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Environment Hawai'i
a monthly newsletter

Forest Fright

When the 'ohi'a start dying, who are you going to call?

Don't bother the state Department of Agriculture. Although its Plant Quarantine Branch could impose an emergency ban on shipments of 'ohi'a products from the Big Island, in the hope that this might contain the fungus that is killing trees by the thousands, its standard operating procedure is to wait years and years before acting.

The DOA's Plant Pest Control Branch could at least put out a pest advisory, advising the public not to ship firewood or other 'ohi'a products from one island to another. But that's not going to happen either.

If the situation on the Big Island, where thousands of 'ohi'a are dead and dying as a result of infestation by a new-to-Hawai'i fungus, doesn't move the DOA into high gear, it is impossible to imagine a scenario that would.

As much as the fungus needs to be urgently addressed, and quickly, so, too, do the lethargy and indifference of the folks at the DOA.

IN THIS ISSUE

'Ohi'a Disease on Big Island Poses Threat to Native Forests Statewide

"This pathogen poses a serious threat to Hawai'i's flagship native tree species whose loss would be catastrophic for the diversity, structure, and function of Hawai'i's remaining native forests and the services they provide."

—"First Report of Ceratocystis wilt on 'Ohi'a"

This is the most depressing topic I've ever worked on," said Flint Hughes, a researcher with the Hilo-based Institute of Pacific Islands Forestry. "It's tragic."

Hughes has worked on some pretty bleak subjects – invasive grasses, shrubs, and trees (including albizia), among others – but Ceratocystis fimbriata, a fungus that has been killing 'ohi'a trees on the island of Hawai'i for the last five years tops all the others, he said in a recent interview.

Hughes and colleagues have watched as the fungus, known now as `ohi`a wilt, has spread rapidly from what they believe to be ground zero – the Leilani Estates subdivision in lower Puna – to forested areas throughout Puna and beyond. Remote sensing surveys in 2010 estimated the spread of the infestation at 1,000 hectares (around 2,500 acres). By 2014, 6,000 ha, or 15,000 acres, of 'ohi'a stands had been infested. So far, the disease has not been detected in Kona and Kohala, Hughes said, but it has spread northward to Hilo and westward as far as the residential subdivision that backs up against Hawai'i Volcanoes National Park.

"We have a highly virulent strain of the fungus. We're looking at a worst-case scenario," he said.

The research that Hughes and colleagues from the institute (an agency of the U.S. Forest Service's Pacific Southwest Research Station), the U.S. Department of Agriculture's Pacific Basin Agricultural Research Center (PBARC), also in Hilo, and the University of Hawai'i's College of Tropical Agriculture and Human Resources (CTAHR) undertook to identify the fungus has been summarized in an article, "First Report of Ceratocystis wilt on 'Ohi'a," published online in the scientific journal *Plant Disease*. That has been a major step forward in pinning down the exact cause of the widespread death of 'ohi'a, Hughes noted. "The *Plant Disease* report is the benchmark in establishing that this is the pathogen killing the trees," he said.

Until recently, there had been some suspicion that the trees were dying as a result of "classic cohort senescence," Hughes said, referring to a phenomenon noticed decades ago that occurs when trees in large stands of similarly aged 'ohi'a die off within a relatively short time.

But what is occurring now has nothing to do with cohort senescence and is instead the result of the newly described fungus infecting the trees.

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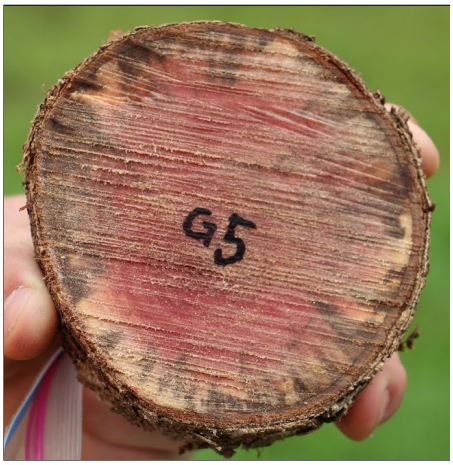

PHOTO: J.B. FRIDAY / CTAHR

A cross-section of an 'ohi'a trunk infested with *Ceratocystis fimbriata.*

Environment Hawai'i

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NEW AND NOTEWORTHY

Warring 'Aina Le'a Factions: The developer that began building the townhouses on the stalled 'Aina Le'a project in South Kohala has sued the company that owns most of the land where the full build-out is to take place.

The lawsuit was filed on April 24 by DW 'Aina Le'a Development, LLC, and RELCO Corp., manager of the LLC. It alleges that Bridge 'Aina Le'a, LLC, the principal landowner, welshed on a promise to sell DW some 2,500 acres that make up the remainder of the area that, since 1989, has been the site of on-again, off-again development plans.

In December 2009, a subsidiary of DW 'Aina Le'a Development – 'Aina Le'a, LLC – took title to about 38 acres of the promised land. This is the lot where DW had begun building 385 townhouses intended to fulfill the requirement of affordable housing imposed by the state Land Use Commission.

The LUC later determined that the developer had not met the deadline for completing the affordable housing portion of the project and other conditions, and rescinded the Urban land use classification, putting all the property back into the state Agriculture district where the anticipated residential and commercial construction could no longer take place.

That decision is still being litigated. Despite delays associated with the litigation, DW 'Aina Le'a claims that it never surrendered its rights under the purchase and sale agreement.

Bridge, however, apparently thinks otherwise and "is now demanding new terms and conditions to close," the complaint states. "For this reason, plaintiffs seek judicial intervention to compel specific performance on the part of defendant to close on the remaining residential lots."

Aha Moku Divisions: For about a decade, the Aha Moku Advisory Committee (formerly Aha Kiole) has had extremely close ties with the Western Pacific Fishery Management Council. Wespac supported it financially and with staff long before the state became involved – involvement that was done at the urging of Wespac.

A major bone of contention has been the proposal floated last summer by the federal Department of Interior to establish government-to-government relations with a native Hawaiian government. While AMAC executive director (and former Wespac contractor) Leimana DaMate submitted testimony on behalf of the AMAC in strong support of the proposal, several AMAC members disagreed, including Michelle Ho'opi'i, of Wailuku.

In response to Ho'opi'i's objections to her testimony, DaMate wrote: "You are correct in that not all of the moku were notified of the AMAC response [to the Interior proposal]. … However, there were a lot of correspondence and phone calls from moku people from the different islands asking for us to send a letter of support. This was because they felt they could not testify in person because the independence people overwhelmed them at the different hearings."

In December, AMAC submitted its annual report to the Legislature, prompting Wespac employee Charles Ka'ai'ai to ask an AMAC member whether DaMate had run the report by the full committee. "This is the first I have heard of this," the committee member informed Ka'ai'ai.

That same month, DaMate and her allies supported a subsistence fishing plan for Ha'ena, Kaua'i, while AMAC member Makani Christensen opposed it. (See our February 2015 "Board Talk" column for details on this.)

The extent of the rift became apparent most recently in March, in testimony before the state Senate Committees on Hawaiian Affairs and Water and Land.

DaMate, testifying on behalf of AMAC, supported Senate Resolution 24, which asked that the AMAC engage stakeholders in the process of developing rules.

