

# Swords Drawn Over Swordfish

Since its earliest days, the Hawai'i swordfish fleet has been bedeviled by the presence of sea turtles in the same waters as the fish it seeks to catch when setting out miles of lines.

Well, that's not quite accurate. For the first decade or so of its existence, the boats, and the agency that nominally regulated it, simply ignored the fact that the fleet injured or killed increasing numbers of endangered and threatened species of turtles. Not until litigation stopped the fleet in its tracks in 2001 did vessel owners, the National Marine Fisheries Service, and the Western Pacific Fishery Management Council begin to pay serious attention to the harm done to turtles.

Fifteen years after the swordfish boats were allowed back on the water, the question of how to protect sea turtles – particularly the endangered leatherbacks and loggerheads – seems to loom as large as ever.

## IN THIS ISSUE

#### 2

New & Noteworthy: Another Whale Death; Clean Water Act; 'Aina Le'a

**3** Leatherback Takes in Hawaiʻi Fishery Deemed Acceptable in NMFS Proposal

Land Board Delays Action on Plan To Move Forward with Water Permits

## 10

County Planners Embrace Exposure Area, But Face Resistance, Technical Obstacles

> **12** Seabed Mining Test On Hold for Now

# Longliners Chafe at Draft Measures To Protect Endangered Sea Turtles

What the National Marine Fisheries Service had proposed was simply unacceptable to Roger Dang, whose family's longline vessels make up a significant portion of the Hawai'i swordfish fleet.

He likened it to the NBA limiting LeBron James to just two technical fouls per season. If James hits that limit, "he's out of the game, out of the season, and not getting paid," Dang complained at a meeting of the Western Pacific Fishery Management Council last month. The council had convened the meeting to comment on the service's new draft biological opinion (BiOp) for the fishery and make new recommendations for operating the fishery given the new information in the document.

With regard to the swordfish fleet, the "technical fouls" would be the incidental hooking of leatherback sea turtles, whose population of about 1,400 in the Western Pacific is declining at a rate of 5 percent per year, and "is at risk of falling to less than half of its current abundance in as few as three years," the opinion states.

The swordfish fleet is one component of

the commercial fishing industry in Hawai'i, which consists of around 145 permitted longline vessels. Most of them fish exclusively for bigeye tuna, which requires that the hooks be set deep in the water column. However, some of them also are configured at times to target swordfish, which requires setting the hooks at shallower depths. This leads to the so-called shallow-set fishery interacting more frequently with sea turtles, including leatherback and loggerhead, both of which are endangered.

Siding with Dang and other representatives of the Hawai'i Longline Association, the council rejected the service's proposal to impose annual hard caps on individual vessels, in addition to the longstanding limits on turtle interactions for the entire fleet.

The council instead recommended that the service adopt a more forgiving scheme: force vessels that catch two leatherbacks in a single trip to return to port for a few days, but allow them to continue to fish for the rest of the year, or until the fleet-wide limit is reached.

With regard to loggerhead sea turtles, Continued on Page 5



Leatherback sea turtle

PHOTO: NOAA



# **NEW AND NOTEWORTHY**

Another Whale Death: For the second time this year, a Hawai'i deep-set longline vessel killed a false killer whale while fishing for bigeye tuna. The first incident occurred in January within the 200-mile exclusive economic zone around the state and contributed to the National Marine Fisheries Service closing a large section of the zone south of the islands in February.

On March 1, a vessel fishing outside the zone hooked and killed another false killer whale. According to an incident report, the animal was initially seen floating motionless at the ocean surface and upon closer inspection, was found to have been hooked in the tail, with the wire leader and branch line cinched around it.

Despite a federal observer asking the crew to retrieve the captain, the captain chose not to come on deck, telling a crew member that he did not see the whale, the report states.

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

Patricia Tummons, Editor Teresa Dawson, Managing Editor

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

Environment Hawai'i

190 Keawe Street, Suite 29, Hilo, Hawaiʻi 96720. Telephone: 808 934-0115.

E-mail:ptummons@gmail.com

Web page: http://www.environment-hawaii.org

Twitter: Envhawaii

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

Copyright © 2019 Environment Hawaiʻi, Inc. ISSN 1050-3285

#### Officers

Patricia Tummons, President and Treasurer Deborah Chang Teresa Dawson Vice President Secretary Directors

Mary Evanson Valerie Monson

"As the animal was pulled closer to the boat, bubbles came out of the animal's mouth, likely from trapped air released as the animal was pulled from the tail. This caused the crew to question whether the animal was still alive," the report states. Before the animal could be biopsied, the crew decided the animal was too heavy to bring any closer and cut the branch line.

Several days earlier, the fishery hooked what may have been another false killer whale, but the crew kept the line taught and the animal managed to free itself by straightening the hook, which is what is ideally supposed to happen under measures required by the whales' take reduction plan.

**Clean Water Act Watered Down:** The Environmental Protection Agency has issued guidance undermining protections that were previously afforded the nation's waterways under the Clean Water Act.

The guidance, issued April 16, holds that pollution that reaches waters of the United States by means of groundwater flows is not subject to regulation under the Clean Water Act. As the law firm Earthjustice noted, "This formally reverses the [Trump] administration's position in an upcoming Supreme Court case, *Hawai'i Wildlife Fund v. County of Maui.*"

That litigation resulted in a finding by the federal district court in Honolulu, upheld by the 9th U.S. Circuit Court of Appeals, that the county had violated the Clean Water Act by discharging effluent from

# Quote of the Month

"If NMFS is looking to change fishermen's behavior, this will do it. It will be to not go fishing for swordfish, ever." — Sean Martin, Hawai'i Longline Association the Lahaina sewage treatment plant into groundwater, which carried the effluent to nearshore waters.

The county appealed the ruling to the U.S. Supreme Court, which agreed in February to hear the case. While the EPA had filed an amicus brief with the appellate court agreeing that the county's practice was a violation of the act, the EPA's new guidance reverses that position. This, Earthjustice stated in a press release, "effectively [gives] chemical plants, concentrated animal feeding operations, oil refiners, and other industrial facilities free rein to discharge pollutants indirectly into the nation's waterways without Clean Water Act permits."

In addition to the Hawai'i Wildlife Fund, the Sierra Club-Maui Group, Surfrider Foundation, and West Maui Preservation Association are plaintiffs in the lawsuit against the county.

David Henkin, the Earthjustice attorney arguing the case, said, "While unsurprising, it is nevertheless disappointing that Trump's EPA has reversed the position that every other administration – Republican and Democratic – has consistently taken since the Clean Water Act was enacted."

'Aina Le'a Emerges from Bankruptcy: As the hearing date approached for the bankruptcy court hearing on the reorganization plan of 'Aina Le'a, Inc., one lone secured creditor was still a holdout. Romspen Investment Corp., which was owed more than \$13 million, was unhappy with the debtor's proposal to pay off its note.

