It seems to be way larger than the original footprint," he said. Hamilton, however, assured him that it was not.

"Everybody would agree the original house is nonconforming. It looks like it's been there forever. I think we can all safely assume it was there since 1964," Yuen said. "The question is, is this old structure here that we're looking at in the pictures had that been … damaged or destroyed to the extent of more than 50 percent of its replacement cost?" he asked. If it had, the department's rules do not allow it to be rebuilt without a permit, he argued.

Thoene countered that the house was not destroyed and that the rules allow for repair and maintenance without a permit.

"My gut feeling [is] it had lost more than 50 percent of the cost to replace it by the time these pictures were taken," Yuen said, referring to the photos of the home as it was in 2003. "The rules say the burden of proof to establish a legally non-

Continued on next page

TVR from page 6

connection with a farm: to support and be accessory to agricultural activities which provide income to the exclusive occupants of the farm dwelling who are also the owners or leaseholders of a farm," the petition stated.

Bill 108's definition of a short-term vacation rental "irreconcilably conflicts with a farm dwelling. … [T]hose short-term renters do not obtain income from agricultural activity," the petition continued.

The county conceded that the state land use law allows short-term overnight accommodations (21 days or less) within the Agricultural District if they are part of an agricultural tourism activity "which coexist with a bona fine agricultural activity." However, they are only allowed in Maui County.

"The provision of these types of agricultural tourism short-term overnight accommodations further demonstrates that the Legislature did not intend to allow for the short-term vacation rentals at issue in farm dwellings," the petition stated.

Finally, the petition pointed out that a Hawai'i court ruled that allowing cellular towers to be considered "utility lines" in the Agricultural District unreasonably expanded the intended scope of the term and frustrates the state land use law's basic objectives of protection and rational development. The same rationale, the county argued, should be applied to short-term vacation rentals and farm dwellings. ***—T.D.***

Board from page 7

conforming structure is on the applicant. The rule doesn't say whose burden it is to establish whether the replacement cost is more than 50 percent," Yuen said.

He said he was very sympathetic with reducing the proposed fines.

OCCL administrator Sam Lemmo said that the home was a single-family residence. "If you change that use to a commercial use, a transient vacation rental, it then becomes something different from what it was intended for. Therein lies the reason we're seeking a penalty for that," he explained. With regard to the fact that the house was unpermitted, Lemmo said he thought Hamilton seemed amenable to applying for an after-the-fact CDUP. Lemmo also said he did not have a problem with eliminating the proposed setback fine. "That could have been an overreach on our part," he said.

"At the end of the day, I'm interested in compliance. I'm not interested in people's money, per se," Lemmo said, adding that his main focus was getting the maximum — $15,000 — for the illegal vacation rental to maintain the department's credibility with regard to enforcement. Hamilton said she stopped as soon as she received a letter from Lemmo's office informing her it was illegal. "If you want to fine them for the construction of a home, that's up to you. I'm trying to get through this without a contested case," Lemmo said.

Yuen said he thought the reconstruction of the house was a violation based on the fact that the old house lost more than 50 percent of its value beforehand, but recommended only a $1,000 fine.

With regard to the illegal vacation rental, Yuen proposed a $10,000 fine because "there is this possibility there is an argument they had a legal TVR … in the preexisting nonconforming structure."

In addition to the fines, Yuen recommended that Hamilton apply for an after-the-fact CDUP within 180 days.

The board approved Yuen's recommendations and Thoene indicated that Hamilton found them acceptable.

PHOTO: DEPARTMENT OF LAND AND NATURAL RESOURCES

Sheri Parish-Hamilton's Honaunau home before (top) and after (bottom) repairs.

Full Fine

Later in the meeting, the board did impose the maximum fine of $15,000 for an unauthorized transient rental near Ke'ei Beach, plus a fine of $2,000 for administrative costs. The property is owned by Hugh Wilson, Ke'ei Beach, LLC, Hubert Richards, and Elizabeth Richards.

