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In an Octopus's Garden, Who Gets the Fish?

Three years ago, a Hawai'i Supreme Court ruling led many people to think that the state would finally have to undertake a hard look at the environmental effects of commercial fishermen collecting hundreds of thousands of colorful reef fish for shipment to overseas markets and, ultimately, for sale to fanciers of saltwater aquarium fish.

That didn't happen. The state found a way to bless the practice everywhere except most of the coast off the western side of Hawai'i island.

Whether that is a sneaky loophole to avoid the environmental review requirement, or whether it is a way to allow a business with a light environmental footprint to continue, is now a matter before the court.

Not waiting for the state to act, the Honolulu City Council is weighing a bill that would discourage the practice as it is conventionally done, much as Maui County did nearly a decade ago.

The state court heard arguments on the matter in June. A decision had not been issued by press time.

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Lawsuit Seeks to Close 'Loophole' Allowing Aquarium Fish Collection

More than three years ago, the Hawai'i Supreme Court issued its ruling in a case that many observers thought would halt commercial aquarium fish collection, at least for a time. The high court determined in *Umberger v. Dep't of Land and Natural Res.* that any permits that the Department of Land and Natural Resources issued pursuant to Hawai'i Revised Statutes Section 188-31 could not be valid until the department complied with the Hawai'i Environmental Policy Act (HEPA), requiring an environmental impact statement or environmental assessment describing the effect of the practice on the human and natural environment.

The high court remanded the case to the 1st Circuit Court, which then enjoined the department from issuing or renewing permits issued under this statute until it satisfied the high court's order.

But the practice continued across the state, except for West Hawai'i, where special rules effectively ban commercial aquarium fish collection by requiring collectors to hold permits issued under HRS § 188-31.

How could it do this?

By its title – "Permits to take aquatic life for aquarium purposes" – HRS § 188-31 would seem to govern commercial aquarium fishing. However, the state continued to issue permits for commercial aquarium fishing under HRS § 189-2, "Commercial marine license" (CML) and claimed that so long as fine-meshed nets were not used to collect fish, there was no need to further restrict the trade.

According to the DLNR's own statistics, in the period from January 2018 to October 2019, nearly half a million marine animals were taken for aquarium purposes by individuals issued CMLs.

In January, the state was sued once again by some of the same individuals who were plaintiffs in *Umberger* in an effort to close what they see as the DLNR's exploitation

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PHOTO: GIOVANNI PARKS

These young yellow tang were illegally harvested recently from waters off West Hawai'i.

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NEW AND NOTEWORTHY

A Loss for American Samoa: The 9th Circuit Court of Appeals has overturned a lower court decision, effectively giving longline fishing vessels the right to fish as close as 12 miles from the territory's coast. The decision is a blow to the American Samoa government, which had sued the National Marine Fisheries Service and Kitty Simonds, executive director of the Western Pacific Fishery Management Council, over the decision of NMFS in 2016 to shrink the zone in which longline fishing was prohibited to 12 miles from 50, the limit that had been in effect since 2002.

After that, the government of American Samoa sued, arguing that NMFS had not considered the 1900 and 1904 Deeds of Cession that protected the cultural fishing rights of its citizens.

In 2017, U.S. District Judge Leslie E. Kobayashi found in favor of the territorial claim and declared the rule to be invalid.

At the time the council recommended opening the closed area, it argued that the waters from 12 out to 50 miles were not being used by the smaller alia catamaran fishing vessels that local fishermen had developed.

On September 25, the three-judge appellate panel issued its ruling, stating that it really didn't matter that NMFS ignored the cessions, since NMFS did consider the impact of the expanded longline fishing area on the alia vessels, "and rationally determined the effects were not significant."

Many of the small alias were damaged in the tsunami that hit the main island in 2009 and not repaired for years.

Last month, at the most recent meeting of the council, a member from American Samoa noted that many of the alia boats had been damaged and out of service for the last few years. The cause was said to be the use of a paint by a boatyard that corroded the hulls of the small boats, rendering them inoperable.

Wespac Wish List: Earlier this year, President Donald Trump issued executive orders (13921 and 13924) aimed at promoting seafood competitiveness and economic growth and providing regulatory relief to support economic recovery. NOAA Fisheries gave the Western Pacific Fishery Management Council (Wespac) until November to submit a list of actions that it believed would ease burdens on domestic fishing in the region.

The council finalized its list at its meeting last month. Lifting fishing bans in the Pacific island marine monuments topped the list. Removing the longline vessel protected area in American Samoa was also considered.

Quote of the Month

"Obviously, the extent to which diversions 'mar natural beauty,' if at all, is inherently subjective."

— state attorneys in Maui water permit case

PHOTO: WPFMC

Alia boats berthed in Pago Pago.

Back in June, Mike Tosatto, regional administrator for the National Marine Fisheries Services' Pacific Islands Regional Office, warned the council that including actions that would require statutory changes would probably not be supported.

Even so, the council recommended that NMFS work with the administration and Congress to exempt Pacific Islands fishermen from the Billfish Conservation Act and to amend the Endangered Species Act to reduce the ability of citizens to sue NMFS.

The council also recommended that the status of certain listed species that interact with the fisheries (i.e., green sea turtles and loggerheads) be revised "where the populations are increasing and threats do not pose an immediate danger of extinction."

Tosatto suggested that the council's rationale for that recommendation was misguided. He noted that when NMFS designated distinct population segments (DPS) of the green sea turtle years ago — which resulted in the Hawai'i population being listed as threatened and those in American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands being listed as endangered — "there was … never going to be a delisting situation. It was whether there was a DPS."

Comparing delisting with establishing a DPS is like comparing apples and oranges, he suggested. "You seem to be mixing that fruit basket," he said, adding that when evaluating whether to delist a species, "we can't consider the consultation burden when we're making those determinations. It has to be on the biology of the species."

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Opponents of Aquarium Trade Appeal Decision Upholding BLNR Rejection of EIS

Last May, the Board of Land and Natural Resources refused to accept an environmental impact statement that had been prepared by a private group seeking to reopen much of the west coast of Hawai'i island to commercial aquarium fish collectors. In August, the Environmental Council upheld the board's rejection of the document.

So why, on September 14, did a hui of individuals and groups that advocate for a ban on commercial aquarium fishing sue the council, the Land Board, and the private group that wants to see 10 individuals be issued permits allowing them to resume collecting reef fish?

Buckle up. It's a long story.

Background

The group that prepared the document and was seeking the permits on behalf of those individuals is the Pet Industry Joint Advisory Council, or PIJAC. Following the Land Board's decision, it appealed to the state Environmental Council. In August, the council voted to uphold the board's action. In its final decision, the council discussed the 14 reasons for the rejection cited in the Land Board's formal order, holding them up against the legal standard of whether they were "arbitrary and capricious." In most instances, the council determined that the BLNR's reasoning was sound. In two cases, though, the council found that the BLNR's reasoning was indeed arbitrary and capricious.