Ka'ai'ai also favored the resolution, but went on to use the occasion of the hearing to denounce DaMate. "Island Moku Councils have been battling" with the committee chair and the executive director, who, he went on to say, "have continually erected barriers to accessing the island representatives.

"The ED undermined the Island Councils and supported the development of other councils to obfuscate and hide the actions and requests of the island Aha Moku Councils. The ED has used her interpretation of the Sunshine law to prevent island councils from meeting. … The integrity and veracity of the AMAC and their ED is in question."

Quote of the Month

"My optimism was shaken this session."

— Mark Fox
The Nature Conservancy of Hawai'i

Save the Date: Chip Fletcher, one of the foremost experts on global warming in Hawai'i, will be the featured guest at *Environment Hawai'i's* annual dinner on August 14, in Hilo. The event will celebrate our completion of 25 years of publishing. Call for more information: 808 934-0115.

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

Patricia Tummons, Editor
Teresa Dawson, Staff Writer

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Environment Hawai'i
190 Keawe Street, Suite 29, Hilo, Hawai'i 96720.
Telephone: 808 934-0115. Toll-free: 877-934-0130.
E-mail:ptummons@gmail.com
Web page: http://www.environment-hawaii.org
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Legislators Give Conservation Causes Few Reasons to Cheer, Lots to Worry

At a recent meeting of the Coordinating Group on Alien Pest Species, veteran observers of the state Legislature summed up their take on the session that came to an end last month.

"My optimism was shaken this session," said Mark Fox, the new interim head of The Nature Conservancy of Hawai'i (now that Suzanne Case has been appointed to chair the Board of Land and Natural Resources). While the state Division of Forestry and Wildlife emerged with its forest programs intact, he continued, "the Hawai'i Invasive Species Council [HISC] is going to take a hit."

There were some good bills regarding the inter-island shipment of pests, but they did not make it through to passage.

"It was a challenging session, particularly in regard to some of the processes that occurred at the Legislature. Clinically, some of it was ingenious policy-making, but it was sometimes frustrating to watch."

Josh Atwood, director of HISC, said that his organization "avoided some potentially damaging bills, but it didn't get any changes that would allow the [state] Department of Agriculture to work on biosecurity." After the dust settles, he said, "it's looking like we'll have $4.75 million in our pool for competitive HISC proposals."

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Taking Back from NARS

Perhaps the biggest hit to Hawai'i's natural resources came with passage of Senate Bill 1299. As introduced (by Sen. Jill Tokuda, chair of the Senate Committee on Ways and Means), it would have established a cap on special funds supported by the conveyance tax. The Land Conservation Fund, which receives 10 percent of the conveyance tax, would have been funded only until it reached a maximum of $7.6 million. The rental housing trust fund would have been capped at $38 million. And the Natural Area Reserve Fund (NARF) would have stopped receiving its portion of the conveyance tax once it reached $19 million.

The committee report, signed by Tokuda, states that capping the funds would "promote budgetary planning and transparency" by, among other things, "increasing competition for limited public funds among agencies and programs…"

Carty Chang, at the time the interim chairman of the Board of Land and Natural Resources, testified at the bill's first hearing in February that the NARF had already undergone a cutback from 2009 to 2012, when "the allocation to the NARF was reduced to 20 percent to support the General Fund during the economic downturn. Coupled with the greatly reduced revenues due to lethargic real estate market, the department tightened its belt and made do with less. … [T]he department feels now is the time to push forward with conservation activities to protect the state from the pending impacts of climate change."

When the bill moved to the House of Representatives on April 8, the cap on the Land Conservation Fund was lowered to $6.8 million, while the NARF was completely eliminated. Instead of receiving a portion of the conveyance tax revenues, now NARF would be subject to annual appropriations – set in the House draft at $2.1 million for fiscal years 2016 and 2017 – and the ability to use any of that to manage state-owned Natural Area Reserves was eliminated.

(The use of conveyance tax funds to support the state's own reserves wasn't authorized until 2005. Before then, the fund could be used only to support the Forest Stewardship, Natural Area Partnership, and watershed partnership programs, which provide matching funds to private landowners, and the Department of Land and Natural Resources' Youth Conservation Corps.)

To offset the loss of conveyance tax revenue, the House draft proposed instead appropriating a total of $9,656,128 from the general fund to support the programs and projects that would have been paid for out of the special fund. It also called for $5 million in general funds to support invasive species programs.

The conservation community mobilized in opposition to the House proposal. Dozens of people submitted testimony – some as individuals, others representing all the major environmental organizations in Hawai'i.

Christy Martin, director of the Coordinating Group on Alien Pest Species, reminded lawmakers that this represented a change from their previous positions. "Historically, legislators were supportive of finding dedicated funding mechanisms for programs and services where there is a nexus between the source and the program it supports," she stated in her testimony. Referring to the idea expressed in the Senate committee report that programs should have to compete for funds, Martin continued:

"Funding to protect 'ohi'a (for example) cannot possibly compete against programs protecting public health, or educating kids. Agencies can only do so much to compete for funds, but legislators have a responsibility to ensure that government agencies have enough funds to take care of public trust resources. Special funds like those funded through a portion of the conveyance tax were a way to ensure that 'ohi'a did not have to compete with kids for funds."

Martin attached a table to her testimony, showing the amount of general funds received by the Department of Land and Natural Resources since 1996. In that year, that department received $26.67 million. Two decades later, the general fund appropriation for the department was barely $3 million more — $29.95 million. Although clearly, legislators have not been able to fund increases over time, she said, "the DLNR has added programs by utilizing special funds. … These programs include the Watershed Partnerships and support for the Invasive Species Committees on each island, support for the Hawai'i Ant Lab, and more. The repeal of S[pecial] funds for conservation will have repercussions statewide this year, and for generations to come."

Marjorie Ziegler, testifying on behalf of the Conservation Council for Hawai'i, called the proposed draft "a huge loss and a significant step backwards in protecting our resources for future generations." In addition to opposing the bill, Ziegler also voiced her objections to the way the legislation was handled. "The content of the proposed [House Draft 1] should have been heard by subject committees in both houses" before eliminating the dedicated funding for these important programs, she told the committee.

Chris Yuen, a member of the Board of Land and Natural Resources, also weighed in on the process as well as the substance of the bill. "This move to take dedicated funding away from the Natural Area Reserve System, coming after it passed [the state budget bill], … raises some serious questions about the leadership of the House Finance Committee and its commitment to environmental protection."

Despite the testimony, the Finance Committee passed the bill out with few

changes. This was, for all intents and purposes, the same bill that was adopted by House and Senate conferees, with co-chairs Sylvia Luke, chair of the House Ways and Means Committee, and Tokuda, her Senate counterpart.

On May 5, the conference bill was approved in the Senate, with "no" votes cast only by Sam Slom and Laura Thielen. Russell Ruderman and Gil Riviere voted aye with reservations. The same day, the House voted to approve the bill as well, with dissenting votes cast by Calvin Say, Cynthia Thielen, and James Tokioka.

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Invasive Species Study To Get an Update

In 2002, the Legislative Reference Bureau released a study, "Filling the Gaps in the Fight Against Invasive Species," that estimated the annual cost of addressing invasive species issues in the state at $50 million. Of course, since then, funding for programs addressing invasive species has fallen far short of that mark. The initial budget of the Hawai'i Invasive Species Council, in fiscal 2005, was just $2 million. From 2010 to 2013, HISC had no general funds, and in 2014, just $750,000. In the current fiscal year, a record $5.75 million was appropriated.