In this case, the home was fully permitted, but, according to the owners' attorney Veronica Nordyke, they were unaware of the permit conditions prohibiting short-term rentals when they inherited it.

Once OCCL informed them of their permit conditions, the Wilsons immediately stopped all rentals and have been in compliance ever since, she said. She added that the family disagreed with the fines, since it was a first violation and no harm was done to the environment. She asked that the board reduce the fine to somewhere in the zero-to-$1,000 range.

With regard to the proposed administrative expenses, Nordyke suggested that should be reduced as well, since the violation case was essentially the result of self-reporting to the county while trying to obtain a county TVR permit.

Nordyke said the home had been in the family for more than 100 years and the recent vacation rentals helped fund needed repairs.

"The fine should be measured based on harm to environment, not on any alleged profit. That is not a factor staff should be looking at," she said, adding, "There was no profit. They were receiving income, but it was to offset [repair costs]."

"That's still income," board chair Suzanne Case said.

Board member Yuen added that by Nordyke's logic, someone could make $300 a night renting the home "and as long as the guests were nice people and didn't break any coral or throw beer bottles around, there's no harm to the resource." The family could make $300,000 in income "and no fine should be levied. That's your position," Yuen said.

"Yes, that's part of our position," she replied.

Board member Sam Gon explained that the fine was not so much for damage, but inappropriate use of the Conservation District.

Nordyke suggested that the board update its penalty guidelines to reflect that. She also cited a January 2019 Hawai'i Supreme Court decision that she said backed up her recommendations.

After an executive session, the board unanimously voted to approve the $17,000 fine OCCL had recommended.

—T.D.

Owner of Wailuku Ditch System Fights Fine for Dumping Water into Dry Gulch

Last November, Wailuku Water Company (WWC) president Avery Chumbley told the Commission on Water Resource Management that his company doesn't have enough money to make the kinds of improvements needed to better control the water flowing through the irrigation system he operates.

"We're at a financial point I'm not sure how much longer I can continue to be able to do this. Had I had more cash reserves, maybe I would have done more system losses work," he said during final arguments in a contested case hearing over the use of water diverted from Waihe'e and Wailuku rivers and Waiehu and Waikapu streams, collectively known as Na Wai Eha. (The commission has not yet issued a decision in that case.)

Instead, he said, he has had to release water diverted from those streams that his customers don't use into Pale'a'ahu Gulch, which empties into the Kealia National Wildlife Refuge.

While Chumbley called it a release, commission staff and the community group Hui o Na Wai Eha are calling it waste, which is prohibited under the state Water Code.

At the commission's February 18 meeting, based on evidence collected by the Hui, staff recommended fining the company $24,500 for 16 days of wasting water in a designated water management area between late September and early January.

Hui members flew to Honolulu to testify on the matter, but Chumbley requested a contested case hearing before they could do so. "There is a lot I would like to say. Wailuku Water Company disagrees with all of the conclusions in the staff submittal," Chumbley said in making his request.

Once a contested case hearing is requested, the commission is barred from receiving evidence or testimony at a public meeting, unless the commission decides at that same meeting to deny the request. In Chumbley's case, since his company is the target of an enforcement action, it's unlikely the commission would find he is not entitled to a contested case hearing.

Citizen Complaint

Before Chumbley made his request, commissioners heard from Dean Uyeno, head of the commission's stream protection and management branch, on how the agency arrived at its fine recommendation.

After receiving a tip in late September that water was flowing in the normally dry gulch, Hui members began taking note of how often water flowed through it and even dispatched a drone to determine the source.

The group found that water was spilling from an outlet in WWC's Waihe'e Ditch that fed directly into the gulch.

In an October citizen complaint to the commission, the Hui wrote that it was disturbed by WWC's water dumping, "especially during one of the hottest and driest summers on record."