By April 8, however, the date of the hearing, 'Aina Le'a and Romspen had come to terms acceptable to Romspen, just as the other two major creditors – Bridge 'Aina Le'a, LLC, and a Chinese woman, Libo Zhang – had done.

Now all that remains is for 'Aina Le'a to give the court evidence of its exit financing and other documents. That will clear the way for final approval of the plan and allow the company to move forward with its efforts to develop the roughly 1,000 acres of land it owns in South Kohala.

# Leatherback Takes in Hawai'i Fishery Deemed Acceptable in NMFS Proposal

Can the 1,424 adult leatherback sea turtles that ply the western Pacific withstand the losses resulting from their interactions with gear set by the Hawai'ibased longline fishing vessels that target swordfish?

A new "internal and deliberative" draft biological opinion (BiOp) that the National Marine Fisheries Service has just put out suggests that, barring some heroic action, they probably won't withstand the myriad threats to its survival, and the fishery is a relatively minor one.

The service estimates that at most, given the current levels of hooks set by the swordfish fleet, the longliners would interact with 21 adult leatherbacks a year, with three of those dying as a result. The BiOp outlines measures that would initially cap those interactions at 16, down from the current level, set in 2012, at 26. That cap could later be modified if certain conservation measures proved successful. An annual vessel limit of two leatherback interactions was also proposed.

But the western Pacific population is already declining at a rate of 5 percent a year. The BiOp notes that the International Union for the Conservation of Nature has estimated that the western Pacific population has declined 83 percent over the last three generations and "is likely to decline by 96 percent by the year 2040."

Still, with some 100 or so leatherbacks from this population being killed annually as a result of interacting with fishing gear of all kinds, NMFS concludes that the contribution to that total made by the Hawai'i swordfish fleet is tolerable: "the proposed action's effects ... would have a minor or inconsequential impact on the species' overall reproduction, numbers and distribution in the wild."

"Based on our analysis," the BiOp continues, "we expect little consequential change in the species' chances of survival and recovery with or without the effects of the proposed action."

The proposal did not sit well with the Hawai'i Longline Association. At the meeting last month of the Western Pacific Fishery Management Council (Wespac), HLA representatives argued that the strict — and, they claimed, economically detrimental — conservation measures outlined in the BiOp to protect leatherbacks were unjustified and illegal. In testifying before the council, HLA executive director Eric Kingma seemed to warn that if the service did not work with his group to rid the BiOp of its "subjective analysis" and revise the conservation measures so that they were "reasonable and lawful," a lawsuit might be forthcoming.

"We don't want this to go down that road to litigation," he said after noting that his organization prevailed in its court challenge to a previous BiOp more than a decade ago.

How NMFS responds remains to be seen. But given findings by the 9th U.S. Circuit Court of Appeals in a lawsuit brought by the Center for Biological Diversity and Turtle Island Restoration Network, any effort by the service to weaken protections for leatherbacks or loggerheads may simply spur another legal challenge from the conservation groups.

In an email to *Environment Hawai'i*, the groups' attorney, Earthjustice's David Henkin, expressed dismay at the direction the agency was heading with respect to both leatherback and endangered loggerhead sea turtles.

"I'm deeply concerned about the proposed adjustments to the fleet-wide hard cap. Even though 'the highest number of [leatherback] interactions on record' is 16 leatherbacks, the draft BiOp would authorize the fishery to take even more leatherbacks [if conservation measures reduced take levels by 25 percent]. For loggerheads, the draft BiOp would authorize 36 takes, two more takes than NMFS authorized in the illegal 2012 BiOp," he said, adding that there is no legally valid analysis to support the agency's conclusion that both critically imperiled species can survive those high levels of harm.

"If the final BiOp fails to comply with NMFS's mandatory ESA [Endangered Species Act] duties, we will do what it takes to counter the existential threat to leatherback and loggerhead sea turtles posed by the Hawai'i-based longline swordfish fishery," he wrote.

## Flip-Flop

In a 2-1 decision, the 9th Circuit ruled that NMFS erred when it determined in late 2017 that a proposed increase in fishing effort by the Hawai'i swordfish fishery would not jeopardize endangered loggerhead sea turtles. That ruling overturned a lower court that upheld NMFS's 2012 BiOp, which capped annual leatherback and loggerhead takes at 26 and 17, respectively.

The 2012 BiOp used a climate-based model to determine turtle population trends. It found that loggerheads faced a high risk of extinction, even without any increase in fishery effort. When the effort increase proposed by NMFS was incorporated into the model, "the additional loss to the loggerhead population ... ranged from 4 to 11 percent," according to the court's majority decision.

The same model also showed that the population of leatherbacks would likely increase if the swordfish fishery's level of effort stayed the same and that if that effort rose, there would still be a low extinction risk.

At that time, the service determined that the swordfish vessels were likely to kill just one adult female loggerhead turtle a year, which it said would have a negligible effect on the loggerhead population "when considered together with the environmental baseline and the cumulative effects."

Ultimately, NMFS found that the swordfish fishery would not jeopardize either turtle species.

The court majority, however, found that the agency's 2012 decision with regard to loggerheads was arbitrary and capricious. "Specifically, the panel held that the climate-based model predicted that the proposed action would exacerbate the loggerheads' decline, and the Biological Opinion was structurally flawed to the extent the NMFS failed to incorporate those findings into its jeopardy analysis," a summary of the decision states.

In the new draft BiOp, the service's "no jeopardy" finding for an endangered species facing extinction could still be a problem. This time, however, analyses suggest that the loggerhead turtle population may be increasing, while the Western Pacific leatherback population is decreasing and faces a high risk of extinction.

To NMFS's determination that the fishery poses no jeopardy to any of the species it interacts with, Henkin had this to say: "The agency acknowledges that the species is steadily declining towards extinction and that the fishery adds to the leatherback's woes by contributing as much as 6 percent to the species' annual mortality. NMFS provides no population viability analysis or other reasoned analysis to support its claim that this additional mortality would not appreciably change the species' chances of survival and recovery. The ESA demands *Continued on next page*  that NMFS base its decisions on science, not bald assertions."

#### **Climate Changes**

In the current draft BiOp, the service decided against using a climate-based model, which it said would heap even more uncertainty into extinction risk predictions that were derived from limited data.

The climate-based models used in the 2012 "did not perform as expected because the predictions were wrong for leatherback sea turtles the majority of the time, and predictions for loggerhead sea turtles were wrong half the time," the draft BiOp states.

This time, the service instead relied on "causal loop diagrams," which aid in understanding how variable factors in a model are related, and incorporated climate change studies and information into various facets of the BiOp, such as its characterization of the environmental baseline and action area.

It also examined whether

climate changes would alter the species' timing, location, or intensity of exposure to the fishery, and "whether and to what degree a species' responses to anthropogenic stressors would change as they are forced to cope with higher background levels of stress caused by climate-related phenomena."

While studies suggest that a warmer ocean could increase the abundance of leatherback prey (i.e., sea jellies), "we do not know what impact other climate-related changes may have such as increasing sand temperatures, sea level rise" — both of which may already be affecting hatch success — "and increased storm events," the BiOp states.