One of those was the board's fourth reason to reject the EIS. The action proposed by PIJAC, the board suggested, would give a monopoly on the use of fine-mesh nets to ten individuals. The council, however, determined that the BLNR had no basis "to conclude that by approving the EIS, the 10 fishers that constitute the applicant" would enjoy such a monopoly since the board itself – and not the applicant – has the power to grant permits.

In its original order, dated August 13, the council appeared to agree with PIJAC when PIJAC, arguing against this particular finding, wrote that the EIS was for just 10 permits – but that nothing precluded the Land Board from issuing additional permits, provided those permittees would need to undergo their own environmental review process under state law. "The applicant does not have the authority to ban issuance of aquarium permits for any area," PIJAC wrote.

In appearing to agree with PIJAC on this point, the council misquoted it, writing instead, in paragraph 93 of its order, that, "Applicant [PIJAC] is correct that BLNR [sic] has no legal authority to ban or prevent the issuance of aquarium permits."

When the mistake was pointed out, the council substituted not the quote or paraphrased quote from PIJAC's argument, as apparently was the initial intent, but rather the statement, "BLNR has limited authority to prevent the issuance of aquarium fishing permits."

The Environmental Council determined that the board's 11th reason for rejecting the EIS was arbitrary and capricious as well. In this case, the board found that the EIS did not adequately discuss scientific findings that supported claims that aquarium fishing harmed the environment, such as a 2003 study by Brian Tissot and Leon Hallacher. "The FEIS need not agree or disprove the negative findings, but it should discuss them," the board stated. In response, PIJAC claimed the Tissot and Hallacher study was dated and that it instead relied on more current data.

The council agreed with PIJAC, stating, "It was appropriate for the applicant to use the more recent fish population data."

The Current Lawsuit

On September 14, three individuals – Willie Kaupiko, his son Ka'imi Kaupiko, and Mike Nakachi – and three groups – For the Fishes, the Center for Biological Diversity, and Kai Palaoa – appealed that decision in 1st Circuit Court.

The group, collectively calling itself the Kaupiko Hui, noted that it "generally supports the council's decision to affirm BLNR's rejection of PIJAC's FEIS." However, it objected to:

- The statement in the revised paragraph 93 that the Land Board has only "limited authority to prevent the issuance of aquarium fishing permits." This claim, the hui stated through its attorneys at Earthjustice, "exceeds the bounds of the council's legal authority and is legally invalid under the Hawai'i Constitution, BLNR's implementing statutes, and the Hawai'i Supreme Court's decision in *Umberger v. Dep't of Land and Natural Resources."*
- The council's finding that the BLNR was arbitrary and capricious in its rejection of the EIS on the ground that it did not adequately discuss relevant negative findings, in paragraph 122 and Section XI of the council's decision.
- The council's denial of the hui's request to intervene in the contested case the council conducted in hearing PIJAC's appeal. The council ruled that the governing statute, Hawai'i Revised Statutes Section 343-5(3), does not allow any intervention by a third party and, in any case, the council would consider the hui's "extensive written comments" submitted on the EIS as well as to the Land Board in its May meeting. The council "finds that there is no additional information at this time that KH can provide other than what it has already provided."

The Kaupikos are Native Hawaiians who reside in Miloli'i, a tiny fishing village in South Kona. For more than 60 years, the complaint states, Willie Kaupiko "has fished the waters of West Hawai'i in the traditional ways handed down from his father and grandfather. … The aquatic life and reef ecosystems that he depends upon to feed his family suffer direct harm from the aquarium trade. … Mr. Kaupiko was also a plaintiff in the original litigation that led the courts to mandate environmental review of commercial aquarium collection under [the Hawai'i Environmental Policy Act, or HEPA], has participated substantially in every step of the resulting HEPA processes … and made every effort to participate in the contested case at issue in this appeal."

Ka'imi Kaupiko, in addition to fishing, is a co-founder of a school in Miloli'i "that teaches children about Hawaiian culture,

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fishing, and the ocean," the complaint states. "The aquarium trade's harmful extractive practices also affect his ability to educate his students about cultural practices that rely upon healthy reefs and fish populations."

Mike Nakachi, also a Native Hawaiian, is a dive operator and founder of Moana 'Ohana, which, the complaint says, "provides diving experiences to private individuals, with a focus on educating its clients about the Hawaiian philosophies of malama 'aina and malama kai, i.e., caring for and nurturing land, ocean, and natural resources. Mr. Nakachi has noticed negative changes on the coral reefs where he dives due to the aquarium trade, including a marked decrease in the abundance and diversity of species and broken coral resulting form the trade's harmful extraction techniques."

As for the groups involved in the lawsuit, Kai Palaoa is an unincorporated association of Native Hawaiian religious and cultural practitioners, For the Fishes is a Hawai'i-based non-profit whose executive director, Rene Umberger, was the lead plaintiff in the original litigation that led the courts to mandate environmental review of commercial aquarium collection, and the Center for Biological Diversity is a non-profit whose "longstanding interests in the health of marine ecosystems has included working to secure protections for species impacted by commercial aquarium collection."

All the appellants had sought to participate in a contested case before the Environmental Council and all but Kai Palaoa were plaintiffs in the *Umberger* case.

The parties are asking the court to modify paragraph 93 "and declare that BLNR has discretion and authority to prevent the issuance of aquarium permits" under the Hawai'i Constitution, HRS Section 188-31, and the Supreme Court's ruling in *Umberger*; to modify paragraph 122 and declare that the BLNR "did not act arbitrarily and capriciously" when rejecting the EIS on the ground that it did not adequately discuss negative findings as to the impacts of aquarium collection on fish populations; reverse the Environmental Council's decision to deny the plaintiffs the ability to intervene in the contested case proceeding; and stay the council's order.

— Patricia Tummons

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of a loophole in its use of a different section of the law to allow aquarium collection to continue.

In a motion for summary judgment in that case, filed in May, Earthjustice attorneys argue that this loophole is flawed and that under *Umberger*, the same HEPA review is required under HRS § 189-2 as the high court required for 188-31.

"DLNR's brazen end-run around the court's order is unlawful for three separate yet complementary reasons," attorney Mahesh Cleveland wrote. "First, all commercial aquarium collection, regardless of the equipment types used, requires a § 188-31 aquarium permit and, thus, must comply with HEPA and this court's order. Second, based on the reasoning the Hawai'i Supreme Court already set forth in *Umberger*, all commercial aquarium collection requires HEPA review regardless whether it occurs under a § 189-2 CML and/or § 188-31 aquarium collection permit. Finally, DLNR's failure to examine and address the impacts of ongoing commercial aquarium collection contravenes the agency's constitutional duties to protect public trust resources and traditional and customary Native Hawaiian rights."