PHOTO: HUI O NA WAI EHA

Water spills from Wailuku Water Company's Waihe'e Ditch into Pale'a'ahu Gulch.

"In fact, the Na Wai Eha Contested Case that started in 2003-2004 derived from a similar waste complaint in which the Hui filed against WWC who was doing similar illegal dumping of water into Pohakea Gulch, which is the fourth dry gulch in Waikapu just south of Pale'a'ahu Gulch. This is truly appalling and a blatant misuse of our public trust resource, let alone the fact that this dumping is occurring during an open contested case hearing, extreme drought conditions and while there are discrepancies around IIFSs [interim instream flow standards] in multiple streams across Na Wai Eha," the complaint stated.

With regard to the flow standard, on September 27, the Hui and Skippy Hau of the Department of Land and Natural Resources' Division of Aquatic Resources took flow and temperature measurements of Wailuku River. They found 4.7 million gallons a day (mgd) was flowing and the water temperature was a high 79.7 degrees Fahrenheit.

"This measurement signifies that the 5 mgd at the mouth of the Wailuku River, which is the IIFS, is not being met," the Hui wrote, adding that the high water temperature does not promote healthy native aquatic species habitat and is detrimental to kalo production.

With the possibility that WWC had been dumping water on and off for "weeks on end, months and possibly on and off for years," the Hui argued that the only fair remedy would be to issue fines for all of the days the Hui had documented water being released into the gulch.

Commission deputy director Kaleo Manuel forwarded the complaint to WWC and asked the company to formally respond and immediately cease any water dumping.

In its November 15 response, WWC explained that the dumping was due to a number of factors: One of its water customers, MMK Maui, shut down a reservoir for a month to reline it, resulting in reduced water deliveries beginning on September 24. Another large customer, Mahi Pono, reduced its use from 5 mgd to 3 mgd starting around November 1. From October 28 to 31, WWC took additional water in support of the fish ladder installation project on the Wailuku River. The company also stated that its previous efforts to reduce waste — by shutting down some of its reservoirs — also reduced its ability to store, rather than dump, excess water.

To avoid future waste, WWC promised to check in more often with its customers on their actual water needs, instead of relying on their historical use.

Commission staff visited the Pale'a'ahu Gulch on November 19. It was dry. But less than two months later, on January 10, Hui president Hokuao Pellegrino informed the commission that water was again being dumped into the gulch, "more than we have ever seen, in fact." The Hui again submitted photos and video.

Staff concluded in its report to the commission that the Hui's photo and video evidence suggest that the amount of water

Continued on next page

WWC released into Pale'a'ahu Gulch considerably negated the company's efforts over the past decade to reduce system losses "on a single-day basis." Altogether, WWC claims to have reduced system losses by about 1.3 mgd through repairs, improvements, and the closure of certain reservoirs and diversions.

The report notes that the 16 occurrences of water flowing into the gulch between September 29, 2019 and January 9 of this year did not include the period in October during which the commission had asked WWC to divert water for the fish ladder installation.

Discussion

The commission has the ability to impose fines of up to $5,000 per day per violation. In WWC's case, staff recommended the minimum daily fine — $250 — for wasting water, as well as an additional $250 per day for committing a violation in a designated Water Management Area. It tacked on another $1,000 a day because multiple violations had occurred after WWC had been told to either minimize waste or stop dumping water. It also recommended a fine of $500 for administrative costs.

While the commission's penalty policy allows fines to be reduced because of mitigating factors, staff did not recommend any reductions.

At the commission's meeting, Uyeno said that WWC, to its credit, has taken a number of steps to leave water in the streams. However, he added that the streams are located in a water management area, and the company had been ordered in a contested case hearing to reduce waste. While it may be difficult to prevent waste during high-flow periods, Uyeno pointed out that the waste was occurring in low-flow conditions.

Commissioner Paul Meyer asked what reasonable measures WWC should have taken to allow for greater control over diversions and releases.