To Henkin, the BiOp's abandonment of a climate-based model is particularly troubling. analysis, and the agency does not otherwise appear to have incorporated any meaningful consideration of the future impacts of climate change. If finalized, the Draft BiOp's failure to conduct any meaningful analysis of the entirely foreseeable and unquestionably harmful impacts of climate change on leatherbacks and loggerheads would violate the ESA," he stated.



Lethal sand temperatures, sea level rise, increasing storms due to climate change, and egg harvesting threaten the hatch success of endangered leatherback sea turtles.

### Hawai'i Fleet Effects

Other major threats include the harvesting of leatherback eggs and adult leatherback sea turtles and the harm done to the species by other countries' longline fisheries in the North Pacific. The BiOp estimated that an annual average of about 120 leatherbacks a year die from their exposure to fisheries in the region, including the Hawai'i fishery.

The BiOp determined that the Hawai'i swordfish fishery alone would interact with at most 21 leatherbacks a year with an annual average of 10. The current average is six.

In determining the risk the fishery posed to the population, the BiOp took a scientifically conservative approach, evaluating the results of the likely maximum take of 21

## "I believe our fishery is the model fishery." — Mike Tosatto, NMFS

"NMFS continues to acknowledge in its draft BiOp that climate change threatens 'species persistence' of both leatherback and loggerhead turtles. However, citing the allegedly 'inherent challenges with creating population models to predict extinction risks,' NMFS then refuses to apply any climate-based model to inform its jeopardy leatherbacks in a given year. In that case, the BiOp estimated that three of those 21 would die and that loss would represent a mere 0.2 percent of the current population estimated to number 1,424 individuals in the Western Pacific. Given the already projected population decline of 5 percent a year, the Hawai'i shallow-set fleet would be responsible for 4 to 6 percent of the 71 leatherback deaths expected to occur in year one.

"[In] many years the total mortality is likely to be less than 3," the BiOp stated. Even so, the document stated that leatherbacks face a high risk of extinction.

"The cumulative effect of other stressors, including other fisheries must be removed or abated or this species will reach a catastrophic

> bifurcation (tipping point) where recovery is no longer possible. Today, based on the present population abundance, we expect that there is time yet to ensure that the chances for the recovery of the West Pacific Ocean population are not yet foreclosed," it states.

> Fishery representatives testified to Wespac that more turtles would be conserved if the United States got more of its swordfish from the strictly regulated Hawai'i fleet rather than foreign fleets, such as Brazil's.

The BiOp, however, did not come to the same conclusion, which Henkin

was happy to see.

"NMFS 'found no evidence to suggest that a market transfer effect occurs today.' Then, NMFS debunked the longliners' claim that 'sea turtle bycatch rates of the foreign longline fisheries [are] higher than the sea turtle bycatch rate of the [swordfish] fishery.' After reviewing the best available data, NMFS said it 'cannot conclude ... there is a beneficial effect from the continued operation of the [fishery] to sea turtles, generally, or to the specific sea turtle species adversely affected."

To Justin Hospital, a researcher with the Pacific Islands Fisheries Science Center and member of the council's Scientific and Statistical Committee, however, the BiOp's conclusions about market transfer effects were "a little strong," and the method used to calculate interactions by foreign fleets was unclear.

### **Previous Efforts**

As a result of previous litigation over the swordfish fishery's take of sea turtles, the fishery was closed in 2001. NMFS was forced to take strong measures to limit the interactions. By 2004, the agency had released a biological opinion that cleared the way to allow the vessels to resume their pursuit of

# Climate from page 4

swordfish.

The current draft BiOp takes note of the relative success of these measures: "The 2004 management measures have proven to reduce leatherback sea turtle interaction rates by 83 percent.... Since the [swordfish] fishery reopened in 2004, an estimated 22 leatherback sea turtles have died. All of the leatherback sea turtles caught were released alive; mortality estimates come from applying the NMFS post-hooking mortality criteria." From the mid-1990s to the closure, the longline fleet routinely caught more than 100 leatherbacks a year, with the shallow-set swordfish vessels accounting for almost all of those interactions.

In that same period, Congress appropriated millions of dollars to fund efforts by Wespac to join forces with conservation groups to improve the nesting success of leatherbacks and loggerheads on beaches in

#### Turtles from page 1

the council stuck with a recommendation it made last year to establish a trip limit of five interactions, also known as takes. NMFS's BiOp proposed a vessel limit of six.

The service has also proposed increasing the fleet-wide hard cap for loggerheads from 34 to 36, and reducing the leatherback cap from 26 to 16. The council did not oppose either change.

### The Proposal

The service's draft BiOp, released in late-March, evaluated the shallow-set fishery's effects on a broad range of protected species, including the giant manta ray and oceanic whitetip shark — both federally listed as threatened last year — as well as loggerhead, leatherback, green, and olive ridley sea turtles, as well as the endangered Guadalupe fur seal. But what the council and HLA awaited most anxiously were the opinion's recommendations regarding loggerheads and leatherbacks.

On March 19, NMFS closed the shallow-set fishery because it had hooked too many loggerheads. As part of a federal court settlement last year, after the fleet had caught 33 loggerheads, the service reduced the hard cap for the species from 34 to 17 pending the issuance of the new BiOp. The BiOp would not only describe the fishery's impacts, it would also include an incidental take statement detailing the protective measures the fishery would be subject to or be required to implement. Those could include hard caps, as well as gear restrictions or area closures. both the eastern and western Pacific.

The funding for those efforts dried up years ago and the council has no ongoing work in these areas, so far as any public record can document.

More recently, starting in 2015, the council has received a grant of \$875,000 for what it described as a "marine turtle award" – although none of the actions described in the narrative associated with the grant mentions turtles at all. Instead, it is described as assisting the council in carrying out its responsibilities under the federal Magnuson-Stevens Act, which governs fishing by all U.S.-permitted fleets.

At Wespac's April meeting, Ann Garrett, assistant administrator for the service's Protected Resources Division in the Pacific islands region, reported that the agency provides hundreds of thousands of dollars in funds to international partners every year to conduct surveys of the turtles' nesting

The document was expected to be completed by last October, but NFMS did not release a draft until late March. In the meantime, the fishery not only hit the loggerhead cap set in 2018, it exceeded it. All told, the fishery had hooked 20 of them by the time the fishery closed.

In the draft BiOp, the service determined that the fishery does not jeopardize the continued existence of any of the protected species known to interact with the fleet. Even so, the service proposed imposing several conservation measures:

In addition to setting new vessel and fishery limits on leatherbacks and loggerheads, the BiOp tasked the service's Sustainable Fisheries Division with analyzing loggerhead and leatherback interactions to evaluate interaction patterns, issuing a report on that analysis and an action plan for working with vessels that interact with a disproportionate number of the turtles within 18 months of the final BiOp being signed, and, within two years, implementing measures to "reduce incidental take and associated mortality of leatherbacks and loggerheads by at least 25 percent."

