

Price: \$5.00

A Dirty Little Secret Off Maui Beaches

Given Maui's near total reliance on tourism to drive its economy, one might think that county leaders would do everything in their power to ensure the waters off its two most powerful economic engines – Lahaina and Kihei – were pristine and healthy.

One would be mistaken.

Recent scientific reports establish conclusively that if you swim at Kahekili Beach Park, or surf off Kalama Park, you're bathing in sewage. Yes, it's been scrubbed a little at nearby treatment plants, but it still has not been disinfected to even the standard required of irrigation water. And it certainly has not been stripped of nutrients that, dumped into the ocean by the tons, allow invasive seaweed to thrive, killing coral and fouling shores.

The response of county administrators has been to say the county simply cannot afford to upgrade its treatment facilities or reclaim a greater fraction of effluent for irrigation.

If it can't afford that now, what will it do when the tourists stop coming?

Maybe Maui County is poor. Not so the bottomfish and lobster fishers who once fished in the Northwestern Hawaiian Islands. Teresa Dawson's exclusive report uncovers another aspect of fisheries management in Hawai'i that we're sure the fishers would just as soon have kept under wraps.

IN THIS ISSUE

2 New & Noteworthy: Those Polite Whales and Cruise Control

4

The Role of Effluent in Algae Blooms **4**

.

Link Unclear Between Ocean Water, Infections

9

A Perfect Storm of Factors In Decline of Maui Reefs



Kahekili Park, north of Ka'anapali resort area.

Reports Show Maui County Sewage Plants Are Polluting Waters at Popular Beaches

Say you're in West Maui and decide to take a dip at Kahekili Park, just north of the Ka'anapali resort area. The water sparkles at the foot of the wide beach. It *looks* inviting. But, according to a recent U.S. Geological Survey report, you'll be swimming in a lot more than seawater.

There are the drugs: among them, carbamazepine, sulfamethoxazole, diphenhydramine, and caffeine (an anticonvulsant, an antibiotic, an antihistamine, and a stimulant, respectively). Quite a few laundry products, including brighteners, fragrances, and surfactants, are in the soup. Hair mousse, cleaners and disinfectants, cosmetics and food additives – the list goes on and on.

While you might look to your fellow bathers as the source for some of these products (caffeine, especially), the more likely source for most of the others is the nearby Lahaina sewage treatment plant, according to the report's authors, Charles Hunt Jr. and Sarah Rosa.

to page 4

Feds Disburse \$6.4 Million in 'Relief' To NWHI Bottomfish, Lobster Fishers

When Congress passed and President George Bush approved the 2008 Consolidated Appropriations Act, no one seemed to notice that language appropriating \$6.7 million in compensation to the Northwestern Hawaiian Islands commercial bottomfish and lobster fishers didn't really jibe with reality.

Under the act, the National Marine Fisheries Service was given \$6,697,000 to compensate bottomfish and lobster fishermen who "*will be displaced* [emphasis added] by the 2011 fishery closure" prescribed by the June 15, 2006, presidential proclamation establishing the Papahanaumokuakea Marine



NEW AND NOTEWORTHY

Killers with Manners: Emily Post, step aside. The new book on etiquette is being written by false killer whales. Studies of these large dolphins by Cascadia Research Collective scientists reveal a highly developed sense of community. According to the CRC, false killer whales (*Pseudorca crassidens*) "have long-term bonds. They share their prey, not only with their companions, but also with humans. A *Pseudorca* that was alone in British Columbia and Washington ... far from their normal range off Mexico, repeatedly caught large salmon and would offer them to boaters. In Hawaiian waters, *Pseudorca* have offered fish to human snorkelers and divers."

Such behavior may be endearing, but the animals themselves are endangered, especially the small population that inhabits nearshore waters around the Hawaiian Islands. A recently published study by Robin Baird of the CRC and

Environment Hawai'i

72 Kapi'olani Street Hilo, Hawai'i 96720

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Environment Hawai'i is published monthly by Environment Hawai'i, Inc., a 501(c)(3) non-profit corporation. Subscriptions are \$50 individual; \$85 supporting; \$85 corporate and institutional. Send subscription inquiries, address changes, and all other correspondence to *Environment Hawai'i*, 72 Kapi'olani Street, Hilo, Hawai'i 96720. Telephone: 808 934-0115. Toll-free: 877-934-0130. E-mail:pattum@aloha.net Web page: http://www.environment-hawaii.org

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

Production: For Color Publishing

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A publication of Environment Hawaiʻi, Inc.

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President and Treasurer Mary Evanson Teresa Dawson Mina Morita Vice President and Secretary others, published in *Endangered Species Research*, shows that the range of this population, which numbers about 123, probably extends past the exclusion zone around the islands within which longline vessels may not fish. Members of a larger, archipelagic population were similarly found to venture into the exclusion zone. Baird and his colleagues conclude that simply using the distance from shore as the sole criterion for assigning a false killer whale to one or the other population is not "biologically realistic. These two populations may broadly overlap in their ranges."