"Certainly a monitoring system is needed," Uyeno replied, adding that old monitoring systems used by WWC and previous system managers are now inoperable. According to the staff's report to the commission, a damaged intake along the Waihe'e ditch sometimes results in WWC diverting more water from the Waihe'e River than needed.

Commissioner Mike Buck asked Uyeno if he had a more specific estimate of how much water had been wasted. "Did you have a number or just some ballpark?" Buck asked.

Uyeno said that just by looking at the photographic evidence, a considerable amount of water flowed through the gulch. "How long it occurred, I can't say. Perhaps the Hui could provide some information on that," Uyeno said.

Commissioner Kamana Beamer said he thought 16 separate occurrences was pretty egregious. He and other commissioners asked Uyeno what could be done to prevent WWC's water dumping.

"It's always going to be difficult. Number one, better monitoring would certainly help us do that," he replied, adding that his agency would need daily, if not hourly, reporting. "That can be a burden on different irrigation systems, but is something we need to move forward with. If we had that we could possibly build in system alerts," he said.

He continued that so many ditch systems run through unpopulated areas or forests that the commission needs people on the ground, like the Hui.

Beamer asked whether having a commission staff person on Maui would help.

Uyeno said it might improve the commission's response time.

Commissioner Neil Hannahs asked whether people who are allocated water have an obligation to inform the system operator in a timely manner of changes in their water needs.

Uyeno pointed out that the Water Commission had not yet issued any water use permits to any of the parties in the contested case involving WWC's system. There are contracts between water users and WWC, he added.

Commissioner Meyer asked if WWC would have had more control or flexibility in diverting water if it had fixed the damaged or inoperable control gates on its ditches.

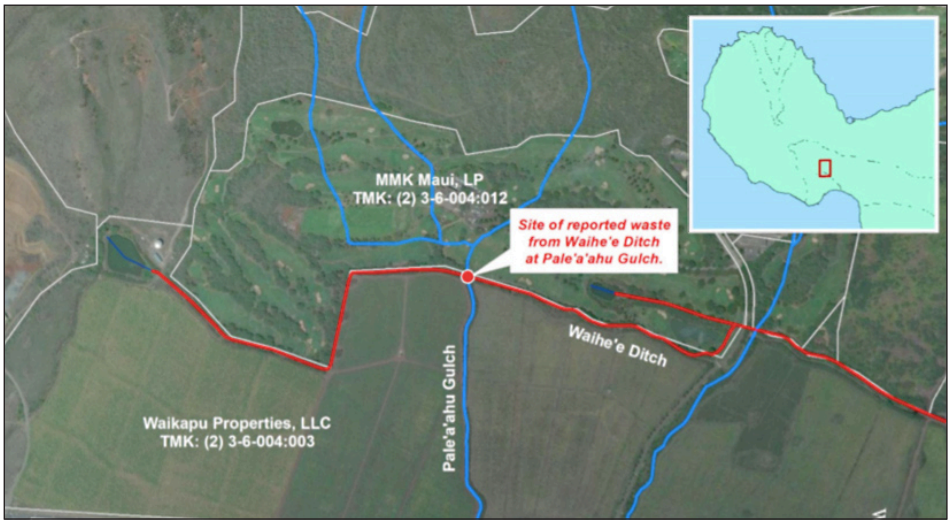
"At minimum, Wailuku Water Company would be able to reduce the overall intake into Waihe'e ditch," Uyeno said.

"Did you ask them why they didn't fix it?" Meyer asked.

"No," Uyeno replied.

Commission chair Suzanne Case said the commission would later determine whether or not to hold the contested case on Maui.

