Hawaii

‘From Bad To Worse:’ Hawaii’s $1.75 Billion Cesspool Problem

The risks posed by the state’s 88,000 remaining cesspools will likely be amplified by climate change.

By Nathan Eagle / December 27, 2017

Thousands of cesspools throughout the islands are threatening drinking water supplies, coral reefs and the health of people who swim and surf in popular places, according to a new analysis by the Hawaii Department of Health.

It’s a serious public safety issue, environmental problem and economic danger that’s exacerbated by the effects of climate change, officials said.

In its 36-page report last week to the Legislature, the Health Department estimates $1.75 billion is needed to replace all 88,000 cesspools around Hawaii, with upgrades required urgently for about half of those. Some 53 million gallons of raw sewage are being discharged each day into cesspools, essentially just holes in the ground for wastewater.

Cory Lum/Civil Beat

Signs have been placed to warn the public to keep out of the water at Kahaluu Lagoon, which suffers from the effects of thousands of cesspools in the area.

"It's a good chunk of change to swallow for the Legislature but that's the magnitude of what we're dealing with," said Keith Kawaoka, deputy director of the department's Environmental Health Administration.

The reality is government will not be able to foot the bill to overhaul everyone's system, but he said he hopes a combination of tools can be used to turn the tide.

The highest priority areas are upcountry Maui, where 7,400 cesspools have caused nitrate levels in well water to spike dangerously close to safe-drinking limits, and Kahaluu on the east side of Oahu, where there have been "incidents of skin infections consistent with sewage-contaminated surface waters."

The department plans to hold public meetings next month to gather community input, starting Jan. 9 in Makawao and Jan. 12 in Kahuluu.

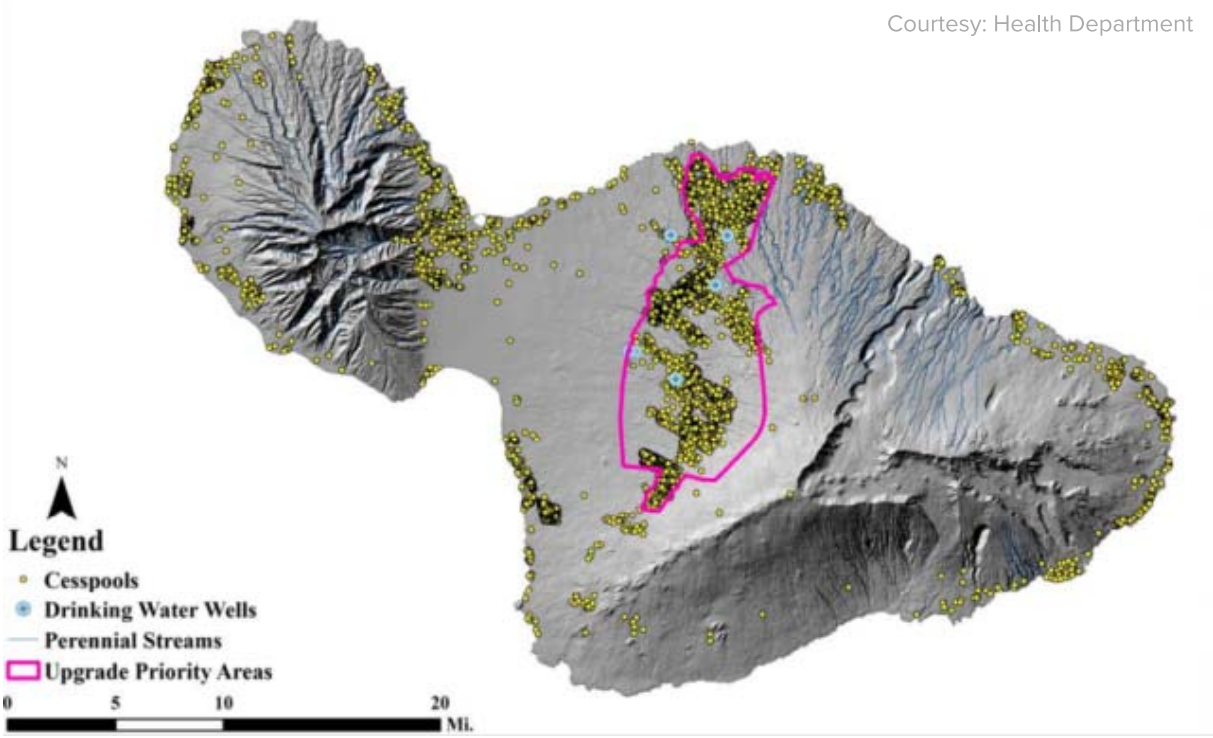
While water is still safe to drink throughout the state and it's OK to swim in almost all areas, health officials said, the risk of disease is expected to increase as cesspools deteriorate and become more prone to flooding as the sea level rises and storms intensify.