More specifically, the memorandum in support of the motion for summary judgment states, in *Umberger*, the court held that commercial aquarium collection:

"(1) constitutes an 'action' under HEPA because it meets the ordinary meaning of 'program or project,' and its impacts 'fall squarely' within HEPA's ambit….

"(2) triggers HEPA because it 'utilizes state lands and conservation districts in an actual and substantial manner….

"(3) as a matter of law, cannot be categorically exempted from HEPA because 'the extraction of an unlimited number of aquatic life' is not 'a very minor project' that would qualify under any exemption… and

"(4) is an 'applicant action' that requires DLNR's discretionary content and approval…"

Until the *Umberger* ruling, the plaintiffs argue, "DLNR had required commercial aquarium collectors to obtain both a § 189-2 CML and a § 188-31 aquarium collection permit." Neither places any limit on the quantity of fish that can be taken.

Since the 1st Circuit Court barred the state from issuing commercial aquarium permits in October 2017, following remand from the Supreme Court, the DLNR "has issued or renewed at least 66 CMLs to commercial aquarium collectors," the plaintiffs state, with most of the self-reported collections occurring along the southeastern Ka'u coast of Hawai'i island and along the western and northeastern coasts of O'ahu. "Hawai'i Department of Agriculture shipping records from 2018 and 2019 also show that commercial aquarium collectors on the island of Hawai'i have continued to export aquarium animals in high numbers, sometimes totaling hundreds or thousands of animals per shipment," the plaintiffs note.

In a declaration for the plaintiffs, former commercial aquarium collector James Elder of Puako, Hawai'i, cast doubt on whether all of these animals were taken without the use of fine-meshed nets. He stated that based on his 27 years of experience and knowledge of other collectors' practices, he believed it would be impossible to collect the numbers of fish reported without the use of fine-meshed gear.

Elder said that after the circuit court's 2018 ruling, he tried collecting fish using wide-mesh nets, but found them inadequate. "I was unable to corral or collect enough fish to maintain my business, because the fish I tried to collect were either small enough to pass through the mesh, or the fishes' gills would become entangled in my net, requiring me to carefully remove each fish from the net individually, which is too time-consuming to be worthwhile," he stated.

Last month, when the DLNR apprehended aquarium fisher Steve Howard and two apparent accomplices in Kona, enforcement officers located fine-meshed nets and other equipment used for aquarium collection in the ocean, along with cages containing some 200 fish they had apparently collected and left.

The State Responds

The state's reply to the motion for summary judgment argues that because "genuine issues of material fact" are in dispute, the motion should be denied.

Defending the DLNR's position that commercial aquarium collection can continue legally, and in conformance with the Supreme Court's decision, under commercial marine licenses, deputy attorney general Melissa Goldman states that commercial aquarium collection "post

Continued on next page

Umberger is completely different than it was before…. [T]he present practice uses completely different tools and methods, occurs in largely different areas, is far more difficult, and involves far fewer specimens than before."

The state argues, "it is (and always has been) possible to fish for aquarium species intended for commercial sale without a fine mesh net. So, if that court believed that the act of aquarium collection itself was a HEPA-triggering issue, they would have said so in *Umberger*."

Instead, it continues, "the *Umberger* court consistently and clearly limited its holding to the collection activities authorized by § 188-31(a), such as collecting using fine-mesh nets."

In response to the ban on fine-meshed nets, collectors have come up with new techniques, the state says, including "fishing-pole and hook-and-line fishing, fishing with a so-called 'slurp gun' that suctions aquatic specimens directly into the diver's catch bag, and especially night fishing…. Based on catch reports from 2018, 2019, and so far in 2020, it appears that the reduced-efficiency practice of commercial aquarium fishing has continued under these alternative methods at approximately one-half its prior rate." Indeed, the state argues, "many opine that unlimited 'take' would be physically impossible" post-*Umberger* given the loss of efficient fishing techniques.

But even if fine-meshed nets were allowed, former DLNR aquatic biologist Bill Walsh argued in a declaration for the state that aquarium collection of sexually immature juvenile reef fish does not harm reef ecosystems. He cited a 2008 study of yellow tang in West Hawai'i that found only about one percent of recruits were likely to become adults, even when they are protected from fishing. "[I]t is the adult fish which contribute to repopulation; and for many, if not most species, these larger fish are rarely targeted by aquarium collectors," he stated.

Walsh also disagreed with claims that that the Hawai'i aquarium trade seriously threatens the populations of collected species. "[I]n fiscal year 2017-2018, yellow tang and kole made up 92 percent of the total catch in the [West Hawai'i Regional Fishery Management Area]. Yet research from 1999-2000 suggests that yellow tang and kole populations have increased over the years in *both* closed and open West Hawai'i areas. And although the population of Achilles tang has declined in recent years, researchers recognize that a key reason for the decline in this species is harvesting of the nearshore adult breeding population by food fishers, and *not* harvesting of juveniles conducted by aquarium collectors," he stated.

PHOTO: GIOVANNI PARKS

Enforcement officers discovered fine-meshed nets last month that were allegedly used by poachers to harvest aquarium fish in a restricted area along the Kona coast.

He also disagreed with claims by some that aquarium collection of herbivorous fish promotes the spread of algae.

Another point the state raises is that under the CML statute, the award of licenses by the state is not discretionary but rather ministerial. The susceptibility of an action to HEPA review, it argues, "depends on whether the agency must exercise discretionary consent in the approval process."

"The CML statute at issue here does not indicate that CMLs 'may' issue. Rather, HRS § 189-2 directs the DLNR (by using 'shall') to command DLNR to, among other things, 'refuse to renew, reinstate, or restore' or 'deny' a CML" only if the applicant has failed to comply with Hawai'i's child-support laws.

The state also attempts to expand the roster of parties by casting a net over all holders of current licenses allowing the take of aquarium fish. "According to the complaint," the state argues, "plaintiffs seek a complete shutdown of state-permitted commercial marine activity by aquarium collectors across the state until the state can fully comply with [HEPA]. … As such, the complaint takes direct aim at the legal basis for the [Division of Aquatic Resources, an agency of the Department of Land and Natural Resources] issuance of CMLs … yet none of the CML-holders are present to protect their interests."

When the lawsuit was filed, 12 individuals held valid CMLs, the state continues, "seven of whose CMLs will still be valid and active on the date of the June 24, 2020, hearing on the [motion for summary judgment]. Each of these persons is a necessary party" to the lawsuit.

The Fishers' Friend

While the current license holders may not have been named as parties to the lawsuit, their interests have been represented by the Pet Industry Joint Advisory Council (PIJAC), which has intervened as an amicus curiae supporting the state's position.

In its response to the motion for summary judgment, PIJAC agrees with the state's position that material issues of fact preclude the court from issuing summary judgment.