With regard the latter measure, the BiOp directed the division to evaluate closing the area east of 140°W in the first and fourth quarters of the year and prohibiting fishing in the sea surface temperature bands preferred by foraging turtles.

Although the service's analysis suggests that loggerhead numbers may be increasing — which is why it was proposing to increase the annual cap — the BiOp stressed the agency's uncertainty surrounding that beaches, outreach, and a variety of other activities.

NMFS regional administrator Mike Tosatto added that for more than a decade, his office has received about \$1 million for sea turtle work, but that money has been used instead to offset a shortfall in fishery observer funding. He said he's been working with NOAA headquarters to regain observer funding, which would allow that \$1 million "earmark" to be spent on turtle research and the like.

Tosatto also said his agency is working to reduce the number of turtle takes by foreign fleets in the Pacific. "I believe our fishery is the model fishery. We are working hard on the international forum to level the playing field," by trying to get international fishery management organizations to mandate the kinds of sea turtle protection measures the Hawai'i fleet is subject to.

—T.D. and P.T.

conclusion. It noted that the data supporting the increasing trend came from a single subpopulation of loggerheads, and "the variance around our estimate suggest that the species could be declining, and we do not know the trends for the other two primary subpopulations."

"Being that the species is comprised of subpopulations that impart specific benefits to the species as a whole, the reduction of take to these subpopulations is important to the conservation of the species as a whole," it stated.

That being said, the BiOp left the door open to modifying the annual hard caps if the fishery implemented measures that achieved a 25 percent reduction in take.

Another recommendation in the BiOp was that NMFS' Protected Resources Division hold a workshop to determine whether there are more effective ways to remove more fishing gear from hooked leatherbacks to increase survivorship. Also, the division should expand the protected species workshops it now holds for vessel captains to include crew members, the BiOp recommended.

### Vessel vs. Trip

When Ann Garrett, assistant regional administrator for NMFS's Pacific Islands Regional Office Protected Resources Division, summarized the BiOp to the council and its Scientific and Statistical Committee (SSC) on April 12, members of both bodies questioned why the service had chosen to add hard caps on individual vessels rather than

#### Turtles from page 5

adopt the council's trip-limit approach.

SSC member Steve Martell pointed out that if the fishery closes or vessels hit their limit, "they have something that's equally profitable to switch into," referring to the deep-set fishery. Given that, the limits as proposed didn't provide a strong incentive to avoid catching turtles, he said.

Trip limits would force the vessels that hit their limits to return to port and idle in Honolulu for a few days before heading back out, providing a much stronger incentive to try to avoid turtles, he said.

By keeping vessels fishing for swordfish, it would also benefit the market and support a cleaner fishery that has 100 percent observer coverage. Only 20 percent of the deep-set fishery is covered, and that coverage is likely even less in foreign swordfish fleets.

Garrett said her division had considered trip limits, but in evaluating the past 16 years of bycatch data, it was clear that a large portion of the total turtle takes was coming from a handful of vessels. Forty-one percent of leatherback interactions was attributable to five vessels, or 15 percent of the fleet, and 40 percent of loggerhead interactions were attributable to four vessels, or 11 percent of the fleet, she said.

Targeting individual vessels allows the fishery to stay open, since most vessels have, at most, only one leatherback interaction

# For Further Reading

*Environment Hawai'i* has extensively covered the Hawai'i shallow-set fishery's impacts on sea turtles. Below is a short list of some of our more recent stories. All are available on our website, www.environment-hawaii.org.

• "Council Seeks to End Hard Caps on Swordfish Fleet's Turtle Takes," November 2017;

• "Court Finds Federal Agencies Violated Law in Granting Permit, Setting Loggerhead Cap," and "With Looming Threat of Fishery Closure, Council Seeks New Ways to Save Turtles," April 2018;

• "Council Tries to Keep Rogue Vessels from Closing Entire Swordfish Fishery," July 2018;

• "Swordfish Fishery Closes Early Again After Hitting Loggerhead Catch Limit," April 2019. and fewer than three loggerhead interactions in a given year, she said.

Vessel limits ensure the burden is borne by those few vessels that may need to adjust their behavior, she continued.

A vessel limit of six loggerheads would have affected just three vessels in the past two years given historical take levels, she said.

The leatherback vessel limit would likely affect even fewer vessels. She noted that the average number of vessels with a history of more than two leatherback interactions a year was 1.25.

The service had considered a leatherback vessel limit of three, but decided it would provide no real conservation benefit, she said.

Martell asked how the service accounted for the potential change in the fishery's behavior under vessel limits.

"We did not accommodate for that. We just looked at the numbers of animals that would have been affected," she replied.

Martell again stressed how the scheme NFMS proposed lacked incentives for fishermen to avoid the turtles. With a vessel limit of six for loggerheads, and a fleetwide cap of 36, six vessels could shut down the fishery, he also noted.

"Wouldn't it be better to send him back to port rather than allow him to fish in that area until he hits six turtles?" he asked.

Garrett pointed out that the number of times a given vessel interacted with loggerheads six or more times in a single year was pretty infrequent.

### A Minor Change?

Under the Endangered Species Act, the conservation measures contained in the service's incidental take statements must not "alter the basic design, location, scope, duration, or timing of the action" and must involve only minor changes to the action, which in this case is the operation of the shallow-set fishery as proposed by the council.

At the SSC meeting, chair Jim Lynch asked Garrett why she felt the measures in the draft BiOp met that requirement. "This is a pretty big change from what was proposed," he argued.

Garrett replied that the vessel limit measures could allow the fishery to stay open because they only affected vessels with high interaction rates, and those made up "a pretty small percentage of the fleet."

With regard to the measure calling for the implementation within 18 months of a plan to reduce turtle interactions by 25 percent, she said that is an aspirational goal. The service chose 25 percent because "it's reasonably easy to meet from a variety of sources," such as using Turtle Watch, a service that tracks the temperature bands preferred by the animals, and dealing with the amount of trailing gear on leatherbacks, she said

"It would be easy enough to take a suite of measures to reduce mortalities and perhaps interactions," she said.

To Hawai'i Longline Association executive director Eric Kingma, who until recently was the council's National Environmental Policy Act coordinator, the measures proposed by NMFS would, in fact, significantly affect the fishery. He argued that the vessel limits would "remove participants in the fishery to an extent that will not allow the fishery to continue in the future."

HLA president Sean Martin, a former council chair, put it more bluntly: "If NMFS is looking to change fishermen's behavior, this will do it. It will be to not go fishing for swordfish, ever. If NMFS wants to end the Hawai'i swordfish fishery, this will do it," he testified before the council.

Martin said he thought the fleet-wide hard caps were unnecessary, but that his organization would not oppose them, for now. The vessel limits, however, were plainly unlawful, he said.

Dang also pointed out that the vessel limit may not solve anything in those cases where the high take level is a result of the captain's actions. The vessel may be forced out for the season, but the captain could jump onto another boat, he said.