"Climate change will impact things," said Bruce Anderson, who heads the Department of Land and Natural Resources' Division of Aquatic Resources and formerly led the Health Department.

Hawaii depends on wells for more than 90 percent of its drinking water and the vast majority of homes are near the ocean. As the sea level and water tables rise, there is an increased opportunity for more wastewater to contaminate healthy sources.

"This is going to go from bad to worse unless someone figures out how to deal with it," Anderson said.

Courtesy: Health Department



Maui cesspools pose the biggest health risk in the state.

But solutions to this decades-old problem are elusive.

Lawmakers have tried encouraging community members to replace their cesspools by offering a $10,000 tax credit but only 47 people have taken advantage of it since it was enacted in 2015.

The Health Department had proposed a rule to phase out old cesspools by requiring an upgrade to a septic or other wastewater system upon the sale of the property but it was never signed. That effort languished on former Gov. Neil Abercrombie's desk before Gov. David Ige took office in December 2015.

Kawaoka said that plan did not go over well with the public and likely won't be attempted again anytime soon.

Gladys Baisa, who was Maui County Council chair when those rules were being put forward, said at the time that it would have been a financial hardship for many Valley Isle residents.

More than 3,000 large-capacity cesspools have been closed since a 2005 law banned them. But the Environmental Protection Agency has had to fine businesses and restaurants thousands of dollars to force compliance in some cases, such as with Travassa Hotel Hana Resort on Maui, Vacation Inns International on Oahu and Shaka's in Pahoa on the Big Island.

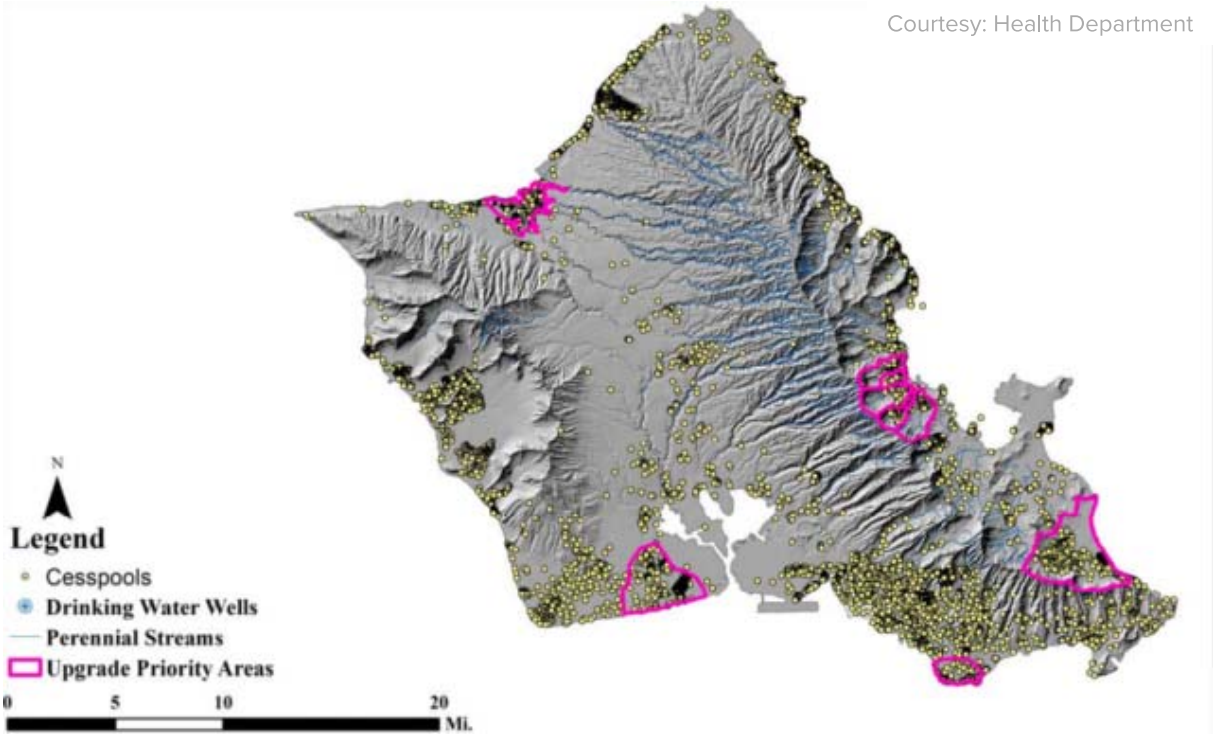
The state prohibited new cesspools in certain areas in 1992 and extended the ban to apply to all of Hawaii in 2016. Kawaoka said the department had been receiving requests for several hundred new cesspools each year.