Now, with more than a decade of new invasive pests and ramped-up associated risks – little fire ants and the coconut rhinocerous beetle on O'ahu, albizia in hurricane-ravaged Puna, the awful prospect of 'ohi'a disappearing from Hawai'i forests as a result of a new-to-Hawai'i fungus – the Legislature has decided to update the 2002 study by appropriating $100,000 to the LRB. The study, authorized in House Bill 1471, is to be delivered to the Legislature before the start of next-year's session.

But at the same time, and in the same bill, the Legislature rescinded funding for two invasive species projects approved in 2013: an appropriation of $162,540 for a detector-dog program, and $165,055 for a program to protect queen bees.

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Resource Protection Struck From Environmental Response Fund

One of the first measures signed by Gov. David Ige – Act 25 of the 2015 session – was Senate Bill 1118. That bill makes an appropriation of $800,000 for the current fiscal year to cover expenses incurred by the Department of Health's Hazard Evaluation and Emergency Response (HEER) branch. Whether it is enough is anyone's guess: the DOH had asked for $1.05 million.

As the bill notes, HEER is funded mostly by the Environmental Response, Energy, and Food Security tax, better known as the barrel tax. Of the $1.05 tax on each barrel of petroleum product, five cents is deposited into the Environmental Response Revolving Fund (ERRF).

"However," the bill notes, "the environmental response revolving fund balance is dangerously low due to reduced consumption of crude oil in the state, while demand for public health and environmental hazard evaluation and emergency response has increased."

It's more than dangerously low: it is in debt.

According to testimony from the Department of Health on Senate Bill 359, HEER had asked to borrow $1 million from the state treasury to help it meet its obligations and cover payroll through June (the governor and the Department of Budget and Finance pared that back to $900,000). The department "anticipates that it would repay this loan in" fiscal year 2016, the DOH told the House Committee on Energy and Environmental Protection last March, when the panel was hearing SB 359.

In its original draft, that measure would have increased the share of the barrel tax that goes to fund the ERRF to 15 cents, from 5 cents; increased the share that goes to the Energy Security Special Fund to 40 cents, from 15; and increased that going to the Agricultural Development and Food Security Special Fund to 40 cents, from 15.

According to the Department of Health, the five-cent diversion into the ERRF "is insufficient to sustain the 41 positions (31 filled positions) that depend on the ERRF for funding. These include positions that respond to oil spills and hazardous material releases, as well as positions that work on environmental issues, like state water quality monitoring, contaminated site remediation, and management of solid and hazardous waste."

The bill passed the Senate and the House Energy and Environment Committee without substantial change. When it arrived before the House Ways and Means Committee, chaired by Sylvia Luke, it became clear that Luke had a different vision for the barrel tax. What her committee heard was a drastically modified version of the bill– a proposed House Draft 1 – that, yet again, removed a permanent funding source for much-needed resource protection programs, replacing it instead with general fund appropriations amounting to roughly $6.5 million total over the next two fiscal years.

The Department of Health did not object. Testimony from others, including the Honolulu Board of Water Supply, seemed to be directed to the earlier version of the bill, the one that would have increased HEER's share of the barrel tax.

When the bill came out of the House and Senate conference committee, it had been changed once again. The definition of fossil fuel was expanded to include fuels other than oil, with taxes on them based on their BTU content.

In its final form, it retains the ERRF, but holds its share of the barrel tax to five cents. At the same time, it narrows considerably the range of activities that the DOH can support with the ERRF. Actions authorized in previous legislation had included "response actions and preparedness, including removal actions" and "environmental protection and natural resource protection programs … and to address concerns related to air quality, global warming, clean water, polluted runoff, solid and hazardous waste, drinking water" and more. All that language has been struck, with the department limited to "removal, remediation, and detection of oil and pollutant or contaminant releases."

Furthermore, any funds in the ERRF in excess of $1.25 million at the end of each fiscal year are to be transferred to the state general fund.

Last, but by no means least, the House and Senate conferees slipped in language, unheard in any previous incarnations of the bill, that allows AES, the owner of the coal-fired power plant on O'ahu, to avoid paying the BTU-based tax, set at 19 cents per million BTU, on the coal it imports. AES is not called out by name, but is the only facility that fits the definition in the bill. "The tax imposed … shall not apply to coal used to fulfill a signed power purchase agreement between an independent power producer and an electric utility that is in effect as of June 30, 2015."

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Energy Security, With an Asterisk

One bill that has received high praise from a number of quarters is House Bill 623, relating to renewable standards. In

its final form, the measure resets the state's goals for advancing renewable energy. Before, the goal was to achieve 25 percent of net electricity sales by December 31, 2020, from renewable energy; that is now 30 percent. The fraction for the end of 2040 is 70 percent, and that for 2045 is 100 percent.

Life of the Land's Henry Curtis has had the bad grace to point out the fly in the renewable portfolio standards. In a commentary published in the online news source *Civil Beat*, he reminded readers that electricity accounts for less than a third of all energy consumed in Hawai'i. "Twenty-two percent renewable electricity" – the state's current level – "means Hawai'i gets 7 percent of its total energy from renewable resources. Most energy is used for ground and air transportation."

Furthermore, he noted, state law defines renewable in a way "that does not make sense." All biofuel qualifies as renewable, he wrote, "no matter how it is made or where it is grown" – including, for example, palm oil from plantations in Southeast Asia. Finally, he pointed out that the way that percentage is calculated is skewed, so that renewable goals can be deemed to have been met even if non-renewable fuels continue to account for a large measure of electricity used.

The measure contains another big loophole. If utilities are unable "to acquire sufficient renewable electrical energy to meet the renewable portfolio standard goals beyond 2030 in a manner that is beneficial to Hawai'i's economy in relation to comparable fossil fuel resources," they are given a pass.

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Community-Based Renewable Energy

Rooftop solar installations can benefit homeowners, but it is difficult for those living in apartments and other multi-family dwellings to enjoy the same advantages, given the difficulties associated with siting photovoltaic panels and other challenges.

Senate Bill 1050 attempts to address that by requiring utilities to file with the Public Utilities Commission a rate schedule to accommodate people who participate in community-based renewable energy projects. The deadline for that filing is October 1 of this year.

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Liquefied Natural Gas Gets a Green Light

Liquefied natural gas is not renewable, nor is it locally sourced, but Hawaiian Electric Industries has been pushing to allow it to be included as part of a bridge to a more renewable future. And this year, the Legislature went along.

House Bill 1286, already signed by Gov. Ige into law as Act 38 of the 2015 Legislature, calls for LNG to be used, albeit "only as a cost-effective transitional, limited-term replacement of petroleum for electricity generation" and when its use "does not impede the development and use of other cost-effective renewable energy sources."

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Special Purpose Bond For Maui Waste Processor

House Bill 139 sailed through to passage with few amendments, although there were many vocal opponents. The measure authorizes the issuance of $90 million in special purpose revenue bonds to help Anaergia, Inc., build a waste-to-energy plant on Maui.