With regard to the possible measures to reach the 25 percent take reduction goal, Martin dismissed them as either illegal or impractical. Closing waters east of 140°W would decimate the fishery, since over 80 percent of it occurs there, and a prohibition on fishing within certain temperature bands would be nearly impossible to enforce, he said.

He pronounced the HLA could accept a loggerhead trip limit of five and a leatherback trip limit of three.

The HLA is also taking steps on its own to reduce turtle interactions, he continued, including improving fleet-wide communication and crew training, as well as funding the development of a branch line cutter that could reduce the amount of trailing gear on released turtles, thereby reducing post-hooking mortality.

#### **Conservation Benefit**

To the council and fishery representatives, the conservation benefit of a leatherback vessel limit of two simply wasn't worth the damage it would cause to the fishery.

Analysis of historical data showed that a vessel limit of two would have resulted in six turtles being saved over the past decade or so.

# Land Board Delays Action on Plan To Move Forward with Water Permits

<sup>66</sup> Let me first say, what you're doing is long overdue. It's something we need to do and it's taken a long time for us to get to this point," Stanley Roehrig told Ian Hirokawa of the Department of Land and Natural Resources' Land Division.

On March 22, Hirokawa presented Rochrig and his fellow members of the Board of Land and Natural Resources a novel method by which prospective water lessees could, with relatively little work or expense, meet their statutory requirement to develop and implement a watershed management plan.

More than a year ago, the Land Board prompted the division to investigate 1) whether existing watershed management plans were sufficient to meet the plan requirement as described in the state's water lease statute, Hawai'i Revised Statutes Chapter 171-58(e), and 2) whether the small uses of water sought by some permittees could be exempt from the requirement to complete an environmental assessment or impact statement.

At the time, the board was in the process of approving a second suite of three one-year

holdover permits allowed under Act 126 of the 2016 Legislature. That measure was intended to allow the nine entities that had been drawing water from state land for years under month-to-month revocable permits to continue to do so for up to three more, to give them time to secure a long-term lease from the Land Board. The act was believed by many to have been necessary in light of a Circuit Court decision invalidating Alexander & Baldwin, Inc.'s four revocable permits for water diversions in East Maui.

In December 2017, with time running out on that three-year grace period, the board heard from a number of the permittees — mainly small farmers from Ka'u — that they had not made any significant progress in developing a watershed plan or complying with the state's environmental review law, Chapter 343. And it was clear from the testimony that some of them simply did not understand the process they were expected to follow.

At the Land Board's March meeting, it also became clear they weren't alone. As one board member put it, 171-58 is "a difficult statute to deal with."

### Cost-Share

Developing a watershed management plan can cost a mint. Implementing one can cost even more. But the source of the water being sought by lease applicants needs to be protected, which is why the Legislature in 1990 included language in the water lease statute requiring new leases to "contain a covenant that requires the lessee and the [DLNR] to jointly develop and implement a watershed management plan."

The statute also requires the board to "prescribe the minimum content" of the plan.

In his March report to the Land Board, Hirokawa explained that few watershed management plans existed before 1990, but now there are many, including those implemented by DLNR's Division of Forestry and Wildlife and public-private watershed partnerships statewide. That being the case, existing watershed management plans can be used to meet the requirement to develop a plan, he stated.

With regard to implementation, the Land Division proposed a cost-sharing scheme in which lessees would pay an annual watershed management fee based on the relative amount of available water they used.

For example, Kapapala Ranch is seeking to use about a tenth of a percent of the water *Continued on next page 8* 

## Turtles from page 6

If that rate were to apply to future takes, "in my opinion, it's a pretty small benefit compared to displacing vessels in the fishery," council member Mike Goto told Garrett. Goto manages the Honolulu fish auction and is also an HLA board member.

To Garrett, the ESA's requirement that agencies take steps to conserve endangered species forced strict action with regard to leatherbacks.

The leatherback population that interacts with the Hawai'i fleet is declining at 5 percent a year, she said, adding, "We believe that trip limits don't do anything for leatherback turtles. Probably the biggest problem with trip limits [is that] vessels would still be going back out. A trip limit should address other issues, such as fishing selectivity. ... The vessel limit for leatherbacks is very clear what it will do to reduce the catch of leatherback turtles," she said.

The BiOp points out that while the Hawai'i fishery may have only a minor effect on the leatherback population, "Nevertheless, more must be done to ensure the recovery of leatherback sea turtles. ... NMFS has not investigated the survivability of adult leatherback sea turtles in this fishery, and still knows very little about the long term prognosis of those individual adult leatherback sea turtles that interact with this fishery. Given our concern for the West Pacific Ocean leatherback sea turtle's status, immediate additional steps to help mitigate the effect of the [Hawai'i shallow-set longline] fishery on leatherback sea turtles are necessary."

Garrett told the council that if it has another model that supports its position that trip limits are superior, it should provide it to NMFS.

At the council meeting, the agency's protected species coordinator, Asuka Ishizaki, presented her analysis of the conservation benefits of vessel limits vs. trip limits. She found that trip limits were better for loggerheads, but not leatherbacks.

Similar to Goto's sentiment, she said that while the vessel limits may save more leatherbacks, they would hardly benefit the species and would have a greater economic impact, especially since the vessels that have had the most turtle interactions over the years also set the most hooks. She suggested that reducing the leatherback post-hooking mortality rate — currently at 20 percent — would provide a greater conservation benefit. Adjusting mortality estimates and cutting branch lines just above the hook would go a long way toward achieving that, she argued.

The fact that the council needed to explore ways to reduce the fishery's take of leatherbacks at all seemed to gall the HLA's Kingma. He pointed out that the BiOp itself found that the likelihood the shallow-set fishery will significantly affect the turtle's population is minuscule. "There's a greater chance a meteor will strike the earth and kill all organisms," he said.

Even so, the council ultimately chose to be slightly more conservative than the HLA in its recommendations regarding leatherbacks. While Martin had said he could accept a trip limit of three, the council decided two would be better. According Ishizaki's analysis, that stricter limit would have avoided 23 leatherback interactions between 2004 and 2018, while the higher limit would have avoided only three.

—Teresa Dawson

#### Water from page 7

available from the aquifer in Ka'u. Annual management costs under the plan for the area have been estimated at about \$1 million. A tenth of a percent of that equates to about \$1,000, which is what the ranch would pay to the department every year under the division's plan.

Management costs vary depending on the area, but the division proposed that lessees' fees be prorated on the basis of a daily overall management cost of at least \$2,500.

Hirokawa stressed to the board that his division was simply seeking the board's approval of that approach, in concept. "This is not the way we're going to do it necessarily. This doesn't bind the board in any way into not looking at watershed management plans or other alternatives that can be done. It doesn't even require the permittees to exercise this formula," he said.

However, if the smaller water users on Kaua'i and Hawai'i — East Kaua'i Water Users' Cooperative, Jeffrey Linder, Edmund C. Olson Trust, Kapapala Ranch, Kuahiwi lessee until they win a bid at public auction — is going to bid on the property."