And lawmakers passed a bill last year to eliminate all cesspools by 2050, with some exceptions. The law calls for exploring a grant program to help low-income property owners.

But grant programs have also struggled. Last week, the Health Department canceled a nearly $500,000 contract it had with the Hanalei Watershed Hui, headed by Makaala Kaaumoana, that was set up to help north shore Kauai residents upgrade their systems.

“Apparently, from our Hanalei experience, people don’t do it unless they are forced,” Kaaumoana said, noting that the Health Department was very patient as her nonprofit tried for over a year to secure applicants. “It’s clear to us that people think the government should do it.”

The Health Department report notes that 270 cesspools in Hanalei pose a “high probability of contamination.”



Kahaluu on the east side faces the biggest health risks on Oahu.

But government officials and community leaders cautioned that even if they could somehow convince people to replace their free cesspools, the next best option is converting to a septic system, which still presents problems.

Septic systems are undoubtedly better environmentally, as solids drop to the bottom of the tank and liquids are then filtered through a leach field. But it still means dumping millions of gallons of raw sewage into the ground each day.

“Both cesspools and septic tanks result in allowing effluent to get into the ground and into the groundwater, which can get it to the ocean,” Anderson said. “That’s the risk.”

Connecting to a local wastewater system is best, officials said, but that is not feasible in many rural areas.

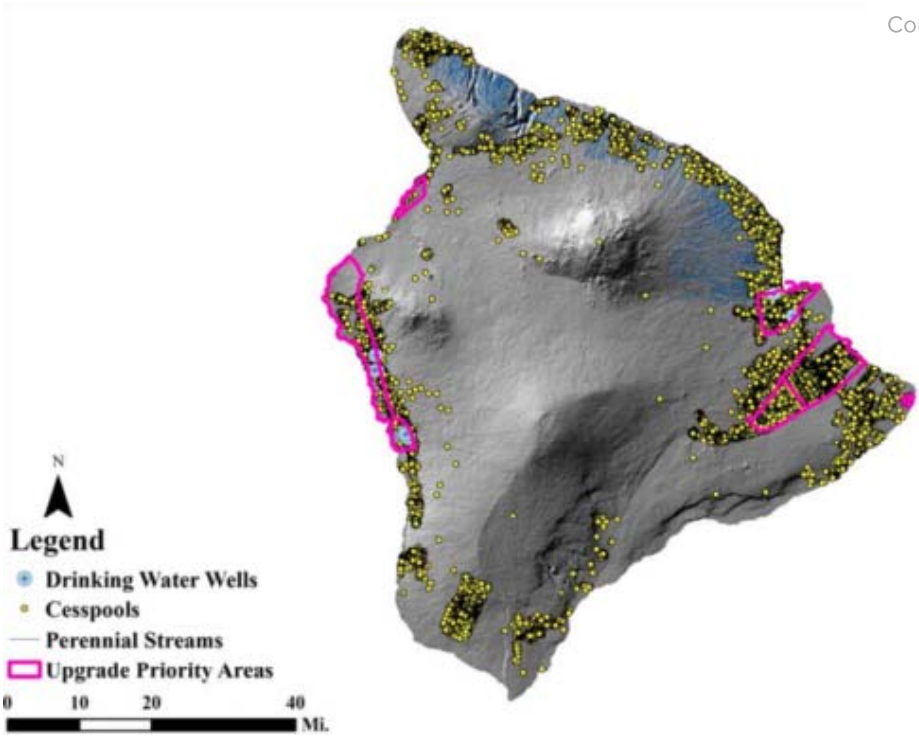
There are almost 50,000 cesspools on the Big Island alone, accounting for 27.3 million gallons of cesspool effluent daily — more than half of the state's load, according to the department's report.