In addition, contrary to what Earthjustice argues as to the unlimited take of aquarium fish allowed by the DLNR's liberal award of CMLs, PIJAC claims that "economic forces provide a practical limit on fishing practices. … Without immediate demand, fish collectors will not collect aquarium species, as it is detrimental to economic viability."

PIJAC, whose law firm, K&L Gates, also represents the Hawai'i Longline Association, brings up the concept of "maximum sustainable yield," a metric developed to assess the impact of fishing effort on targeted populations of food fish, to argue that "fish are a renewable resource, capable of respawning at rates sufficient to replacing fish taken through fishing practices."

Also, it argues, the depletion of reef fish that are herbivores and help control algal growth is a non-issue, writing, "even in reefs where the number of herbivorous fish has decreased due to aquarium collection, researchers found no increases in the abundance of microalgae.

PIJAC elaborates on the state's claim that it has no discretion when it comes to

Study Links Aquarium Collection To Decline of Reef Fish on O'ahu

Some 17 years ago, Leon Hallacher and Brian Tissot undertook to assess the impact of aquarium fish collectors on the population of reef fish along the Kona coast of the Big Island. To collect the data needed, undergraduates were trained to identify the fish and then made underwater surveys along transects in sites known to have been subject to collection and others where such collection was banned.

They found that seven of the 10 species popular with collectors were lower in areas where collection occurred than in the control areas. Also, "several lines of evidence suggest that the current system of catch reporting underestimates actual removals."

Following that, Gail Grabowsky, director of the Environment Program and interim dean of Natural Sciences and Mathematics at Honolulu's Chaminade University, along with Daniel Thornhill, director of Auburn University's Biological Oceanography Program, undertook to apply Hallacher and Tissot's study methods to reef fish along O'ahu's coast. Grabowsky trained six Pacific Islander undergraduates who then surveyed dozens of reef sites around Oahu during the summer months from 2009 through 2011.

Grabowsky presented their findings at this year's Conservation Conference sponsored by the Hawai'i Conservation Alliance. (Owing to the coronavirus pandemic, the conference was conducted virtually September 1- 3.)

Unlike the Kona Coast, O'ahu has few areas where aquarium fish collection is banned. As their control site, Grabowsky and Thornhill used Hanauma Bay, even though at the time of their survey, the bay was still open to use by thousands of visitors a day.

"On O'ahu," Grabowsky noted, "we have very few fully no-take zones, less than one percent. … Those are the Marine Life Conservation Districts. Hanauma Bay is one of them, as is Pupukea and Coconut Island. We initially used all three as control sites, but because we heard of poaching and saw some poaching, we were left with just Hanauma Bay as a fully protected site." Even that wasn't perfect, she added, given the heavy recreational use of the bay, sunscreen pollutants, and other disturbances.

"We started out with a whole bunch of sites," she said, "but not all sites made it into this paper, because there was some legitimate criticism that habitat sites were not the same." Grabowsky consulted NOAA maps that showed geomorphological and biological characteristics of the sites considered and winnowed down

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issuing commercial marine licenses. First, it says, Hawai'i's environmental policy act "mirrors" the National Environmental Policy Act. Second, in rulings addressing the scope of NEPA, the U.S. Supreme Court has determined that "discretionary consent is not inferred through the legislative use of shall." This "lack of discretion" deprives an agency of its "ability to decide, based on its expertise, whether to move forward with an action or not" and thus preparation of an EIS or other environmental disclosure document would be pointless. "A directive within a statute, such as the use of the world 'shall,' abdicates the authority of the agency and with it the prerogative to implement or require additional environmental analyses," PIJAC attorney Geoffrey Davis writes.

In this case, he goes on to argue, "plaintiffs seek to impose discretionary intent where statutory language does not permit such an interpretation. … The language of HRS § 189-2 gives no leeway for DLNR to make a determination as to which permits are to be approved."

The Plaintiffs Reply

In rebutting the state's argument that without fine-meshed nets, the aquarium collectors have been so handicapped that there is no need to limit their take, Earthjustice notes that since October 2017, the DLNR "has overseen a meteoric rise in commercial collection."

"Commercial aquarium catch reports reveal that yellow tang collection on O'ahu nearly doubled from 21,005 in 2018 to 41,129 in 2019. In Kane'ohe Bay alone … yellow tang collection spiked from 8,272 to 24,088 fish during the same period, exceeding in one zone the average island-wide take going back to 2000," it notes.

O'ahu-based subsistence fisher and fireman Nevin Kamaka'ala, who says he fishes from Hau'ula to Kane'ohe Bay, states in a declaration that in recent years, he's noticed a dramatic decrease in yellow tang around the reefs.

As to the state's insistence that aquarium collection with any gear other than fine-meshed nets is allowable, Earthjustice responds that HEPA "requires environmental review of all commercial aquarium collection, regardless of gear types or whether collection occurs under an aquarium permit and/or a commercial marine license."

PIJAC's arguments as to the effect of the removal of juvenile fish and the impact of taking herbivores from the reef environment should be addressed through a HEPA analysis: "These matters fall squarely within HEPA's ambit and intended function and purpose, and DLNR and PIJAC have the burden to disclose and assess these effects through the environmental review process."

Regarding the arguments of both PIJAC and the state that the law gives the DLNR no choice but to issue CMLs and thus no HEPA analysis is required or even permitted, Earthjustice sees this as a reach:

"Like DLNR, PIJAC grasps for straws in assuming that the absence of either 'may' or 'shall' in relation to DLNR's issuance of CMLs … means that DLNR is mandated to issue CMLs in ministerial fashion. The plain language of the statute hardly evinces such an intent, in categorically mandating: 'No person shall take marine life for commercial purposes … without first obtaining a [CML].'" In addition, Earthjustice says, citing to previous Supreme Court rulings, "where a statute is 'devoid of any express provision' regarding an agency's discretionary authority, the agency may exercise discretion consistent with the 'supervisory nature of the [agency's] authority, the [statute's] express mandate, the public's interest, and Hawai'i's public trust doctrine."

Judge Jeffrey Crabtree heard arguments on the motion for summary judgment on June 24. No decision had been reached by press time.

—Patricia Tummons and Teresa Dawson

the list of sites comparable to conditions at Haunama Bay to just 17.

Some 16 species of reef fish were censused. The results: Six of those species were significantly more abundant at Hanauma Bay.

To determine which reef fish were most popular among collectors, Grabowsky sought from the Department of Land and Natural Resources the reports submitted by those collectors to the state and determined that four of those six species were also those that were most commercially collected. Just one of those four is also collected as a food fish, meaning that its depletion at the survey sites cannot be definitively laid at the door of aquarium collectors.

Grabowsky noted the challenges in her study. "There is no good baseline data for O'ahu," she noted. "We can't go back and look at records. … The methods for counting fish are so different, we decided it was better to use the methods on the Big Island. Also, there are shifting trends in the aquarium trade and poaching on protected sites. Also, Hanauma Bay is not really pristine.