He acknowledged that the board and department were assuming that the lease applicants would be the only bidders.

Yuen endorsed the idea that they be apprised of the potential lease costs. However, he noted that the watershed management fees under the formula eclipsed what the current permittees have been paying for the water itself. "This is the Catch-22 in the statute," he said.

Hirokawa countered that the lessee's contribution needs to be meaningful. The proposed base management cost of \$2,500 a day would cover a single day of invasive plant removal by a small work crew. "It's not much. It's something," he said.

Even so, Yuen said he was very concerned about the small ranchers and farmers on Hawai'i island who won't have the "fire power" to do things that are in the grasp of the Kaua'i Island Utility Cooperative or Mahi Pono, which recently bought much of A&B's land in Central Maui.

"As much as we can simplify things for

# "This is not the way we're going to do it necessarily." — Ian Hirokawa, Land Division

Contractors, and Wood Valley—paid their implementation fees based on the formula, they could meet the requirements regarding the watershed plan, he said. Annual fees for those permittees would range between \$824.31 and \$3,267.83.

"This is not in any way a bill or assessment to the permittees, [but] it gives them an idea of how much they would pay under this scenario," he said, referring to Exhibit A in his report to the board, which contained a spreadsheet showing how much each lease applicant would pay under the formula.

Hirokawa said that some permittees had already informed him that the fees in the exhibit were too high. He added, however, that the water users were free to discuss with his division the possibility of meeting their requirements with in-kind services or some other alternative.

#### 'Catch-22'

To board member Chris Yuen, the water lease statute itself was problematic.

"There's a little bit of a Catch-22 in the whole discussion of the watershed management plan. ... [I]f the implementation of the plan is a very expensive proposition, it influences what the lessee — who's not the that group of people, we have to try to work on that," he said.

Sharon Suzuki, president of Hawaiian Electric Light Company, the Big Island electric utility, testified that the watershed fee for its hydropower plant on the Wailuku River could be around \$240,000 under the proposed formula, which was about \$40,000 more than what A&B's East Maui She also asked that the watershed fee be considered as a portion of the total lease cost and that the board take into account the utility's work with the Mauna Kea Watershed Alliance.

Board chair Suzanne Case said the issue of lower fees for non-consumptive uses was worth more discussion. She also commended Suzuki for reaching out to work with the watershed alliance because it was exactly the kind of thing that should be considered when calculating a watershed management fee.

Case said that explaining to water users the need to pay to keep the forests in good condition has never really been done before. "That's why this is ground breaking. That's why it's complicated. And that's why it's a new cost. It's always been an implicit cost but until we actually identify it, we can't really see it for what it is," she said.

## **Technical Difficulties**

Board members and members of the public commended the Land Division for its attempt to resolve such a complicated problem. Even so, Roehrig pointed out that the board had received more than 45 written testimonies in opposition.

"The pilikia (problem) that we're talking about today, it's a technical thing," Roehring told Hirokawa. Echoing testimony from Earthjustice, the Hawaiian Alliance for Progressive Action, and others, he argued that the Land Division needed to adopt administrative rules formalizing the methodology proposed if the division planned to apply it to all future water leases.

Adopting administrative rules is an extensive process that often takes more than a year to complete. The Land Division has

# "As much as we can simplify things for that group of people, we have to try to work on that." — Chris Yuen, Land Board

Irrigation Co. would have to pay.

HELCO's fee would be II times what the utility is paying for the water itself under its permit, she said. She added that all of the water used is returned to the river while pointing out that last year, the plant provided Hawai'i island with 6 percent of its renewable energy.

She suggested that non-consumptive users should pay a lower rate, noting that the fee under the proposed formula would increase the plant's maintenance costs by 78 percent. to draft rules, get board approval to hold public hearings, hold public hearings, get final board approval, and the governor's signature.

While the impetus for the division's proposal was the board's desire to shorten and simplify the lease process for the small water permittees, Roehrig preferred to take a cautious approach.

"If we want to speed up the process, we have to go slow and get it right. ... All you have to do is look at [the court record for a *Continued on next page*  water dispute in] Waiahole and Waikane. It goes on for pages and pages. So we don't need a repeat performance and have the Supreme Court send it back," he said.

A few testifiers also reminded the board that the law requires it to set minimum standards for the watershed management plans. Earthjustice attorney Leina'ala Ley, who represents a community group on Kaua'i challenging interim instream flow standards proposed by the Commission on smaller diverters, even small diversions must be considered to understand the cumulative impact on the watershed. No lessee should be automatically exempted from preparing and EA or EIS based on the amount of their water use. A better solution would be for the DLNR to request funding from the legislature to assist smaller users under a certain threshold."

Board members Yuen and Sam Gon, as well as Native Hawaiian Legal Corporation

"If we want to speed up the process, we have to go slow and get it right."

## — Stanley Roehrig, Land Board

Water Resource Management, suggested that simply basing the lease plans on existing watershed plans was insufficient, especially since some of those plans are more than a decade old.

Yuen also noted that the existing plans would likely cover most, but not all, of the elements of the lease-related plans. "I think the statute implies we finalize the plan after the lease. We may have 90 percent of the expectations in hand before the auction is held, but there may be things that are unique to the particular lessee,' he said. If the applicant was a rancher, for example, he said the watershed plan might call for cattle to be kept out of the forest reserve or for access to the reserve by the state's forestry division to be maintained.

#### Exemption

In his report to the board, Hirokawa stated that many permittees appeared to use very little water in relation to the volume available from the source watershed or aquifer. In those instances, an exemption from the need to prepare an environmental assessment or impact statement may be appropriate, he said, citing an administrative rule that allows exemptions for "operations, repairs or maintenance of existing structures, facilities, equipment, or topographical features, involving negligible or no expansion or change of use beyond that previously existing."

He added that the department's exemption list includes one for leases of state land, again "involving negligible or no expansion or change of use beyond that previously existing."

The department received many form letters opposing this approach, all saying: "While I understand that the board may reasonably be looking for a way to ease the cost burden of environmental review on the attorney Alan Murakami said they thought the current legal framework regarding exemptions was sufficient and the board didn't need to take any further action.

But whether or not the board took action, Earthjustice's Ley argued that the exemptions the division said might apply to the small water users, in fact, did not.

"This proposal is kind of shoe-horning water leases into existing exemptions that weren't designed for water leases, so you're skipping a few steps. When you have an exemption under Chapter 343, it goes to the "I disagree. It's taking water from public land," Ley replied.

"The exemption says existing facilities or existing land uses can be exempted. ... We are trying to see what we can do for farmers and ranchers in Ka'u ... We are not talking about people taking water out of a stream," Yuen said.

Ley said she appreciated Yuen's point, but still believed his proposed application of the exemption would be "over-broad."

#### Final Vote

In the end, the board approved a motion by Roehrig to defer taking action on the Land Division's proposal.