And yet the island has just 187,000 of the state's 1.4 million residents, not to mention a smaller share of the 8 million annual visitors to Hawaii.

The Health Department found 25 percent of domestic wells sampled in the Keaau area of Big Island, for instance, tested positive for wastewater indicator bacteria, "demonstrating the potential for disease transmission."

Many residents rely on domestic wells in the area, and there is "little soil to mitigate the impact of 9,300 cesspools," the report said.

Courtesy: Health Department



There are almost 50,000 cesspools on the Big Island alone.

But the threat is widespread on the Big Island, as it is on the other islands. It's also indiscriminate, hitting wealthier neighborhoods like Kahala on Oahu

and Kona on the Big Island, which is one of the fastest growing areas in Hawaii and home to some of the best snorkeling in the state.

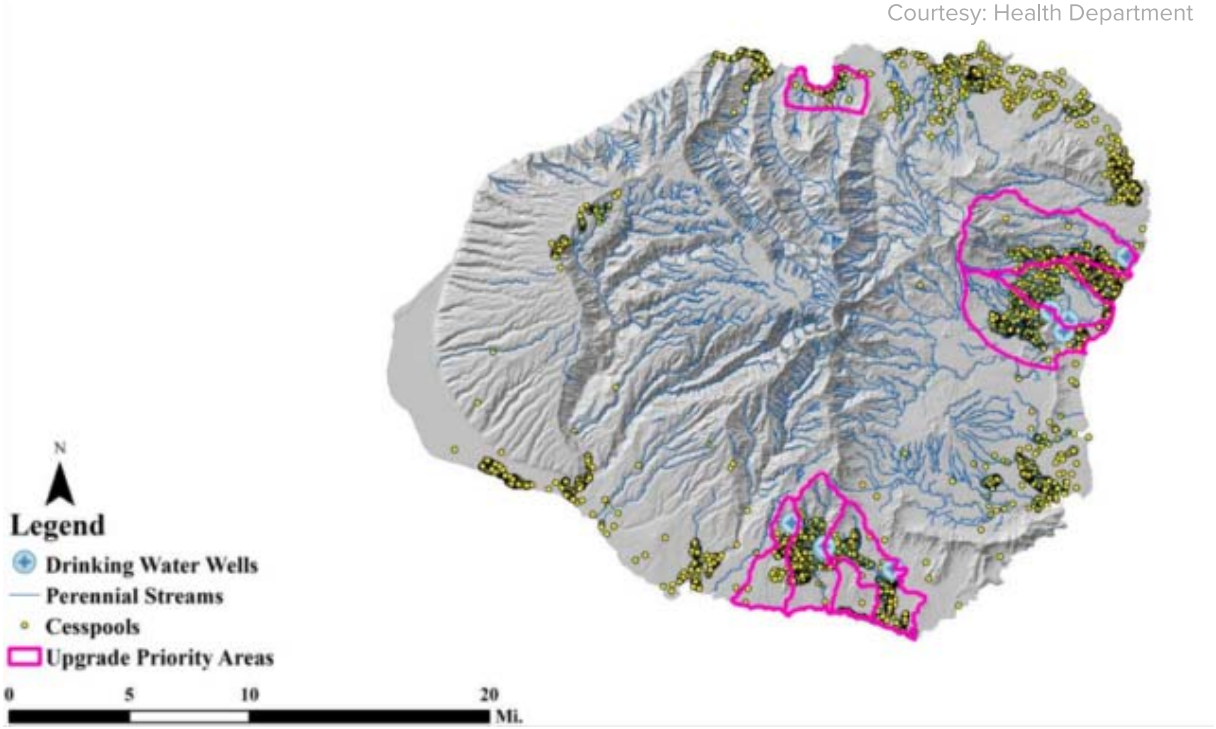
The Health Department report notes 6,500 cesspools are discharging into the nearshore waters of west Hawaii Island and “may contribute to degradation of coral reefs.”