"Nevertheless, our statistically significant results … do make a convincing case for collection-driven declines in reef fish abundance."

"In these days of nutrient pollution and climate change and overfishing, this is possibly another stressor we're putting on our reefs," she concluded. "To make an ethical statement, is it right that we decide that fish sold for money are more valuable than their value on the reef when the reefs are so challenged?"

"Given the potential for negative impacts to both fish populations and coral reef conditions in this time of escalating anthropogenic threats," she continued, "it seems pertinent to increase protective measures to safeguard fish populations from overexploitation."

A Bill for O'ahu

The state Department of Land and Natural Resources has continued to issue permits allowing for the commercial collection of reef fish destined for confinement in private aquariums, even though a Supreme Court decision three years ago was thought by many to put an end to the practice, at least until an environmental impact statement could be completed and accepted.

On Maui, an ordinance that took effect in January 2011 curtailed much of the commercial aquarium collection by requiring the humane treatment of fish caught for the trade. Common practices that were banned include puncturing the swim bladders, trimming their fins or spines, and holding them for extended periods without food. Also prohibited is the transport of aquarium fish in a manner that results in injury or death to the fish. Collectors were required to submit biannual reports on mortality rates to the Maui Humane Society.

Now a similar bill has been proposed to the Honolulu City Council. Bill 66, introduced by council member Ron Menor on September 2, would ban deflating the swim bladders of fish and cutting or trimming their fins as well as their transport in a manner resulting in injury or death.

Menor's bill would also require reports to the city on a monthly basis, including data on mortalities, by species, and cause of death. For each shipment of aquarium fish out of state, the city would also require the copy of the packing list, invoice, or other document "listing the species contained within the shipment by common and scientific name." Finally, the city would require any business entity selling the aquarium fish to obtain state and federal tax clearances.

At its first reading, on September 9, almost all testimony was in strong support. Earthjustice attorneys Kylie Wager-Cruz and Mahesh Cleveland, who were part of the team representing Native Hawaiians and other organizations that won the Supreme Court decision. The bill, they testified, "would fill a critical gap in regulating the aquarium trade on O'ahu which in the past few years has become a hotbed for the industry since West Hawai'i was temporarily closed to collectors. Although statutes and rules under the state Department of Land and Natural Resources' purview … purport to address the aquarium trade's impacts on Hawai'i's marine ecosystems, none of these management tools specifically regulate how animals are handled during collection, storage, and transport. Thus Bill 66 is necessary to prevent mistreatment and waste of these public natural resources."

Earthjustice endorsed amendments, initially proposed by the group For the Fishes, that would make monthly reports required only for mortality by species and out-of-state shipments.

Testimony in opposition was received from Chatham Callan of the Oceanic Institute at Hawai'i Pacific University and Tom Bowling, an aquaculturist. Callan objected to the language that would prohibit the withholding of food from aquarium fish for more than 24 hours in transport.

"As written," Callan stated in his testimony "this bill would effectively prohibit the transport or shipping of marine life, AT ALL."

"We have extensive data," he said, "to show that marine fish need to purge their digestive systems prior to be transported, or they will pollute their shipping water with toxic waste products. These waste products are far more harmful to the fish than being without food for a short time period. With herbivorous species, such as Yellow Tang, this fasting period can take up to 48 hours.

"We have shipped over 15,000 cultured juvenile Yellow Tang in over 100 separate shipments over the past several years. In all these shipments, fish were fasted for 48 hours prior to shipping. We are pleased to report the survival rate of these fish in these shipments is always greater than 90 percent and in most cases is greater than 99 percent. …

"Further, we feel the enforcement of this arbitrary time period will negatively impact OI's ability to generate revenue and would restrict the development of new technologies for the captive rearing of aquarium fish to take pressure off the reefs."

Bowling, whose company partners with Oceanic Institute, repeated many of the same concerns raised by Callan. "Although the idea of 'starving' an animal does come across as inhumane and cruel, it is done for much the same reason you are told not to eat for 24 hours prior to surgery. If you do eat, it could put your life in danger … Similarly, the fish must not be fed 24 hours prior to transit, as this means they would defecate in their small volume of transit water and this WILL kill them," Bowling wrote.

The bill received unanimous approval on its first reading and now awaits further hearing from the Committee of Public Safety and Welfare. ***— P.T.***

Court Holds Final Arguments in Case Over Stream Diversions in East Maui

On June 24, Environmental Court Judge Jeffrey Crabtree heard final arguments in a case brought by the Sierra Club of Hawai'i over permits that allow East Maui stream water to be diverted out of the watershed. The group argues that the state Board of Land and Natural Resources failed to fulfill its public trust duties and violated the Coastal Zone Management Act when it decided in 2018 and 2019 to continue four revocable permits to East Maui Irrigation (EMI) and Alexander & Baldwin, Inc. (A&B), for the use of state land to divert tens of millions of gallons of water a day (mgd), mainly for diversified agriculture.

In November 2018, the Land Board approved the permits with the only limit being that the amount diverted had to be consistent with interim instream flow standards (IIFS) set by the Commission on Water Resource Management earlier that year for about two dozen streams.

In October 2019, the board capped the diversions at 45 mgd — 10 mgd more than what the Department of Land and Natural Resources' (DLNR) Land Division had recommended.

In arguing for the increase, board member Chris Yuen pointed out that IIFS standards set by the Water Commission left 93 mgd available for offstream use. And Mahi Pono, which co-owns EMI and had purchased most of A&B's former sugarcane lands in Central Maui with the intent of developing diversified agriculture, testified at the time that 35 mgd would be insufficient to meet its projected needs.

Alexander & Baldwin vice president Meredith Ching (left) and Mahi Pono vice president Grant Nakama (right).

Lucienne De Naie of the Sierra Club's Maui group, however, testified that the company's purported water needs amounted to a whopping 10,000 gallons per acre per day, an amount she said none of Mahi Pono's proposed crops for the area would require.

After being denied a contested case hearing by the board, the Sierra Club sued, asking the court to cap the amount of water the companies divert under the revocable permits to 27 mgd.

It also asked the court to maintain that cap until the Land Board took a number of actions to protect the public trust, including filing a petition to amend the IIFS of 13 East Maui streams that were not part of the Water Commission's 2018 order. The IIFS for those 13 streams were set in 1988 at whatever the status quo was at the time.

The Sierra Club, represented by attorney David Kimo Frankel, pointed out that the Land Board never knew or inquired about how much water EMI/A&B were diverting from each stream when it approved the permits. In any case, he stated, "research indicates the minimum flow necessary to provide suitable habitat conditions for recruitment, growth and reproduction of native stream animals is 64 percent of median base flow."