Two years ago, Maui County selected Maui Resource Recovery Facility, LLC (a subsidiary of Anaergia Services, LLC, which is itself a subsidiary of Anaergia, Inc.) to develop the facility, intended to produce renewable fuels from municipal waste as well as fuel-producing crops the company plans to grow on Department of Hawaiian Home Lands in west Maui.

Last year, when the county announced it was discontinuing a pilot curbside recycling program launched in Kihei in 2013, many residents placed the blame on the agreement with Anaergia, signed by Mayor Alan Arakawa in January 2014. In testimony before the House Finance Committee on February 26, dozens of them made their objections clear. It was in vain. The measure passed and sped through the Senate as well.

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Tax Credits For Cesspool Upgrades

Hawai'i leads the nation in one dubious category: cesspools. As stated in the preface to House Bill 1140, "Cesspools constitute a nonpoint contamination source of grave concern… [They] release approximately 55,000,000 gallons of untreated sewage into the ground each day."

Although few would disagree on the need to upgrade cesspools to septic tanks or connect the homes and businesses using them to sewer lines, a proposal by the Department of Health last year requiring the phase out of cesspools was met with strong objection, led primarily by real-estate brokers. Then-Gov. Neil Abercrombie left office in December without having signed the proposed rules.

HB 1140 attempts to move the state in the direction that the proposed rules could not by offering some financial assistance to owners of buildings that are served by cesspools. An individual homeowner can qualify for up to $10,000 in tax credits. As soon as the amount of credits totals $5 million, however, tax credits cease for that year, with eligible taxpayers instructed to claim the credit the next year.

The bill restricts eligibility for the tax credits to only those cesspools that are within 200 feet of a shoreline, stream, wetland, or source of drinking water are qualified for the credit.

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Water Scalping

Stating that "new and innovative options for water conservation must be explored," House Bill 1394 calls for a study of water scalping, a process that "involves the extraction of valuable, usable water from a sewerage network."

Initially, the bill called for the Department of Accounting and General Services to develop criteria for implementing water scalping technology and to install and operate it in selected state facilities by 2019. With DAGS protesting that it had neither experience nor funds to carry out the assignment, the focus was shifted to the Department of Transportation and the scale of work was trimmed back.

In final form, DOT's Airports Division is called on to study the feasibility of water scalping technology in state airport facilities. The bill, which authorizes $8.6 million for the work, gives the DOT until the end of the year to report back on its findings.

— P.T.

For Further Reading

The Hawai'i State Capitol website has a complete list of bills, including all drafts, committee reports, and testimony. Go to *www.capitol.hawaii.gov*.

'Ohi'a from page 1

'Hop-Scotching'

Even determining the extent of infestation is difficult. Trees may be infected long before showing signs of wilt. That confounds efforts to control the disease. While removing a tree showing signs of the wilt might reduce the chance that it could infect other trees, if it is surrounded by other trees that are infected but still apparently healthy, little would be achieved by that effort.

What's more, little is known about the way the disease spreads through the forest, Hughes says. "It's hop-scotching, almost like a forest fire," he noted, with new outbreaks detected at some distance from old ones.

One of the mysteries yet to be solved is how the fungus arrived in Hawai'i in the first place.

Genetic analysis of the wilt showed it was very similar to strains found in arrowhead plants (Syngonium) in Hawai'i, Florida, Brazil, and Australia. However, it is not yet known whether this fungus is the introduction of an exotic strain or whether it is an existing strain infecting a new host. The range of Ceratocystis hosts "is scary," Hughes said, and includes fruit trees, understory plants, and crop species.

While stopping the spread of the disease on Hawai'i island may be difficult, it may yet be possible to keep it from moving to other islands. "If we're smart, we need to take action quickly. Any number of things could carry this to other islands. There's an immediate need to do something."

A Forest Whodunnit

J.B. Friday, extension forester with CTAHR, elaborated on the difficulty of finding a cure for the disease when so little is known about it.

Friday was one of the first to raise the alarm about Ceratocystis – although until last December, neither he nor anyone else had a name for the disease they were seeing.

He first became aware of a problem in 2010. "I visited a landowner in lower Puna," Friday said. "He couldn't figure out what was wrong" with his dying 'ohi'a trees.

"You see a dead tree," Friday said, "and there's a heck of a lot of things going on. Bugs are getting in, disease – but most of that is secondary."

In 2011, more calls came in from homeowners in the Leilani Estates area. "There are always 'ohi'a dying in people's lots. They bang their roots, do other things. We can't help homeowners with sick trees, though."

By 2012, Friday and his colleagues were seeing trees "going down" and in 2013, they began surveying areas to pinpoint the infestation and taking samples from dying trees in an effort to identify the pathogen.

"The samples we took didn't turn up anything unusual. There are a lot of organisms in a dying tree. But do any of them cause the disease? You can do a swab of your tongue and find a lot of pathogens there, but you're still not sick. There's a disease triangle. You have a pathogen, an organism, and an environment where the pathogens can cause disease.

"So there was no answer as to why we're seeing this widespread disease with regular run-of-the-mill pathogens."

For years he and his colleagues struggled to identify what was wrong with the dying 'ohi'a. "We were casting a wide net, trying to figure out what was going on. Some of the areas lined up with a rift zone, so I even talked with Don Thomas, a volcanologist, about elevated subterranean levels of CO2. Some folks suspected geothermal was causing it. We just didn't know what this was," he said.

> *"To me, the biggest question is, how does it spread?"*
>
> ***— J.B. Friday***

Finally, in 2014, Brian Bushe, diagnostician with CTAHR's Agriculture Diagnostic Service Center in Hilo, recovered a pathogen. Lisa Keith, a plant pathologist with the USDA Agriculture Research Service, "nailed down what it was," Friday said. Never before had it been found on 'ohi'a.

While identifying the pathogen as *Ceratocystis fimbriata* marked a huge step forward, in many respects, that only multiplied the questions facing Friday and the rest of the team working on this issue.

"To me, the biggest question is, how does it spread?" Friday said.

The fungus is related to Dutch elm disease, he noted, "and that gives us some insight into where it could be going."

That disease ravaged elms in Europe and North America in the last century. Treatment of individual trees is possible with injections of a fungicide, but at an annual cost of hundreds of dollars per tree. "But that's landscaping," Friday said, "and is out of the realm of real forestry. We're not going to be flying helicopters over the forest, spraying fungicide."

Knowing how it arrived in Hawai'i might yield important clues about how it disperses. "It didn't get here on an 'ohi'a seedling, since we're not bringing in 'ohi'a seedlings," Friday said, "but it could have come in on an infected piece of wood."

Then again, he continued, "it could have moved on an alternate host. Fungi have complex life cycles and have different hosts at different points in their life cycle." As an example, he cited rust of pine, which has an alternate host of gooseberry. Although gooseberry plants can be infected, they are not seriously damaged by the rust. When white pines are infected, however, they die.

"If there's an alternate host for this," Friday said, referring to *Ceratocystis*, "and we're happily moving this other host around, then we don't know what we're doing."

Friday has set up a website, *http://www.ohiawilt.org*, where he and colleagues can post the latest information on the disease.

'Ohi'a Cookies

Keith, the plant pathologist, is more accustomed to working with diseases of commercially grown plants than native species. But the process of narrowing down pathogens is the same in both cases.