“The impacts to coral reefs affects the state’s economy, shoreline protection, recreation and habitat for important marine life,” the report says.

Coral reefs there and around the state, including Kahaluu Lagoon and Diamond Head on Oahu, are threatened as the cesspools overload nearby waters with nutrients — nitrogen and phosphorous — that cause algae to take over and smother new growth.

“Anyone who enjoys our nearshore resources is impacted,” Anderson said. “There’s no question. People fishing, enjoying the beach… it’s not a small issue.”

Courtesy: Health Department



A grant program to encourage residents on Kauai’s north shore to convert from cesspools was unsuccessful.

But as Kawaoka said, it's an economic issue as much as an environmental one.

Hawaii Island Mayor Harry Kim has testified before the Legislature in opposition to a ban on cesspools.

"Yes, I realize that Hawaii has changed and we are now in the 21st century, but those of us who grew up in ancient times know that some of the old practices, while not entirely compatible with modern thought, are nevertheless environmentally sound and do not need to be discarded," he said in his testimony last year on the bill to ban cesspools by 2050.

"As a prime example, in Hawaii County we have literally thousands of lots on which cesspools pose absolutely no hazard to groundwater nor any risk of pollution," Kim said. "Many of these lots may represent the best hope for current and future Hawaii residents to live in a dwelling rather than on the street."

Officials said the problem stems from the way in which Hawaii grew. It would not have made sense to install a municipal or private sewage system 50 years ago in Haleiwa, for instance, as there were hardly any homes on the north shore of Oahu.

But now there is more density in the area, much like what happened in other communities around the state.

"The cesspool issue didn't happen overnight," Kawaoka said, "and it's not going to be overnight to solve it either."

Sen. Donovan Dela Cruz, who chairs the Ways and Means Committee, said the the government and the public need to share responsibility in addressing the problem.

"It's not a good situation," he said. "But we can't just keep kicking the can down the road."

Dela Cruz said there probably needs to be a “carrot and a stick” approach. Perhaps, he said, there could be stronger incentives for a certain number of years followed by enforcement of a law requiring upgrades.

“As long as everyone is treated fair and it’s transparent and it’s reasonable,” he said.

Short of the state spending massive sums of money on infrastructure, Anderson said he envisions a slow process. The good news, he said, is new homes are on sewage systems and rebuilding an old home would require an upgraded system.

“I’m not sure there’s anything the Legislature can do,” he said. “I think they’ve used the tools that are readily available.”

About the Author

Nathan Eagle

Nathan Eagle is a reporter for Civil Beat. You can reach him by email at neagle@civilbeat.org or follow him on Twitter at @nathaneagle, Facebook here and Instagram here.

Use the RSS feed to subscribe to Nathan Eagle's posts today

SHOW COMMENTS

The New York Times | https://nyti.ms/2E6BcyU

CLIMATE

Global Warming's Toll on Coral Reefs: As if They're 'Ravaged by War'

By KENDRA PIERRE-LOUIS and BRAD PLUMER JAN. 4, 2018

Before we call rockfish, shrimp and crab "dinner," some of these species call coral reefs "home." But those reefs, home to a quarter of all marine fish species, are now increasingly threatened as rising ocean temperatures accelerate a phenomenon known as coral bleaching.