Before the Land Board voted in 2019, the Sierra Club highlighted a 2019 report James Parham prepared as part of A&B's environmental impact statement for a long-term lease for the permit areas. "He concludes that the diversion of water from these 13 streams reduces habitat units on those streams from 588,000 square meters to 88,386 square meters – a reduction of 85 percent."

Frankel noted in his proposed decision and order that Glenn Higashi of the DLNR's Division of Aquatic Resources testified in a deposition that such an impact was "significant."

Frankel argued that the court should order the board to ensure the diverted water is being used reasonably and beneficially, and to justify its decisions to allow less water to remain in streams than is needed for suitable habitat conditions.

He pointed out that A&B/Mahi Pono was using far less water than they said they would need. A&B planned to divert 35 mgd in 2019, but actually diverted just 27 mgd. Mahi Pono planned to increase diversions to 45 mgd in 2020, but in the first quarter of 2020, "A&B diverted an average of 27.79 mgd. In the second quarter [it] diverted an average of 22.6 mgd," he wrote.

"If Mahi Pono made better use of the water west of Honopou stream, lined its reservoirs, used groundwater, used water in the Reservoir/Fire Protection/Evaporation/Dust Control/Hydroelectric category for irrigation, continued to receive 27 mgd, reduced system losses and limited its irrigation to 2,500 gallons per acre per day, it would have more than enough water to meet its current water needs for agriculture," Frankel wrote.

(Mahi Pono vice president Grant Nakama testified that the COVID-19 pandemic delayed the company's planting schedule "because materials and supplies needed for planting were either delayed or became unavailable." As a result, he said, the company had used less water than it had originally projected.)

The Sierra Club also asked the court to order the Land Board to require A&B/EMI to assess which of its diversion structures adversely affect native aquatic species, facilitate mosquito breeding, and mar natural beauty, and to then require the removal of any offending structures.

Defendants' Reply

In their proposed decision and order, attorneys for the Land Board and DLNR argued that the board had enough information in 2018 and 2019 to weigh the potential harm to native species against the benefits of diverting the 13 streams. They also noted that the Sierra Club provided no evidence that EMI diverts one of those streams, Puakea. The remaining 12 streams are all within the Huelo license area, which is covered by just one of the four revocable permits, they added.

The attorneys argued that it was reasonable for the Land Board to allow the continued diversion from those streams, since forbidding those diversions "might have meant that A&B would be forced to reopen diversions in the Ke'anae and Nahiku areas that were previously closed." (Mark Vaught, director of water resources for Mahi Pono, testified in the case that it gets most of its water from the 12 streams

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BOARD TALK

Land Board Grants Permits, Easements For 'Auwai Repair Projects in East Maui

In the midst of a years-long legal battle with the state Board of Land and Natural Resources over its decisions to allow Alexander & Baldwin, Inc., to divert water from East Maui streams for agricultural uses in the island's central plain, native Hawaiian taro farmers who are plaintiffs in the case have been working with the state — albeit a different agency — on identifying and completing $4.5 million worth of improvements to ancient water channels, or 'auwai, that feed their fields.

In 2016, the state Legislature appropriated money for capital improvement projects that would repair irrigation systems that serve East Maui farms. But the funds were not immediately released because the projects seemed at first to exclusively benefit private parties.

In 2018, the Legislature passed a bill allocating the same funds for the same general purpose, but made it clear that the appropriation benefitted the public, as well, by supporting the state's goal of food self-sufficiency.

In written testimony to the Senate Ways and Means Committee, Ed Wendt, an East Maui taro farmer and member of Na Moku Aupuni O Ko'olau Hui, described how landslides in 2016 had severely damaged "the most important, cliffside miles-long 'auwai above Wailuanui Valley," located on state lands.

East Maui taro farmers, who had maintained the 'auwai for many generations, could no longer do so, due to threats of erosion and falling rocks. As a result, Wendt stated, farmers were not getting the water they needed.

The state Department of Agriculture (DOA) was ultimately tasked with encumbering the funds and shepherding the projects to completion, in cooperation with community members and others with a stake in how water resources in the area are allocated.

On July 10 and September 25, the Land Board approved recommendations from the Department of Land and Natural Resources' Land Division to grant construction right-of-entry permits to the DOA to allow contractors to implement emergency stabilization projects for 'auwai in Honopou, Ke'anae, and Wailuanui.

PHOTO: AECOM

Existing 'auwai at Honopou stream in East Maui.

For the Honopou project, which involves stabilizing about 15 feet of the banks of the 'auwai, the board also issued a revocable permit to Lurlyn Scott and Sanford Kekahuna to allow them to maintain the 'auwai in the future and to continue the intensive agriculture they had already been doing on a five-acre state-owned parcel that is adjacent to their own private lands.

Ian Hirokawa, special project coordinator for the Land Division, stated in his report to the board, "Normally, a long-term disposition, such as an easement or long-term lease, would be required under such circumstances, but staff believes that an exception is appropriate in this specific case. Applicants have a long history of engaging in taro cultivation in the area, as well as maintaining the subject parcel through a revocable permit, and have

Continued on next page

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in the Huelo area that the Sierra Club is concerned with.)

The attorneys added that, consistent with advice from DLNR's Division of Aquatic Resources (DAR), the Water Commission's 2018 IIFS order "spread out the restoration of streams geographically. With the Huelo license area, the Huelo and Honopou streams were ordered to have their natural flow restored, and the Waikamoi stream was ordered to be restored to H90 status [which would provide 64 percent of median base flow]."

With regard to Parham's assessment that the complete diversion of the 13 streams not included in the commission's order would lead to significant habitat loss in their surrounding areas, the state's attorneys noted that his report did not assert that the restoration of the streams was "necessary to the survival or sustainability of the populations of any native stream animals in East Maui."

With regard to the Sierra Club's list of tasks for the Land Board, the attorneys argued that the board "was not required to uncover every possible negative impact caused by every single diversion structure before approving the continued holdover of the RPs."

"Obviously, the extent to which diversions 'mar natural beauty,' if at all, is inherently subjective. Further, it is a matter of common sense that the reduction of stagnant water due to stream diversions is unlikely to significantly reduce mosquito populations in the area, when they are ubiquitous and can breed in any area of stagnant water," they wrote.

They added that the Sierra Club failed to prove why the board should file a petition with the Water Commission to amend the IIFS for the 13 streams when "**CWRM is already undergoing the process of reviewing all streams in Hawai'i to prioritize them for amended IIFS**" (emphasis in the original).

Attorneys for A&B and EMI added "the public trust doctrine cannot require the BLNR to undertake actions that are impossible, unreasonable or impracticable under the circumstances. Accordingly, to establish the standard of care imposed by the public trust doctrine, Plaintiff bears the burden of producing evidence to show that the specific actions it asserts are required are, among other things, reasonable and practicable in the context of a one-year revocable permit terminable upon 30 days' notice."