"We look for signs and symptoms, and how the host is responding to this organism," Keith said in describing her work to the Coordinating Group on Alien Pest Species at its meeting last month in Honolulu. In this case, she continued, "signs and symptoms were rapid browning of leaves and complete foliar death. The leaves remain attached, though, and it seems to take only a couple of weeks from the time of notice to the death of a tree."

About a year ago, "we started collecting samples from a variety of areas," she continued. Field sampling involved taking down entire dead trees and slicing up "cookies" – cross sections of the trunk. "Once we started looking at the cookies, we noticed vascular discoloration, everything from mild to a 'flower burst' pattern. There's streaking when you remove the bark. All this led us to believe we would find an organism associated

with this," she said.

She and colleagues at PBARC were able to quickly isolate the fungus. "Right away, we knew we had *Ceratocystis*, which is a large, diverse complex of species that causes wilts." Lab tests they conducted over the remainder of the year confirmed that this fungus was the disease-causing agent. By clogging up the tree's vascular system, it prevents water from reaching stems and leaves, resulting in first the wilted leaves, then the dying branches, and finally the death of the tree. From the time the infection becomes apparent in inoculated seedlings, with the first wilted leaves, to the time the seedling dies is a matter of days, which led researchers to call the disease rapid 'ohi'a death up to the time the fungus was identified.

Rapid Response?

At the Honolulu meeting, the response to presentations by Keith, Friday, and Hughes was a near-unanimous sentiment that drastic action should be taken, quickly, to prevent the spread of the fungus to other islands.

PHOTO: J.B. FRIDAY/ CTAHR

Bark slash of an 'ohi'a tree showing tangential view of dark staining of sapwood from *Ceratocystis infection.*

Christy Martin, CGAPS director, suggested that a name that carries more terror than "'ohi'a wilt" might be a good place to start. "From the public's perspective, 'ohi'a wilt is much less descriptive of what is going on. Should we call it instead rapid 'ohi'a death?"

Friday replied that 'ohi'a wilt "is the term used by experts" when referring to this class of diseases.

Martin noted wryly that this may be one of the reasons "scientists usually have a hard time communicating these issues to the public."

> *"Wilt doesn't quite convey the magnitude of the problem."*
>
> ***— Flint Hughes, USDA***

Hughes agreed. "Wilt doesn't quite convey the magnitude of the problem," he said.

Bryan Harry, a member of CGAPS and former director of the National Park Service in Hawai'i, argued that even in the absence of clear information, when dealing with a risk as grave as this, immediate action was warranted.

"This group should try to go forward with limited knowledge while things are small, rather than wait until it's scientifically documented and we're writing an obituary," he said, eliciting applause from those in attendance.

Hughes asked for guidance from the group: "What would really be helpful for us is to know what kind of questions you all need to have answered before you stick your necks out to do something.... Tell us what kind of information you need."

The Plant Quarantine Branch of the state Department of Agriculture has the legal authority to put emergency rules into place. Such rules are in effect for no more than a year, but they can give resource managers and scientists a breathing space while they learn more about a pest and develop more narrowly tailored permanent rules.

Amy Takahashi, acting head of the Plant Quarantine Branch, was not encouraging about prospects for an emergency rule. "We need to have the science to back it up," she said.

If there was a ban on the inter-island movement of 'ohi'a firewood, she said, "we need to demonstrate that there is fungus in the dead wood." Also, she said, "we have to have an option for treatment. We can't put a total ban on transfer" of suspect items. "There needs to be a way for commodities to move."

Also, before products from any island can be quarantined, the pest that is the target of the quarantine has to be shown to be absent from the non-quarantined areas.

Proving the absence of a disease is difficult, however.

In addition, Friday pointed out a "big wild card" – if the fungus is being transported by an insect or a plant other than 'ohi'a that no one is yet aware of.

The group agreed that surveys of 'ohi'a on other islands would be a good first step toward determining if the fungus is confined so far to the Big Island. Members volunteered to join an ad hoc working group to address the issue and cooperate on allocation of limited resources.

In the meantime, the disease continues to move, swiftly, inexorably, across the island of Hawai'i. Whether it will spread to other islands, or whether it already has, are questions time alone will tell.

— Patricia Tummons

If You Have Infected Trees...

Despite the lack of information on the specific ways trees become infected, the website http://www.ohiawilt.org has common-sense suggestions for anyone who lives near an outbreak.

- Wood from affected trees should not be carried to other areas, since the fungus may remain viable in dead wood.
- Any tools used to cut infected 'ohi'a trees should be cleaned, "either with a Lysol spray or a 70 percent rubbing alcohol solution. Chlorine bleach can rust steel tools, but a 10 percent solution of chlorine bleach and water can be used as long as tools are oiled afterwards. Chain-saw blades should be brushed clean, sprayed with a cleaning solution, then run briefly to re-oil the chain."
- "Vehicles used off-road in infected forest areas should be thoroughly cleaned underneath so as to not carry contaminated soil to healthy forests. Shoes and tools used in infected forests should likewise be cleaned."

Quarantine Rule for 'Ohi'a Fungus Not Likely to Happen Anytime Soon

The rapid spread of the fungus killing 'ohi'a on the Big Island is scary enough. The prospect that it could take down 'ohi'a on other islands is a nightmare.

How to stop it at the shores of Hawai'i island was the question on the minds of most members of the Coordinating Group on Alien Pest Species when it met last month.

"Do we have enough information to try to work on some sort of emergency rule?" asked Christy Martin, CGAPS director. "Probably not is my guess," she said, answering her own question.

An emergency rule from the Plant Quarantine Branch of the state Department of Agriculture (DOA) could put a ban on the shipment of 'ohi'a – seedlings for nursery stock, logs for firewood, and all other 'ohi'a products – from Hawai'i island to other sites within the state.

Amy Takahashi, the acting manager of Plant Quarantine, was asked to tell the group what kind of information would be needed before such an inter-island quarantine could be effected.

"Plant Quarantine is responsible for setting up emergency rules to place restrictions on the movement of 'ohi'a as well as other known hosts," she said. "But we need to have the science to back it up."

Also, she said, "we have to have an option for treatment. We can't put a total ban on the transfer. … There needs to be a way for these commodities to move or of saying that certain items will be low risk."

In addition to finding a treatment, knowing how the fungus, *Ceratocystis fimbriata*, is spread, identifying its possible hosts (in addition to 'ohi'a), and determining its longevity in dead wood were all mentioned as areas of research that would need to be addressed before an emergency rule could be put into place.

Later in the meeting, however, Takahashi was challenged on her insistence that treatment options had to be available before a quarantine could be imposed.

During the discussion of the coconut rhinocerous beetle, which so far has been found only on O'ahu, Springer Kaye of the Big Island Invasive Species Committee said that Neil Reimer, acting administrator of the DOA's Plant Industry Division, had promised that a rule addressing the beetle would be issued soon. In the meantime, she was concerned, she said, that a business on O'ahu was continuing to ship mulch to Lana'i – mulch that could easily be hiding beetle eggs or larvae.

Chris Kishimoto, an entomologist with the DOA, responded. "One of the main reasons why it's not going through the interim rule process is because right now we have no treatments. We can't prohibit the movement of a commodity just because there's a pest. We have to have treatment options to allow those commodities to move."

Instead of a rule, he continued, "we're looking at doing compliance agreements and hope we'll have that ability in the near future."