Large-scale coral bleaching events, in which reefs become extremely fragile, were virtually unheard-of before the 1980s. But in the years since, according to a study published Thursday in the journal Science, the frequency of coral bleaching has increased to the point that reefs no longer have sufficient recovery time between severe episodes.

Jelle Atema, a professor of biology at the Boston University Marine Program who was not involved in the study, said the effects of more frequent bleaching events were very difficult to predict because of the complex networks of dependencies within reefs. But he said they could be devastating.

"When coral dies, it affects the shelter and food that sustain fish, lobsters, shellfish, worms, etc. The same happens in a rain forest. When the trees die, the animals and plants that have developed over millennia die with them," he said,

before adding an analogy. “When a country is ravaged by war, people die and migrate.”

During bleaching events, overheated seawater causes corals to part ways with symbiotic plantlike organisms called zooxanthella that live inside of them. In addition to giving coral reefs their bright colors, zooxanthella also provide corals with oxygen, waste filtration, and up to 90 percent of their energy. Absent zooxanthella, corals not only take on a ghostly pallor, hence the term bleaching, but they are also more susceptible to death.

In theory, coral reefs can recover from even a severe bleaching event. Some of the coral will die off from increased disease susceptibility, but once ocean temperatures drop again, many of the corals will start growing back.

But that’s only if they’re given enough time.

Typically, it takes 10 to 15 years for the fastest-growing corals to recover after a severe bleaching event. Larger corals that provide shelter for bigger fish can take even longer to grow back.

As bleaching events become more frequent, reefs are unlikely to get that needed reprieve. Earth’s average temperature has increased 1 degree Celsius, or 1.8 degrees Fahrenheit, above preindustrial levels, and the median time between severe bleaching events is now just six years, the Science study found.

Case in point: The Scott Reef, 180 miles off the coast of Northwestern Australia, had over the past few years finally begun recovering from a major bleaching event in 1998, with the fastest-growing corals inhabiting much of their earlier territory. But the area was hit by bleaching again in 2016, causing widespread mortality.

Before 1982-3, mass bleaching events across wide areas were nonexistent. That year, reefs across the Tropical Eastern Pacific exposed to warm El Niño year waters bleached. Coral reefs in Costa Rica, Panama and Colombia experienced 70 to 90 percent mortality. Most reefs in the Galápagos Islands, the cradle of Darwin’s theory of evolution, experienced 95 percent mortality.

While many mass bleachings were prompted by El Niño events, which tends to warm Pacific Ocean temperatures, the bleaching event that hit the Great Barrier Reef in 2017 — the reef's first back-to-back bleaching — occurred at the beginning of a La Niña event, when ocean waters should have been cooler. It's a sign that global warming is steadily pushing up ocean temperatures even in cooler years.

"La Niña periods today are actually warmer than El Niño periods were 40 years ago," said Terry Hughes, a senior researcher who specializes in coral reefs at James Cook University in Australia and the lead author of the Science study.

"Coral bleaching is caused by global warming full stop," Dr. Hughes said. "It's not due to El Niño. We've had thousands of El Niño prior to 1983, none of them caused bleaching. Bleaching is caused by the rising baseline temperatures due to anthropogenic global warming."

Scientists have long warned that the effects of climate change will not necessarily progress in a linear way as the planet warms. As Earth crosses certain key temperature thresholds, severe and far-reaching changes can unfold relatively rapidly, such as the collapse of ice sheets or the die-off of key ecosystems.

All evidence suggests that bleaching will only get more and more frequent as the Earth continues to warm. By midcentury, climate models suggest, most reefs will experience the sort of heat associated with severe bleaching every year.

If corals can't adapt quickly enough, "we could be looking at the effective loss of most of the world's coral reefs," said Mark Eakin, an oceanographer who is coordinator of the Coral Reef Watch project at the United States National Oceanographic and Atmospheric Administration.