They also argued that the Sierra Club lacked standing to bring its case because they believed the group failed to prove that its members — who testified to regularly hiking the stream areas and swimming in them, among other things — suffered an actual threat or injury due to the Land Board's actions, or that a favorable ruling would provide any relief.

The court had not made a decision by press time. ***— Teresa Dawson***

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committed to do both for the long term. Applicants have also complied with the terms and conditions of the revocable permit. Given the foregoing, and in consideration of the Applicants' contribution to the state's local food production objectives, staff believes that a revocable permit would be a satisfactory alternative to the burden and cost of an easement or long-term lease." He also recommended that their monthly rent remain at $45.

Scott told the board her family has been growing taro on the property for generations and to continue, "it's really crucial we take care of this issue, especially before the next storm comes."

Board member Jimmy Gomes asked why the recommendation was for a revocable permit (RP) and not a long-term disposition. "Are they comfortable with just an RP … or would they like to expand on it and go the other way? I just want it to be a win-win because they are the stewards in the area," he said.

"Yes, we are. We do plan to go long-term. Because this is an emergency, we want this done as soon as possible. … During this time of COVID, everyone is returning home and wants to open [fields and] start growing more food. … We want to keep that taro patch going and we really need help. … We really want to step up and get a long-term lease after this COVID," she said.

Board member Chris Yuen pointed out that the Land Board has been under a lot of pressure to get rid of revocable permits that have been in place for many years via public auctions. "I see problems with doing that. He asked if the land were transferred to the DOA, whether they could negotiate a lease, instead.

Hirokawa said he wasn't sure about the DOA's ability to avoid an auction, but he then pointed out that if the tenants were to form a non-profit, the Land Division could work with them on a direct lease.

"This is a great example of working with community to maintain a system that has been in place for generations," said board member Sam Gon.

In September, the board approved 55-year easements to the non-profit Maui Mixer, dba Na Mahi'ai O Ke'anae, which plans to maintain the repaired 'auwai in Ke'anae, and to Na Moku, to allow it to maintain the 'auwai in Wailuanui.

Na Moku president Jerome Kekiwi, Jr. told the board that the there are approximately 200 acres of lo'i kalo in the area and the 'auwai is the major source of water to the valley below. He expressed his gratitude to Sen. Jill Tokuda, who chaired the Ways and Means Committee in 2016, as well as Maui County legislators Kalani English and Lynn DeCoite. He also thanked Gov. David Ige, "who took a personal interest in this project," as well as the DOA and Ku'iwalu Consulting.

He also thanked the board for approving the Commission on Water Resource Management's 2018 order that called for the restoration of several streams that serve taro farms in East Maui.

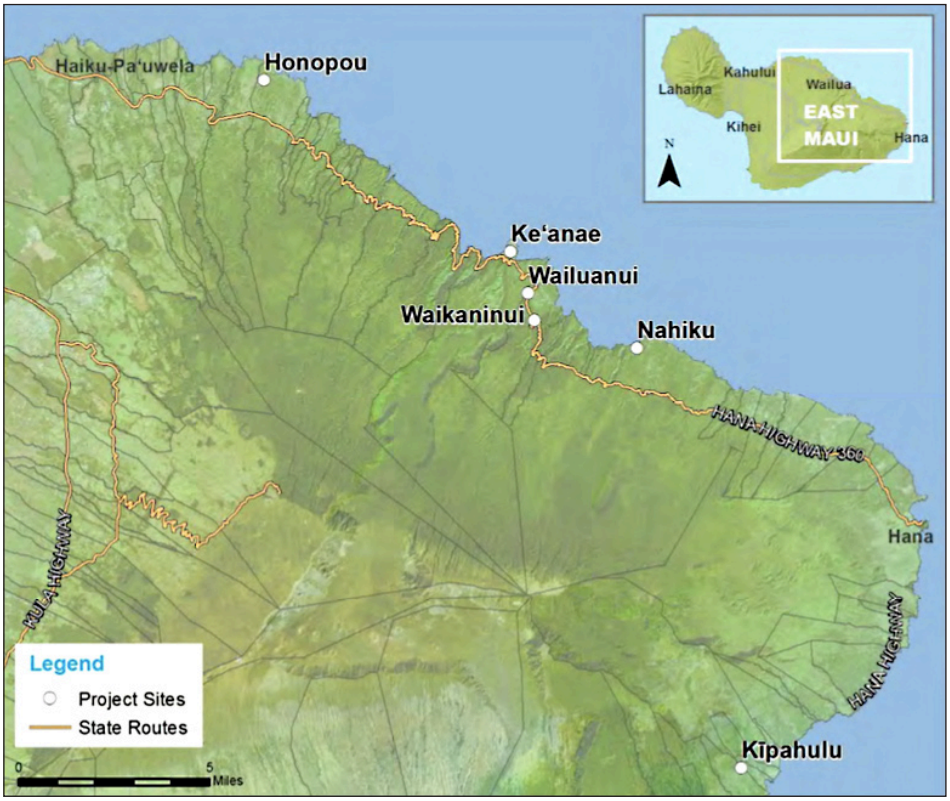

PHOTO: AECOM

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MA'O Farms Wins Approval To Built Processing Facility

At the Land Board's September 25 meeting, it unanimously approved the creation of a two-unit condominium property regime over lands purchased with the help of a Legacy Land Conservation Fund grant in 2008.

The $737,000 grant to the Wai'anae Community Re-development Corporation (WCRC), dba MA'O Organic Farms, helped the organization buy 11 acres of agricultural lands that cost nearly a million dollars. The farm has since vastly expanded its operations to more than 300 acres. According to co-founder Gary Maunakea Forth, it plans to generate gross revenues of $1 million this year.

He said the farm produces 15 different products, including a variety of leafy greens and root vegetables, as well as tomatoes. Because MA'O owns the land it farms, which he said is absolutely critical for the future of agriculture in Hawai'i, it has been able to launch into agro-forestry. It's planted 90 ulu trees, 200 citrus trees, and a lot of mango trees, he said, adding that it's also experimenting with cacao.

He said Hawai'i stores are rabid for anything local and organic.

Once the farm ramps up and is able to have all of its lands producing crops, "we project to be able to make $10 million and fund 90 percent of our internship programs," he said.

He stressed that the youth are part of that evolution and noted that some students who interned on the farm in high school have gone to college and are now they're running the farm. Young, local talent is key to the future of agriculture in Hawai'i, he said.

College student Emily David testified that she started working at the farm as a junior in high school and is now finish-

ing her associate's degree. She said the organization's 'Auwai vocational and workforce specialist, Brianne Imada, is helping her figure out what her future career will be.

In addition to helping her understand the importance of farming, MA'O is a "home to come to, to get my food from, and to ask for support," she said.