Kaye was not satisfied. "There's absolutely no way to screen mulch that's at all effective. I want to state my strong protest on this idea that we're delaying something. I disagree with the decision to not quarantine what we can."

Teya Penniman of the Maui Invasive Species Committee followed up with a challenge on the very claim that a treatment option has to be available before an emergency rule can be implemented.

"What statute says there has to be a treatment option?" she asked.

Takahashi's reply took many in the room aback.

"There's no requirement that says you have to have it," she said. When the DOA takes a proposed rule to public hearings, she said, "what we find out, even though there's good science that says we need to restrict the movement of pests, the other side is, we need to have businesses be able to move their items as needed. … Treatment with chemicals, fumigation, even heat treatment, to minimize infestation and allowing [goods] to move has always been a practice for us before we establish interim or permanent rules. So it's just a practice, not policy."

Meanwhile, 'Ohi'a Rust Rule Waits

It has been ten years and counting since *Puccinia psidii* was first identified as a threat to 'ohi'a. In February, the Board of Agriculture voted to allow a permanent ban on imports of potential carriers of this rust, meaning that the department could now take the rule to public hearings.

At the CGAPS meeting, Takahashi updated the group on the timeline for adopting a final rule. "We need to go to the board in June, … do amendments, followed by governor approval. Then hearings, probably in the summertime, finalize it in the fall."

— P.T.

Pest Advisory on Hala Scale

In mid-May, the Hawai'i Department of Agriculture's Plant Pest Control Branch issued pest advisories on the hala scale, *Thysanococcus pandani* Stickney, and the bagrada bug, *Bagrada hilaris* Burmeister.

The hala scale was first detected in Hawai'i on trees in Hana, Maui, in 1994, and has since spread across the island to the point that, according to the advisory, it "now infests all but the most remote hala trees."

Moloka'i hala have also been infested and population of infested trees found on O'ahu, is being treated, the advisory states.

The scale can deform leaves and "also attacks the tree's fruit, can cause entire crowns of the plant to fall off, and premature death of the tree," the advisory states.

The advisory cautions against any interisland movement of hala plants, seeds, or green leaves. If brown leaves are to be shipped interisland, they should be double-bagged and frozen for at least 48 hours.

The bagrada bug, a small "stink bug" described as "a serious economic pest of agricultural crops," was detected on Maui just last fall. Its preferred hosts are cruciferous vegetables, including broccoli, bok choi, cabbages, cauliflower, and Brussels sprouts, but it also feeds on corn, potatoes, papayas, and other crops as well as weeds.

To date, the branch has issued no pest advisory on the fungus *Ceratocystis fimbriata* killing 'ohi'a on the Big Island.

Nor does it plan to.

According to Darcy Oishi, chief of the biocontrol section of the DOA, "The Plant Pest Control Branch is not planning to issue a pest advisory for *Ceratocystis fimbriata* at this point in time. However, HDOA is working with the lead agencies (U.S. Forest Service, Department of Land and Natural Resources, and University of Hawai'i) on this issue on what actions are appropriate and realistic for HDOA to take."

— P.T.

GEMS Program Expands to Add Businesses To Eligible Entities, But Still No Homeowners

In March, *Environment Hawai'i* provided details – to the extent they were available – of a state-administered program called GEMS, short for Green Energy Market Securitization. The program is intended, according to enabling legislation, to bring the blessings of solar power and other energy-efficiency and energy-saving technologies, to markets that have traditionally been underserved in this regard.

Since our report, the Hawai'i Green Infrastructure Authority, which oversees the GEMS program, has rolled out several new initiatives.

Small Business Loans

Perhaps the most significant is the expansion of eligibility for GEMS loans to include small businesses. This was proposed to the Public Utilities Commission on April 8. Recognizing that this category of consumers was not among those named as "underserved" when the Department of Business, Economic Development, and Tourism originally sought PUC approval for the GEMS program, DBEDT was now claiming that "financing available to small businesses is limited" and that "traditional underwriting criteria … hinder the ability of small businesses to access financing."

"DBEDT does not intend to add small businesses to the critical underserved groups as identified in the Application or modify the metrics for 'underserved'," it states in the PUC filing. Still, it goes on to note that when the PUC approved the GEMS program last fall, the commission "did not restrict the GEMS Program from providing small businesses access to PV systems."

The appendix that describes the "small business loan product" specifies that the minimum loan amount is to be $150,000, with a 20-year payback term. Eligible borrowers are described as "small businesses … that do not have investment grade ratings."

Interconnection Technology

In another notice to the PUC of a program change, on April 2, DBEDT announced it was expanding the range of technology that could be included in a GEMS-financed project to include now "Advanced Inverters," "Smart Modules," "Monitoring Devices," "Other Technologies that Support PV Interconnection," and/or "Physical Infrastructure to Support PV Installations."

The HGIA justifies inclusion of such technologies by referring to another PUC docket, this one opened last August by the commission to investigate various issues raised by advances in Distributed Energy Resources (DER). Hawaiian Electric Industries, which owns the electric utilities on all islands but Kaua'i, submitted its proposal in that docket that would accommodate an expansion in the number of rooftop photovoltaic installations – which all but stopped in the islands in 2014, the result of HEI declaring that certain circuits were oversaturated with solar. But that expansion would come at a cost: customers who install solar would no longer get credit for unused power that is fed back into the grid (a practice known as Net Energy Metering), and electric rates governing distributed generation (DG, which in most cases is solar power) "must fairly allocate the fixed costs of the grid to all customers." In addition, HEI is proposing putting new technological requirements on solar installations – increasing their cost substantially – such as advanced inverters, two-way communications between the utility and the customer, "and other elements of the modernized grid."

The theme of fairness is picked up by the HGIA in its April 2 filing with the PUC. "In a market-based scenario, where consumers must pay for their choices, PV systems and PV-Related Technologies are selected based on function and cost. … In regards to the deployment of PV-Related Technologies for the GEMS Program, it is the understanding of the Authority that the motivation behind current and future interconnection requirements … is to reduce negative impacts to the distribution system that occur as a result of integrating distributed generation. So while the perception is that PV systems may cost more as a result of more advanced PV-Related Technologies, such costs may be necessary to expand the number of customers approved for interconnection. … Additionally, such costs also likely reflect costs that should be borne by the PV customer but are currently being borne by all ratepayers."

What's Next?

On March 31, the HGIA sent to the PUC its plan for the 2016 fiscal year (July 1, 2015 through June 30, 2016).

The plan calls for about $80 million to be drawn from the $146 million remaining in the GEMS bank account (of $150 million raised through a bond sale last fall). That amount would be used to support installation of solar panels and other technologies on the roofs of homes, businesses, or non-profit entities. Administrative costs to support the HGIA are expected to run around $1 million.

But the plan submitted to the PUC does not agree with actions anticipated or called for in other documents obtained by *Environment Hawai'i*.

For example, in describing "administration and operating controls," the plan states: "During this implementation phase of the GEMS Program, the [Hawai'i Green Infrastructure] Authority must seek approvals from its executive board for contracts [and] necessary program approvals…" However, several recent contracts were signed on behalf of the HGIA without having been approved by the board or even brought before the board for discussion.