The Great Barrier Reef had two back-to-back bleaching events that killed just about half of the corals along the length of the barrier reef. This means half are still alive. Those corals are the source of larvae that spawn future generations, which means that the reef moving forward will have a distinctly different character than it had two years before the bleaching event.

“The ecological effect of more and more bleachings is that it’s changing the mix of species in favor of the tougher corals that can survive bleaching events and in terms of the corals that bounce back the quickest,” said Dr. Hughes. “It’s changing the whole ecology of the reefs.”

There are a few things that can help make reefs more resilient to bleaching. Humans can limit fertilizer and sewage runoff that damage coral. They can avoid overfishing key herbivores like the rabbitfish that nurture the reefs by clearing away excessive algae.

Some researchers are experimenting with even more radical techniques, such as trying to breed coral that can thrive in warmer temperatures, or looking at ways to pump cooler water into reefs to protect the coral from overheating, or even placing giant “shade cloths” over reefs.

Some of these ideas are admittedly wild, Dr. Eakin said, and none of them can ever be a substitute for reducing greenhouse gas emissions. “We can’t act as if we can keep emitting carbon dioxide into the atmosphere and just by tinkering around with corals in a lab we’re going to solve the problem,” he said.

But given that frequent bleaching is already underway, and given that at least half a degree of additional global warming appears inevitable, coral researchers are desperate for new ideas.

“We’ve got to start taking steps that we haven’t thought about before — even if they sound absolutely crazy,” Dr. Eakin said. “Because the stuff we thought made sense will no longer work.”

Correction: January 8, 2018

An earlier version of a picture caption with this article, relying on information from a research organization, misidentified a fish on a bleached coral. It is a blenny, not a goby.

Kendra Pierre-Louis reported from New York and Brad Plumer from Washington.

Follow @NYTClimate on Twitter

A version of this article appears in print on January 5, 2018, on Page A9 of the New York edition with the headline: Global Warming Takes A Toll on Coral Reefs.

Pesticides issue debated at Legislature

By Jessica Else The Garden Island | Tuesday, January 30, 2018, 12:05 a.m.

LIHUE — Pesticides' potential impacts on human health require further study, and those furthering that goal are still promoting bills — this time through the 2018 legislative session.

Meanwhile, agribusiness promoters are looking to increase agriculture on the islands, according to the Hawaii Crop Improvement Association.

"Our goal is to help Hawaii agriculture succeed in the long term, clear away misconceptions about our industry, and demonstrate how our members continue to be good neighbors and stewards," said Bennette Misalucha, executive director of HCIA.

She continued: "HCIA is currently reviewing the various measures and will work to support Hawaii's farmers and the future success of our state's agricultural industry."

But that increase has to be done responsibly in the opinion of Kauai people like Fern Holland and Gary Hooser, who are working through the Hawaii Alliance for Progressive Action to "put into place the regulatory protections that are needed."

Pesticide-free buffer zones around schools, comprehensive testing of water, soil and air in impacted communities, a fully updated Birth Defect Registry and a statewide ban of the insecticide chlorpyrifos are all targets for HAPA in the upcoming session.

Holland pointed out a need for an industry environmental impact assessment, which brings forward the need for more information and better data, both on reported health impacts and pesticide usage.

"To conduct proper environmental assessments and protect the public, we need mandatory and detailed disclosure of the restricted-use pesticides used by these corporations," Holland said.

Some of that research was put into a 2016 joint-fact-finding report entitled Pesticide Use by Large Agribusinesses on Kauai, and that is where the call for both the buffer zones and disclosure originated.

At the 2016 release of the JFF Report, JFF committee members said there is a need for more data in order to prove a connection between pesticide usage and human health issues.

“I am cautiously optimistic that the State Legislature will support the Joint Fact Finding recommendations,” Hooser said.

The Legislature is the body with the power to enforce regulations on pesticide usage and reporting after a November 2016 court ruling that stated that’s out of the jurisdiction of county governments in Hawaii.

“I’m hopeful that the 2018 Hawaii Legislature will step up and do the right thing this year,” Hooser said. “The large agrochemical companies on Kauai have a long and public history of causing harm and health to the environment.”