To allow for the kind of growth the organization envisions, it needs to upgrade its packing and processing operations, which currently take place in a repurposed chicken shed located on one of its parcels.

The farm has secured $1.5 million in federal funding to build a new facility on a small portion, about a third of an acre, of the lands it purchased with Legacy Land money in 2008.

"We would like to raise the bar and have professionalism," Forth told the board. The building would be a food safety-certified wash-pack facility that could also be used to train people.

"We're looking to automate … to increase our ability to produce food," he said, noting that they will likely produce about 200,000 pounds this year.

"This is a big development that we've been working on one way or another for the last 12 years," he said.

David added, "Being able to have this expansion for the facility is a perfect idea … for my generation to know we have a hope."

The Land Board approved the organization's proposal to legally separate out the area where the facility will be built and to buy the state's interest in that area. This would allow the federal Economic Development Administration, which is providing the grant for the building, to take over the primary lien interest in the property from the state, at least for the next 20 years.

David Smith, administrator for the Department of Land and Natural Resources' Division of Forestry and Wildlife, which administers the Legacy Lands program, told the board, "We feel it is in the interest of the state because it will support the organic farm. … They have a terrific program, work with at-risk youth, come up with a lot of great products … We feel it's consistent with state program goals." He said the payment for the third of an acre will go back into the Legacy Land program.

Program administrator David Penn said MA'O's situation was unique, but it was not the first time there had been a conflict between federal and state program grant requirements. In all the other cases, the program has been able to resolve issues with federal agencies without needing any approvals from the Land Board, he said.

"A complete and permanent buyout of the state's interest is one scenario. … Another [is] a discounted limited buyout, with reversion to the Legacy Land program after the 20-year life of the [federal] grant expires," he said.

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Update on Sunset Beach 'Burrito' Contested Case

In December 2019, *Environment Hawai'i* reported on an enforcement case brought to the Land Board the previous month regarding the illegal installation of three temporary shoreline protection structures — large sand-filled ballast tubes, or "burritos" — on a portion of Sunset Beach fronting the home of Gary and Cynthia Stanley.

The couple, who had just bought the dangerously eroding property, testified that they believed they had permission to add to an existing sand burrito that had been authorized by the Department of Land and Natural Resources as a temporary, emergency measure.

They did not have any such permission, and the Land Board fined them $3,000 and ordered them to remove the structures.

Instead, they filed a petition for a contested case hearing, which the board granted in January. In their petition, their attorney Greg Kugle argued that the requirement to remove the burritos would "create a physical taking of their real property interests."

In a March 23 letter, however, Kugle informed state deputy attorney general William Wynhoff that the Stanleys were interested in settling, "[r]ather than put the state and themselves through the expense and delay of a contested case hearing."

The Stanleys committed to removing the three unauthorized sand burritos they installed within 60 days of an agreement and paying the full fine within 30 days. The one sand burrito and a tarp authorized by the department in February 2019 would remain in place.

On April 28, hearing officer Chris Yuen, who is also a member of the Land Board, recommended that the board approve the settlement offer, which it ultimately did.

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Coral Outplantings At Hanauma Bay

At its September 25 meeting, the Land Board granted permission to the DLNR's Division of Aquatic Resources to outplant six small coral colony modules, each less than 25 centimeters wide, at two

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sites in the Hanauma Bay Marine Life Conservation District (MLCD).

The modules, grown over four years at the division's state-of-the-art coral nursery at the Anuenue Fisheries Research Center on Sand Island, were created using micro-fragments skinned from Pocilloporid corals from O'ahu.

"These outplantings will assist the division to determine whether additional coral restoration at Hanauma Bay MLCD is viable in order to accelerate the return of lost ecological services and functions at this important reef site for the people of the State of Hawai'i," a DAR report to the board states.

DAR's Dave Gulko explained that across the 60 species of coral found in Hawai'i, they grow at an average rate of only 1-2 cm/year.

Because Hawai'i corals grow so slowly, areas damaged by vessel groundings, or even scientists with permits to take bits of coral, stay damaged for a long time.

He said studies of the reef outside Barber's Point where the *Cape Flattery* grounded in 2005 found no coral recovery years later. "We did not get the larval recruitment and settlement we thought we'd see," he said.

At the coral reef nursery, DAR has developed lab techniques to grow the corals much faster than they would naturally. Source corals are sawed into microfragments and attached with surgical super-glue in rows to pyramid-shaped modules, where they eventually grow together under pristine conditions. "In less than a year, they go from 10 cm of source coral to 42 cm of coral colony. In the wild, to go from 10 cm to 20 would take a decade," he said.

After spending some time in acclimation tanks, "kind of like going from a five-star hotel to being homeless," Gulko said, the modules are carefully planted in the ocean and monitored. To date, every module outplanted has survived.

PHOTO: DIVISION OF AQUATIC RESOURCES

Hanauma Bay MLCD. Proposed outplanting sites within the shallow reef flat area are shown as yellow/red circles. A total of six (6) small (<25 cm) coral colony modules would be outplanted; three (3) small colonies at each site.

"We may be the most expensive coral nursery on the planet, but we have the highest survival rates," he said.

The nursery is now working to create larger modules and so far it has been able to grow one square meter of coral in less than a year. It would take 12 to 125 years to grow that much naturally, he said.

It also has developed a "coral ark" that includes 60 species, 40 of which are rare or uncommon. One of those species actually disappeared from Kaneohe Bay due to bleaching, but has been re-established.

All of the previous module outplantings were at sites with little to no human disturbance. The Hanauma Bay outplantings will allow DAR to assess the viability of restoring coral in an area of high human usage, he said.

Various groups testified in support of the project, including the Kohala Center, Friends of Hanauma Bay, and the Center for Biological Diversity.

Maui Land Board member Jimmy Gomes asked whether fast-growing corals from Florida or Australia that are not invasive could be outplanted here to help restore damaged areas.

"Basically, fast-growing species in the plant world are called weeds. … Our entire ecosystem would be modified," Gulko replied.

Gomes then agreed it would be a bad idea.

Given the advances the nursery has made in growing corals, board member Kaiwi Yoon asked Gulko what he thought the nursery could achieve in the next 20, 50, or 100 years. "You're not talking about a full restoration of all our reefs," he asked.

"Actually, we are," Gulko replied. He said that the nursery has been able to create 80 42-cm modules a year. "In the near future, DAR is hoping to acquire a property directly adjacent to us, if we get funds. We expect to grow thousands of modules a year [and] we're starting to think even larger [than 1 meter]," he said.

He noted that Australia is now trying to restore more than a hundred square kilometers of the Great Barrier Reef. "Our workable scale should be 1 square km. Two thousand modules a year over five years ... Yes, it is possible. It's limited by resources, but we're working our way up and we're showing success at the scales we're working at," he said.

"Thank you Doctor… You just made my Friday," Yoon replied. — ***T.D.***