In a Facebook post the day after the commission's meeting, the Hui stated that it was prepared to refute all of the reasons WWC gave for its water dumping. "What Avery Chumbley of Wailuku Water Co. doesn't realize (obviously) as he scrambles to find any and all ways to deny his wrong doing via stall tactics, is that the Na Wai 'Eha Community has every single stream, diversion, gulch, ditch, and reservoir thoroughly mapped and watched over for any and all missteps on his part. The days of plantation, corporate water theft and their slick legal advisers are slowly fading away and a new generation of kia'i wai and aloha 'aina is rising and laying a new foundation for cultural, natural and environmental management and stewardship." ***—Teresa Dawson***



COMMISSION ON WATER RESOURCE MANAGEMENT

For more background, see, "Parties Offer Final Arguments In Na Wai Eha Contested Case," from our December 2019 issue.

Bills Seek to Secure Water Resources Via Transfers of Lands, Irrigation Ditches

For years, Wailuku Water Company (WWC) has been trying to get Maui County to take over its irrigation system. Maui mayors have repeatedly included in their proposed budgets $9.5 million to purchase the company's lands and infrastructure, but the County Council has never agreed to fund it.

In the meantime, WWC president Avery Chumbley has complained that his company is bleeding money operating the system, which serves more than 100 users, but collects money from only a fraction of them. Many of those who don't pay are owners of kuleana lands that were cut off from their traditional water sources when WWC's ditch system was constructed.

What's more, the Public Utilities Commission (PUC) has prevented WWC from acquiring more paying users until the Commission on Water Resource Management concludes a contested case hearing over who gets to use water from the streams — known as Na Wai Eha or the Four Great Waters — that feed into the ditch system.

In 2018, WWC sold nearly 4,300 acres of watershed lands "to fund continued operations of the surface water delivery system due to 12 years of continued financial losses resulting from the unresolved longstanding contested case before the Commission on Water Resource Management and the suspension docket before the Public Utilities Commission," Chumbley testified to the Legislature in January. Weeks later, the Water Commission staff proposed fining WWC $24,500 for wasting some of the water it diverts. Chumbley has requested a contested case hearing over the recommendation. (A related article on that appears elsewhere in this issue.)

In the meantime, WWC's remaining 8,898.7 acres of watershed lands are still up for sale. And this legislative session, two bills have been introduced to acquire those lands to protect the watershed's scenic, environmental, and cultural value.

House Bill 2555 and its companion, Senate Bill 2692, propose to allocate an undefined sum of money from the state Land Conservation Fund to the Department of Land and Natural Resources (DLNR) to help buy the lands.

Chumbley urged the Legislature to pass the measure quickly.

"If this acquisition process drags on to the sunset date [for purchase of the land] as noted in the measure of June 30, 2022, WWC will have long been forced to shut down its operations and sell off the remaining 8,898 acres to a new private owner. That would be a loss of a rare opportunity for the public to take control of a major and significant part of the Island," he wrote in his testimony on HB 2555.

The House bill stalled after second reading in early February, but the Senate version was approved by the Ways and Means Committee on February 20. The bill would take effect this July.

DLNR and Water Commission director Suzanne Case offered an amendment to both bills to allow the funds to be used to purchase WWC's irrigation system and easements as well, but it was not adopted.

She noted in her testimony that the DLNR is working with federal and county partners to enable the purchase of the watershed lands, while securing, under county ownership, the water systems and easements downslope. "Exact acreage of the acquisition cannot be identified until the land has been surveyed. In addition, it is our understanding that the County of Maui is seeking to secure through its budget process the significant funds needed to purchase the water system and easements," she wrote.

Jeffrey Pearson, Maui's director of water supply, and Mayor Michael Victorino also testified in favor of the acquisition, noting that the watershed provides 70 percent of the island's drinking water. "State control of these critical watersheds would ensure adequately funded and consistent watershed management. Na Wa Eha is also a strong candidate to receive federal funding through the Forest Legacy Program to further enhance this acquisition," they wrote.

Lea Hong of the Trust for Public Land noted in her testimony that the acquisition did not need a special allocation, because it could be accomplished by supporting Gov. David Ige's request to lift the Legacy Land Conservation Program's spending ceiling from $5.1 million to $10.2 million. The low ceiling has allowed more than $20 million to accumulate in the fund.