On April 8, deputy attorney general Gregg Kinkley signed a contract on behalf of the HGIA allowing one of the principal GEMS contractors, Clean Power Finance (CPF Asset Management, LLC) to assign a large part of its responsibilities under an existing contract, signed last November, to Coronal Group, LLC. Although the HGIA board approved the CPF contract after the fact at its February 26 meeting, by that time, CPF and Coronal contract had already entered into their separate contract. At no time during the February 26 meeting was the HGIA board informed of this development, much less asked to consent to it.

(The CPF agreement, by the way, calls for CPF to "make available tax-advantaged power-purchase agreements" worth $65 million in GEMS nonprofit and commercial loans, "which would result in $100 million of clean energy systems funded." Performance standards set in the original CPF agreement require at least 10 percent, or $6.5 million, of that amount to have been obligated through letters of commitment for GEMS loans from participating banks by June 30 of this year. Otherwise, HGIA and CPF are to develop a "Program Improvement Plan" by August 31. If no such plan is agreed to by that date, the contract may be terminated at either party's request.)

Another contract that the state has entered into on the HGIA board's behalf, without the board's prior approval, is with the Electric & Gas Industries Association, Inc. (EGIA). Although *Environment Hawai'i* was unable to obtain a copy of the

BOARD TALK

NMFS Gets OK To Cull Up to 20 Sharks To Protect Monk Seal Pups in NWHI

In past years, when the National Marine Fisheries Service asked for — and received — permits to cull "rogue" Galapagos sharks that were preying on endangered Hawaiian monk seal pups at French Frigate Shoals in the Northwestern Hawaiian Islands, Charles Littnan, lead monk seal scientist for the agency, was grilled by Land Board members unconvinced that the behavior is unique to the area and that culling would solve anything.

This year, weeks before the Department of Land and Natural Resources' Division of Aquatic Resources presented NMFS's permit request to the Board of Land and Natural Resources to cull up to 20 of the sharks, Littnan briefed the board on NMFS's overall program to protect the seals, as well as on the science behind and need for the shark-culling permit.

The permit was swiftly and unanimously approved on April 24.

At the April 10 briefing, Littnan chose his words carefully when characterizing the predation of the seal pups by Galapagos sharks at French Frigate Shoals. He described the behavior, where the sharks swim into the shoals' nearshore waters to kill and eat newly weaned seal pups, as "atypical."

While it seems natural for sharks to prey on helpless pups, he said, research has shown that the Galapagos sharks in the NWHI are not preying on seal pups anywhere but French Frigate Shoals.

"When I say, 'atypical,' I hope you hear I'm not saying, 'unnatural,'" he told the Land Board.

"I can't emphasize this enough. This is a very unique situation at French Frigate Shoals, a behavior that evolved in the period of time starting in 1994 and has not been observed anywhere at the archipelago," he continued, adding that Galapagos sharks generally stay outside the atoll and rarely come into the shallows.

Before 1994, monk seal survival at FFS was high, but it now has one of the worst first-year survival rates, predominantly due to shark predation, he said.

When Maui Land Board member Jimmy Gomes asked why predation jumped in 1994, Littnan said he was unable to answer the question definitively, but the best hypothesis is that the change in shark behavior resulted from the 1993 closure of the lobster fishery in NWHI, which was particularly intense at FFS.

Each year before the closure, fishers tossed many tons of bait into lobster traps at FFS – a practice, he said, that could have artificially enhanced the Galapagos shark population.

"When the food stream was taken away, the sharks became aggressive. In the following years we saw the escalation [of pup predation]," Littnan said.

"A small subset of the Galapagos population used this novel behavior. … It's not that they never took pups, just never to this degree," he said.

When NMFS was allowed to cull sharks in the late 1990s, before the area became a marine reserve and then a national marine monument, dozens were removed and researchers saw a precipitous drop in predation at Trig island at FFS. Between 2000 and 2005, 12 sharks were removed. Two more were removed between 2010 and 2011.

"We haven't removed sharks in the last couple of years and [predation] has jumped," Littnan said.

Littnan explained that the NMFS has done research to make sure Galapagos sharks alone are the culprits and that the pups at FFS aren't behaving any differently than pups elsewhere. The agency has also tried to harass the sharks to prevent predation, to no avail.

"That only served to spread the behavior to other islands [in FFS] and they started hunting at night," he said.

NMFS also translocates pups as soon as they wean to Trig or Tern island in FFS, where the sharks do not prey on them.

"None of those have proven to be long-term solutions. We're at a point where shark removal is only thing left. We need to try to remove that threat permanently," Littnan said.

NMFS wants to remove a total of 18 sharks by fishing within 700 meters of islands at FFS. Scientific samples from the sharks will be collected and their remains returned to sea.

When Gomes asked what the ratio of Galapagos sharks to seals was, Littnan said the Hawai'i Institute of Marine Biology estimates that there are 600 to 1,200 sharks. There about 117 monk seals at FFS, he said.

"The work we've done has demonstrated it's a small number of sharks. Twenty sharks are doing this … learned behavior. If we remove 20 sharks are 20 going to replace it? We don't know. ... We're going to continue to monitor. If more do it, there won't be a culling program. If it's a conveyor belt, we would focus on translocation," he said.

He added that NMFS won't do any more culling than is necessary.

"If we get six sharks and see predation drop, we'll stop fishing. … We won't turn this into a large-scale culling program. The fundamental assumption is this is a specific population," he said. "We're not hoping. We're making a pretty informed conclusion."

Although the Office of Hawaiian Affairs opposed the permit, the Land Board approved it with little discussion on April 24.

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Board Imposes $15,000 Fine For Massive Soil Dump in Palolo

On April 24, the Land Board fined Frank Fistes $15,500 for dumping several hundred cubic yards of soil over a steep hill in the Conservation District in Palolo. Fistes blamed his contractor for the illegal work, which occurred earlier this year and was brought to the attention of the DLNR by June Watanabe, Kokua Line columnist for the *Honolulu Star-Advertiser*.

Fistes' lot at the top of the hill spans 13 acres. Roughly 3,000 square feet of this lies in the Urban District; the rest is in the Conservation District. The Urban portion sits atop the hill and the Conservation lands stretch about halfway down the hillside. In mid-March, staff from the DLNR's Office of Conservation and Coastal Lands inspected the site and advised Fistes to stop his unauthorized work

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contract by our publication deadline, the association is tasked with vetting installers who want to participate in the GEMS program. A DBEDT website describing the benefits of becoming an approved solar installer links to a site maintained by EGIA. As of mid-May, five companies were on the approved installer list: Haleakala Solar, Hawai'i Energy Connection, Island Pacific Energy, Photonworks, and Trane.

But two years after passage of the legislation that created the GEMS program, it had yet to benefit the first customer. According to Alan Yonan, public information officer for DBEDT's energy office, as of mid-May, "The Hawai'i Green Infrastructure Authority is actively working with several local nonprofit organizations to finalize loan applications. … The first loans are expected to be made in the near future."

— P.T.

in the Conservation District. Weeks later, OCCL staff visited the site again and found that work in the Conservation District was continuing, according to an April 24 report to the Land Board.

At the Land Board's meeting, OCCL administrator Sam Lemmo explained that Fistes was apparently building a driveway on the Urban part of his property and seemed to have pushed excavated soil from that work onto the Conservation District portion of his property.