And while some gun for stricter regulations and more rules for big ag on Hawaii, others like Misalucha and HCIA say their goal is to keep the people of the islands fed.

“More than ever, farmers need our support given current challenges in agriculture and the state’s goal to increase food production,” Misalucha said.

Community Voice

Seawalls May Protect Property But They Destroy Beaches

The county and state approaches to shoreline management are aligning in a regime of rising sea levels.

By Chip Fletcher / About 14 hours ago

Dramatic erosion is striking Sunset Beach. Old-timers report having never seen it this bad. Published studies lend support to these observations.

Although winter waves are the immediate cause, the subtle operator behind the scene is slowly accelerating sea level rise. According to the recently released 4th National Climate Assessment, global mean sea level is very likely to rise 1 to 4 feet by the end of the century.

A beach is an environment defined by its position at the edge of the ocean. If the ocean is rising, the beach has to move landward. Coastal scientists conceptualize this process as the beach seeking its “equilibrium profile.”

In other words, our shorelines are moving.

Sinking feeling: The eroding coastline along Sunset Beach, Dec. 13.

Coastal lands have been developed with the assumption that the shoreline would not move. Now, a slow-motion collision is taking place between moving shorelines and beachfront homes and roads.

“Shoreline” is a legal term. It marks the boundary between the public beach and private lands. A moving shoreline triggers questions about ownership, and other issues.

Historically, threatened homes and roads have been protected by seawalls. But this destroys beaches. In fact, on Kauai, Oahu and Maui we have lost over 13 miles of beach because of this shoreline hardening.

Anyone familiar with Sunset Beach would agree that it is a unique and world-famous beach that deserves special protection. If we allow seawalls on Sunset Beach, we will see it disappear as well.

‘Learn To Live With Water’

In an interview, Honolulu Mayor Kirk Caldwell stated that we must “learn to live with water” and “soften the shoreline.” This messaging is incredibly powerful and the first time an elected official in Hawaii has used such forward-thinking language in public.

Given the reality of sea level rise, his words provide an important overarching framework for how to deal with coastal management issues now and in the future.

Poignantly, the mayor’s message reflects long-standing goals of the Hawaii Coastal Zone Management policy: provide, protect and enhance 1) open space, 2) public access and 3) the coastal and marine environment. The primary purpose and objectives of the Hawaii CZM policy 205A and the ROH Chapter 23- Shoreline setbacks are to protect and preserve the natural shoreline, especially the sandy beach.

> It is our obligation as stewards of the present to safeguard beaches for our children.

On Dec. 11, in response to queries by Suzanne Case, chairperson of the state Board of Land and Natural Resources, whose responsibility it is to manage public beach lands, Attorney General Doug Chin released an opinion that the state owns all lands makai of the shoreline. By extension, he wrote, if the shoreline moves mauka because of erosion or sea level rise, the ownership line also moves mauka.

On the basis of case law, he laid out that ownership by the state is not a “taking” and the state does not have to acquire these lands by legal action. Neither is the former owner owed compensation. He also reiterates past

decisions that loss of lands by “permanent encroachment of the waters” (erosion) is one of the hazards that comes with owning coastal land.

Remarkably, we are witnessing an alignment of county and state approaches to beach management in a regime of rising sea level. An alignment to protect the beach.

I believe beaches belong to our children. It is our obligation as stewards of the present to safeguard beaches for their future.

It is good to see our leaders feel the same way.

Community Voices aims to encourage broad discussion on many topics of community interest. It’s kind of a cross between Letters to the Editor and op-eds. This is your space to talk about important issues or interesting people who are making a difference in our world. Columns generally run about 800 words (yes, they can be shorter or longer) and we need a photo of the author and a bio. We welcome video commentary and other multimedia formats. Send to news@civilbeat.com.

About the Author

Chip Fletcher

Dr. Chip Fletcher, author of “Climate Change: What the Science Tells Us” (J. Wiley, 2013) is Associate Dean of the School of Ocean and Earth Science, and Technology, and Professor of Geology and Geophysics, at the University of Hawaii Manoa.