"This would benefit Na Wai Eha as well as other worthy projects from Maui and Hawai'i Island. … The Legacy Commission has identified and recommended 11 projects (including Na Wai Eha) for funding for FY21, but only two projects can be funded at the existing spending ceiling level," she wrote.

With the current ceiling, only the commission's top three projects would receive any funding. The Na Wai Eha project, which sought $2 million from the fund, was ranked sixth.

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Plan to Transfer Kaua'i Ditch To Ag Department Advances

The East Kaua'i Water Users' Cooperative bowed out last year from its responsibility to operate the section of an old sugarcane plantation irrigation system — including the Wailua Reservoir — that fed its farms and pasture lands. It was too expensive to maintain and get a state water license, the group decided.

To keep the system viable for future agricultural use, the Department of Land and Natural Resources has allowed a company to conduct maintenance activities until a long-term solution can be found.

For the second year in a row, a bill (Senate Bill 2099) has been introduced that would transfer to the state Department of Agriculture that section of the East Kaua'i Irrigation System that the co-op used to operate. The bill would also provide the department with additional staffing and funding to handle the added responsibility. On February 20, it was approved by the Senate Ways and Means Committee.

"The bill provides much needed support for a system that has been operated and maintained by volunteer farmers in East Kaua'i for many years. The need for continued irrigation access for farmers in the region is of utmost importance and directly supports the state's goal to double local food production," Board of Agriculture chair Phyllis Shimabukuro-Geiser stated in her testimony on the bill.

The system currently sits on lands controlled by the Department of Land and Natural Resources. Department director Suzanne Case testified in support of the bill, but added that if the Legislature did not approve it, "the Department will pursue shutdown of the irrigation system, including breaching the reservoirs, as a last resort."

PHOTO: DAN DENNISON

Wailua Reservoir, Kaua'i

One of the members of the cooperative, the Saiva Siddhanta Church, testified that the system, specifically the Wailua Reservoir, has served its property for the past 100 years.

"It continues to be used to water our monastery gardens and dairy cows, as well as create wetland habitats within the property and marvelous scenic ponds immediately next to our nearly finished Iraivan Hindu Temple," church vice president Sadasivanatha Palaniswami wrote.

"Leaving aside the vital importance of the water for our property, our neighbors have been alarmed by the threat issued by the [DLNR] to demolish the reservoir should, effectively speaking, SB2099 not pass. Wailua Reservoir is an important public community asset, a public fishing area, a wildlife preserve and nesting place for native birds and bats. It is inconceivable to us that the state would throw away such a resource, especially one they've spent millions of dollars on over the last ten years upgrading to meet dam safety regulations.

"The East Kauai Water Users Cooperative, in which we have had an active part, was formed to manage the system—which is almost entirely owned by the State—on an interim basis after the departure of the plantation. We did so diligently for 18 years, but saw no progress on the State's part to take over the system management. With the failure of SB223 last year, the Coop regretfully but rightly decided to withdraw from management and let the system revert to DLNR, the owners.

"At the end of the session last year, we heard second-hand that SB223 failed because some legislators thought it involved purchasing the system from private owners rather than taking over management of a system—valued 18 years ago at over $200 million—that was already the state's property," he continued.

Without a functioning irrigation system, "farming will not only be impossible in the future, presently active farmers will be put out of business. [Department of Hawaiian Home Lands] will be deprived of water they are presently receiving. Fern Grotto, one of the island's most popular tourist destinations, will suffer greatly. Reservoir 21, immediately on top of the grotto, is filled by this system and when it dries up, the ferns below it die," he wrote.

The Land Use Research Foundation, the Ulupono Initiative, the Hawai'i Farm Bureau, the Maui County Farm Bureau, as well as individual farmers and ranchers also testified in support of the bill.

—T.D.