Lemmo said after inspecting the site himself, he felt the need to bring the matter to the Land Board as soon as possible, mainly to remedy the potential public health and safety threat posed by a possible mudslide or rockfall from the disturbed area. Dozens of residences sit at the bottom of the hill, which is known to be unstable. In 2011, large boulders dislodged from the hill and crashed into one of the homes while residents were inside.

The OCCL recommended that Fistes obtain a geotechnical engineer to determine how best to stabilize the slope and provide reports to the OCCL before and after remediation.

Lemmo added that he was confused about Fistes' plans for the property.

"I'm not sure what's going on, to be honest with you," Lemmo said. Fistes is "building a driveway in that little notch and he can't build a house in there. There's not enough space. The only place he could build a house realistically is on the slope."

Lemmo noted that his office had not issued the Conservation District Use Permit that would be required for a house.

Fistes explained that he had hired a contractor to excavate the driveway and when he found out that the soil had been dumped over the ledge, "I fired the guy instantly." He also said that after the OCCL's first visit, nothing was touched on the hillside.

He also pointed out that he had built a house in the Conservation District nearby in the 1980s and was well aware of the permitting process.

"This is not what I do. I'm not one of those lawbreakers," he said. "I'm here today asking for forgiveness."

He also asked that the Land Board consider reducing his fine.

When the Land Board started asking Fistes questions about his plans for building a house in the Conservation District, it became clear he was fully prepared to spend whatever it would take.

For the OCCL to even consider a permit for a house on that hill, Lemmo said, Fistes would need to hire a professional planning consulting company, complete an environmental assessment, and have fairly complete engineering specifications and designs for drainage and erosion control measures, as well as geotechnical work on the foundation issues posed by the hillside.

"Right off the bat, it would be several hundred thousand dollars just to get an application to you," Lemmo told the board.

When asked by Land Board member Stanley Roehrig whether he was prepared to spend that much, Fistes said he was and that the money would come from a family trust.

Regardless of whether or not Fistes had approved of the work by his contractor, Land Board member Jimmy Gomes said a violation had occurred and recommended approving the fine suggested by the OCCL.

"Had there been a storm or an earthquake … you'd be here telling us you're sorry rocks went into a guy's house," Gomes told Fistes.

Fistes tried to counter that the large rocks had been pulled out from the soil and had been placed along the top of the ledge to prevent bicyclists from riding over the cliff.

To this, Gomes replied, "Are you listening to yourself? Are you listening? You're putting those rocks there for a bicycle?"

Interim Land Board chair Carty Chang added, "Are you aware of the rock falls in 2011?"

Fistes said he was not, but assured the board members that he was going to fix things.

"I'm not gonna let you guys down," he said.

PHOTO: DLNR OFFICE OF CONSERVATION AND COASTAL LANDS

Frank Fistes blames his contractor for dumping several hundred cubic yards of excavated dirt over the cliff of his Palolo lot.

Andy Wiegand, whose home was devastated and whose son was nearly killed by the 2011 rock fall, testified in support of the OCCL's recommendation. He added that the city's decision to grant grading permits for the driveway was unconscionable given that Fistes has only 3,000 square feet of Urban land. With several hundred cubic yards of soil excavated from the area, "I don't know where that was supposed to go other than the hillside. The flaw was in granting the permit in the first place," he said.

He asked that the Land Board ensure that any remediation would be supervised by an engineer. "The hillside is very unstable. … I'm grateful and thankful there has only been property damage so far," he said.

In the end, the Land Board voted to fine

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Fistes the maximum $15,000 for unauthorized land use plus $500 in administrative costs. He must also remediate the land under the direction of a licensed professional. The board also recommended that Fistes remove the boulders he placed at the edge of the cliff as soon as possible.

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State Land Sold Years Ago Becomes Public Again

In 2007, Eddie and Lorraine Holmes paid the state Department of Land and Natural Resources about $70,000 for 1,222 square feet of filled land along O'ahu's Kane'ohe Bay where their seawall jutted past the certified shoreline. They thought that would remedy their encroachment issues. They were wrong.

Today, they want to build on their property, but a small portion of the seawall and some stairs that lead to the beach have, again, been determined to lie seaward of the shoreline. But rather than requiring the Holmeses to purchase a non-exclusive, long-term easement from the state, which is what the DLNR's Land Division recommends nowadays for such encroachments, land agent Barry Cheung recommended on April 24 that the Land Board issue a right-of-entry permit, at no charge, to allow them to proceed with their plans for their property.

State law requires the Land Board to charge fair market value for easements, despite repeated efforts in recent years by the division to get the Legislature to allow the board to charge less. Because the Holmeses already paid for the land beneath the wall eight years ago, "staff does not believe another payment to the state is appropriate," Cheung wrote in his report to the board.

Absent a change in the way the state charges for easements, Cheung recommended a right-of-entry to allow the Holmeses to maintain their wall and, at the same time, to protect the state's interest by "securing indemnity and insurance in favor of the state for the encroachments."

"This has been kind of an ordeal," Eddie Holmes said. He explained that when he and his wife bought the strip of reclaimed land in 2007, it was supposed to have been consolidated with their adjoining lot. But, Holmes said, the land agent who had been overseeing the case died and the consolidation "kind of fell through the cracks," a situation the Holmeses realized only this past summer when they tried to build on their property.

"We found out the lot was never consolidated and now all the rules have changed," he said, referring to changes in how shorelines and ownership of submerged lands are determined.

Hawai'i island Land Board member Stanley Roehrig sympathized with Holmes, a California resident, stating that "when it comes to the board on these shoreline problems, it goes on and on and on." However, he noted that the Land Board was not being asked to decide whether or not the state owned the stairs, only to approve the right-of-entry permit.

In the end, the Land Board approved the Land Division's recommendation. The permit's commencement date is to be determined by the Land Board chair.

— Teresa Dawson

LETTERS

UH Expert Urges ProtectionOf Beaches, Not Seawalls

"Losing Ground," your May article on the shoreline struggles facing DLNR, was, as always, very informative and straightforward.

Certainly the issues tied to beach erosion and sea level rise are going to worsen with time. Indeed, your article provides evidence that they have begun to magnify out of control.

Authorities described much interest in streamlining the easement issue, reducing costs to the homeowner and state, and better equipping our government system to accept shoreline encroachments resulting from coastal erosion.

In the course of your research, did anyone express concern for protecting beaches?

All of the effort described in your article is designed to more easily legalize seawalls - the cause of beach loss on the over 70 percent of our shoreline that is chronically eroding. Hawai'i has lost miles of beaches because of seawall construction. Recently we heard the City and County of Honolulu has now permitted a seawall to be built on undeveloped property.

Hawai'i does not need a plan to increase seawalls. We need a plan to protect beaches.

So that seawall construction can be avoided, I believe such a plan must include an exit strategy for property owners threatened by erosion.

Part of me is loath to donate my tax dollars to buy out irresponsible beachfront owners who gladly accept all the benefits of beach living but do not take responsibility for the fact that they live on the edge of a capricious environment. Yet I also recognize that we will make no progress on this issue until we provide a means for these owners to relocate. New public funds, tied to carbon, and channeled through programs such as DLNR's Legacy Lands Conservation Commission, can be one such strategy.

Chip Fletcher, Kailua

Editor's note: Fletcher is associate dean of academic affairs in the University of Hawai'i's School of Ocean and Earth Science and Technology. He will be the featured speaker at Environment Hawai'i's annual dinner on August 14 in Hilo.