However, the board directed the department to seek advice from the Department of the Attorney General (AG) as to whether and to what extent the board could employ the cost-sharing scheme without promulgating administrative rules. Whether or not rules are required, the board asked staff to return soon to the board with a request to approve minimum requirements for water lease-related watershed management plans and identify the existing plans upon which the former ones might be based.

Roehrig initially made a motion calling for the department to go directly to rulemaking, but backed off at Case's urging.

"This proposal is kind of shoe-horning water leases into existing exemptions that weren't designed for water leases."

# — Leinaʻala Ley, Earthjustice

[state environmental] council and the council allows for public comment," she said.

The DLNR exemption for lease of state land was "simply not designed to address taking water from the stream," she said.

"While this board may have good intentions ... again, it's setting policy. It has future implications. If you use this inapplicable exemption, it can be used again in the future," she said, adding that if the board wanted an exemption specifically for people taking small amounts of water, "that could be a specific new exemption."

Yuen countered that the Ka'u farmers and ranchers don't divert any streams, but take groundwater from an aquifer that has a sustainable yield of 118 mgd. Altogether, those permittees use less than I mgd, much of which goes back into the ground, he said.

He said under his reading of Chapter 343, their uses qualified as land uses, not a water use.

Case asked that the AG analysis come first, just in case rules aren't required. "The whole point of this process is to get public input. It is a huge amount of work to do rule-making and it's time consuming," she said, adding that if it turns out rules are necessary, "I'm fine with that."

Board member Keone Downing, disappointed that the motion lacked any kind of time frame, was the sole no vote. He had asked how long it would take the AG to provide its opinion, but could not get a definitive answer.

As of press time, the state Legislature was still in session and facing a request by Gov. David Ige to resurrect a bill that would extend the holdover period another seven years.

(For more background on this issue, see "Board Directs Land Division To Help Permittees, DHHL Meet Water Needs," from our April 2018 issue, available at www. environment-hawaii.org.) — *T.D.* 

# County Planners Embrace Exposure Area, But Face Resistance, Technical Obstacles

For the second legislative session since the state unveiled its Sea Level Rise Vulnerability and Adaptation Report, bills based on the report's recommendations largely failed.

Among those were bills that would have forced sellers of real property to disclose whether their lands lie within the 3.2-ft. sea level rise exposure area (SLR-XA) identified in the report.

At last month's meeting of the state Climate Change Mitigation and Adaptation Commission, Office of Conservation and Coastal Lands administrator Sam Lemmo said he was disappointed those measures, as well as ones aimed at incorporating sea level rise concerns into the Coastal Zone Management Act, died.

Getting the disclosure legislation passed was one of the commission's top five priorities identified last year. But as Kaua'i planning director Ka'aina Hull revealed at the commission meeting, the SLR-XA may not yet be ready to be used as a tool to impose regulations on individual landowners.

The SLR-XA maps, which depict vulnerable areas under various levels of sea rise, are both in the report and available for finer scale, interactive viewing on the Pacific Islands Ocean Observing System (PacIOOS) website.

While drafting an incentive package to encourage more affordable housing in the

form of small-scale Additional Rental Units (ARUs), Hull said one County Council member proposed removing ARUs from areas vulnerable to sea level rise effects.

"That's where we got into problems," Hull said. He showed the commission a map of Kapa'a town with the 3.2-foot sea level rise exposure area shaded in dark blue: A narrow strip hugged the coast, then sprawled inward, forming a jagged-edged blob surrounded by long, thin branches and errant patches.

"That's the lines we've got, so ... How would you actually tell a property owner, 'You can have an ARU here, but not here?" he asked.

"Aside from it being all over the place, the mapping is not a high-resolution mapping. ... The surveyors were telling us, 'Do you want us to draw it pixelated?'" he continued.

With hundreds of thousands of dollars worth of development at stake, the exposure area line wasn't smooth enough and the proposal was halted, he said.

Despite its drawbacks, Hull said the exposure area was useful in guiding policy. For example, the population on Kaua'i is growing, albeit slowly, and the county general plan recommends accommodating that growth in developed areas rather than allowing urban sprawl.

The problem is that some town cores are situated in coastal areas, Hull said. "Is



Try imposing development restrictions within the Sea Level Rise Exposure Area depicted in this map of Kapa'a, Kaua'i. County planning director Ka'aina Hull says it's not so easy.

that an appropriate policy to have? Should we be sending all of our infill development into the [exposure] area?" he asked.

In Kekaha and Waimea on the island's west coast, the exposure area overlaps 20 percent of the town core, he said. The county is updating the area's community plan, which is expected to also include zoning regulations.

Hull said public opinion against more development in the exposure area for those towns was overwhelming. And based on that, the plan may target areas mauka of the exposure area for intensive development, and possibly down-zone lands makai.

"We're trying to figure out the best area to limit or prohibit [development] in the sea level rise exposure areas," he said.

He added that there was a lot of state land nearby that could be transferred to the county and be used to facilitate a managed retreat from the shoreline.

Because the county's shoreline setback ordinance prohibits hardening, landowners have an incentive to move, he suggested, noting that he's already seen one structure fall because the owner could not build a seawall.

Rather than threatening condemnation, Hull said the county can tell landowners, "We can exchange this land for our land. By the way your structure is going to be in the ocean in a few years."

While retreat is one option, Hull suggested leaving at least Kekaha alone is also being considered.

"Kekaha town is in the wetland. There are pumps right now pumping water out of Kekaha," he said. But there is also a seawall along the highway fronting the town, "protecting the asset," he added.

"Is this an area you're going to preserve in place because infrastructure is already there?" he asked.

Hull said his office was still having "deeply heated and contentious debate" about the plan, but assured the commission that a draft would be released on July 4.

"With fireworks," Climate Change Mitigation and Adaptation coordinator Anu Hittle quipped.

University of Hawai'i professor Chip Fletcher, a vice-chair of the Honolulu climate commission, later advised Hull to consider adaptive design in areas mauka of the exposure area, since "sea level rise is not going to stop at 3.2 feet."

"That is going to be monumentally one of the most important aspects of how we design our towns," Hull replied.

## Setback Pushback

Speaking of fireworks, Maui landowners are lighting up the county Planning Department for trying to incorporate the SLR-XA into to shoreline setback regulations.

"We asked Kaua'i County what they're doing. They said, 'Well, we're waiting to see what you're doing," Jeffrey Dack, the department's senior planner, told the commission.

So late last year, Maui went first. And it did not stop at setback rules.

The proposed rules would amend two of the three options landowners have to establish setbacks. They could locate them at least 40 feet inland of erosion hazard lines in the PacIOOS sea level rise viewer, or at least 200 feet from the shoreline as mapped by the department if there is no erosion hazard line. The option of establishing setbacks so they constitute 25 percent of lot depth for irregularly shaped properties, extending up to 150 feet inland, was left unchanged.

Otherproposed amendments

to the shoreline and Special Management Area (SMA) rules would require permit applicants to include the 3.2-foot SLR-XA and the red erosion hazard line from the PacIOOS viewer into their development site plans.

According to Dack's presentation to the commission, the amendments would also require landowners to agree to forgo shoreline hardening for construction that requires a setback variance, repairs to structures within the setback that cost more than half of replacement costs, and repairs to damage caused by waves, among other things.

Landowners are brimming with questions, Dack reported:

What will happen to existing structures that may now be partially or entirely in the setback area? How many properties would become unbuildable if hazard lines were adopted? Will repairing seawalls be contrary to managed retreat?

Some also believe the rules, if adopted, would constitute a land taking, he said.

"That just gives you a flavor of what's hitting us," he said, adding that his agency is preparing "reasonable responses to all of those."

#### Next Steps

To resolve the kinds of problems Hull raised, Lemmo suggested that his agency,

which spearheaded the effort to develop the sea level rise report, could prepare an addendum that would explain how the report should be used.

"As Ka'aina mentioned, it's not clear," he said. "Are we going to do remodeling? Are we going to smooth lines? Are we going to write guidance ... for people who want to apply it a little more seriously?" he asked.



Sandbag barrier in Kahana, Maui.

Lemmo and Hittle proposed convening a team of experts — from the Department of Land and Natural Resources, UH, the state Department of Transportation, the Honolulu Board of Water Supply, and elsewhere — to develop that guidance.

Commissioner Bruce Anderson, who also heads the state Department of Health, said he hoped some guidance would be developed for counties as to how the SLR- XA should be considered when approving wastewater systems.

"Honestly, we're not doing it right now, not looking at septic systems, and leach fields," he said.

Lemmo acknowledged that agencies and entities throughout the state are already working on various aspects of climate change adaptation and mitigation. As

> Coastal Zone Management program manager Justine Nihipali pointed out, the University of Hawai'i Sea Grant program is developing guidance on how to apply the SLR-XA to community resiliency planning.

> Lemmo said he envisions a more centralized body, located in one place, "where we can grow a small unit that can basically serve as a resource for doing climate adaptation work."

> Nihipali said that the state Office of Planning already has a framework that brings together officials from various government agencies, mainly planning departments.

"Currently what's limited is funding.... We got folks at the table that participate through this process already," she said, adding that she had reservations about "creating something brand new."

To this, Hittle replied, "I don't think we're creating anything brand new. We're just continuing the work. We don't have funding." — *T.D.* 



 $\Box$  individual (\$70)  $\Box$  non-profits, fibraries (\$120)  $\Box$  corporations (\$150)  $\Box$  economic downturn (\$45)

#### To charge by phone, call toll free: 1-877-934-0130

For credit card payments: <b>VISA</b>		
Account No.:	Exp. Date:	
Phone No.:		Mail form to:
Signature of account holder:		Environment Hawai'i
name		190 Keawe Street
address		Suite 29
city, state, zip code		Hilo, HI 96720
email address		

We are a 501(c)(3) organization. All donations are tax-deductible to the extent allowed by law.



Address Service Requested

Printed on recycled paper

# Launch of Seabed Mining Experiment Is Put on Hold for Several Months

The Belgian company Global Sea Mineral Resources (GSR) had planned to start small-scale testing last month of a bus-sized tracked robot – 40 feet long, 13 feet wide, and 15 feet high – designed to vacuum up poly-metallic nodules from the seafloor of the Clarion-Clipperton Zone. That is an area of the Pacific that stretches from east of Hawai'i to west of Mexico and which has been eyed for years as a new source of metals to feed the world's growing demand.

But the launch of the machine, dubbed the Patania II, has been delayed until sometime later this year, GSR has said, after a vital cable connecting the robot to a surface support vessel was

damaged. According to the website of GSR's parent company, DEME Group, the damage occurred "during functionality testing" ahead of the proposed launch.

"The cable, known as an umbilical, is 5 kilometers in length and contains specialized wiring to power, control, and communicate with Patania II ... as well as to hold Patania II's 25-ton weight. ... [R]egrettably, GSR has concluded that it will need to postpone the launch of Patania II for a few months."

Accompanying the deployment of the Patania II will be a team of independent scientists from institutions in 10 European countries and Jamaica. From a separate ship, they will monitor the impacts of the mining effort, with the results of their work being used by GSR to develop an environmental impact statement in anticipation of large-scale mining.

One of the inevitable consequences of seafloor mining is the release of giant clouds of sediment in waters that, as University of Hawai'i benthic ecologist Craig Smith has said, "are the most particle-free bottom waters in the world's ocean."

As a result, "the biota and ecosystem processes are likely to be extremely sensitive to increased suspended sediment concentrations," Smith stated in an email to *Environment Hawai'i*. The effect on marine life will be locally devastating, with the feeding and respiratory structures of animals living in the sediment buried by the sediment stirred up by the mining processes, while animals that live on or depend on the nodules themselves will be destroyed.

One of the scientists involved in the team that will be monitoring the test of the Patania II is Andrea Koschinsky, a geochemist at Ja-



cobs University in Bremen. In an article that appeared in the March 15 edition of *Science*, Koschinsky minimizes the risk it poses to the seafloor ecosystem. "Most of the silt particles" that will be stirred up by the mining operation, she told *Science*, "will clump together and fall out within a kilometer or two."

"That's a bit misleading," Smith says. "Whereas some plume models suggest that most of the sediments will drop out within a kilometer or two of the mining, the bottom waters in the Clarion-Clipperton Zone are so clear that if even a very small percentage of the re-suspended sediment stays in the water column, it is likely to have major impacts.

"The most recent models of plume dispersal from 10 days of simulated mining indicate that suspended sediment concentrations and sediment accumulation rates will be four orders of magnitude – 10,000 times – greater than background levels as far as 10 kilometers from the site of the mining."

In 2015, a team of scientists from Scotland and Germany looked at the natural currents that exist at the seafloor in the CCZ area proposed for mining. At times, the currents can be increased, but there is little disturbance of the sediment. However, should the sediment be disturbed by mining, the currents would be able to disperse the suspended particles over a wide area.

Or, as the authors state, "During eddyinduced elevated flow periods mining-related plumes, potentially supplemented by natural

> sediment resuspension, are expected to spread and disperse more widely and rapidly," they concluded. (See Dmitry Aleynik *et al.*, "Impact of remotely generated eddies on plume dispersion at abyssal mining sites in the Pacific," published online in *Nature/Scientific Reports*, December 5, 2017.)

> "The natural level of background sedimentation in the Central Pacific, accumulated during one thousand years (1-6

mm) is reached within just 10 days" under one of the mining scenarios modeled by Aleynik's team. "The re-deposition of plume [particles] at this scale is expected to have a huge impact on the generally non-resilient deep ocean ecosystems, which could be prone to irreversible changes under such enormous pressure."

## — Patricia Tummons

For more on the proposals to mine the CCZ, see the interview with Craig Smith in the January 2019 *Environment Hawai'i*: "Treasures of Pristine Ocean Ecosystems Could Be Lost to Mining for Metal Nodules."