The findings have implications for managing the longline fishery. A take-reduction team recently established to reduce the bycatch of false killer whales has generally proceeded on the assumption that the nearshore population is unlikely to interact with the longliners. "Efforts should be made to assess longline fishery interactions in the areas where the longline boundary approaches closest to the main Hawaiian islands," the study concludes.

Cruise Control: Faced with persistent allegations by KAHEA: the Hawaiian Environmental Alliance of violating the state's environmental review law (Chapter 343), the state Department of Land and Natural Resources' Division of Aquatic Resources stepped up its game last month to help rescue a planned research cruise to the Northwestern Hawaiian Islands that was in serious danger of being scuttled.



Quote of the Month

"I have to worry about getting sick when I go to do my job. My co-workers are sick."

> — Robin Knox, water quality analyst

At its regular April meeting, the state Board of Land and Natural Resources deferred acting on nine permit applications to study biological resources within the Papahanaumokuakea Marine National Monument. The board made its decision after an executive session and without a staff presentation or public testimony. With the next Land Board meeting scheduled for May 13, the contingent of marine researchers who had planned to sail to the monument on a research vessel in early May filed out of the board's meeting room looking bewildered.

But on April 19, the board, in a rare move, held a special meeting on the NWHI permits. This time, DAR staff presented a lengthy justification for why the division's research exemption and the monument's environmental assessment for its management plan allowed the board to approve the permits without further environmental review. DAR staff, as well as University of Hawai'i researcher Robert Toonen, submitted reports detailing the cumulative impacts research in the NWHI have had so far. In short, the level of impact research has had is "not detectable."

KAHEA's Marti Townsend praised the work, but said she believed merely submitting it to the Land Board fell short of what the law requires and asked that it also be sent to the Office of Environmental Quality Control as the cumulative impact assessment that the monument's EA lacked. Attorney Douglas Codiga, representing the university, argued that the information submitted to the Land Board satisfied Chapter 343 requirements "in the context of an exemption."

"There is clearly a research exemption and these are clearly research activities," he said. And in the end, the Land Board agreed, voting unanimously to approve eight of the permit applications, which cover genetic studies of fish and invertebrates, the deployment of sound recorders, shark tagging, and invasive species surveys, among other things. The board withdrew the ninth application, which coral disease researcher Greta Aeby submitted then withdrew because DAR had recommended denial based on a previous permit violation.

Recent Studies Help Clarify Role Of Sewage Effluent in Maui's Algae Blooms

The two recently published reports (discussed in the main story) are the latest, most painstaking, and most definitive in a series of reports over the last two decades on Maui nearshore water quality. Behind the intense scrutiny have been repeated algae blooms in waters off Lahaina and Kihei, two of the major tourist destinations on the Valley Isle, both served by sewage treatment plants that dispose of 75 to 80 percent of their treated wastewater by means of injection wells.

tion, cesspools, and resorts and golf courses," Charles Hunt and Sarah Rosa write in the report published by the USGS. Similar studies at Kihei concluded that terrestrial nutrients - from various sources - promoted algal growth.

Hunt and Rosa shy away from directly linking the injection wells to the algae blooms. They acknowledge that "excessive growth of macroalgae (seaweed) has been a recurring problem in Maui waters since at least the late 1980s." They continue:

Nutrients in the wastewater have long been called out by surfers and swimmers as a major suspect in the blooms, which can leave tons of rotting, foul-smelling algae on the beaches.

Nutrients in the wastewater have long been called out by surfers and swimmers as a major suspect in the blooms, which can leave tons of rotting, foul-smelling algae on the beaches, ruining the experience of a Hawai'i vacation for tourists and inconveniencing locals. One study in 2004 estimated that dealing with algae blooms cost Maui County \$20 million a year in Kihei alone, due to lost property values and cleanup costs.

Three separate studies off Lahaina in 1993 and 1997 identified "principal sources of nutrients ... as sugarcane and pineapple agriculture, municipal wastewater injec-

"Potential contributing factors include introduction of alien algae species, population reductions in algal grazers such as fish and urchins, and addition of nutrients from terrestrial sources ... and marine sources." But they part company with investigators who "have inferred a pronounced proximity relation between abundant algal growth and wastewater injection," since "moderate to large accumulations of algae have been documented at beaches spanning tens of miles of coastline on Maui, a much greater extent than that of the relatively limited municipal injection plumes.... To the extent that terrestrial nutrients contribute to

algal growth in outlying areas, sources other than waste injection would be involved, such as fertilizers, cesspools, and possibly even background nutrient loads originating from upland forests."

The lead author on the other report, Meghan Dailer, says she has no doubt whatsoever about a causal connection between the algae blooms and the effluent. As part of her research, Dailer positioned about 100 samples of Ulva fasciata, a species of algae implicated in the blooms, off Kahekili Beach, to see how they would respond to being bathed in effluent from the Lahaina plant. "All samples deployed over freshwater seeps drastically and significantly increased ... in tissue ∂ ¹⁵N values," she and her colleagues write. The lowest value, obtained in March, was 33.1, was still higher than the previously reported record of 25.7 "from the heavily polluted (including sewage) Scheldt Estuary in the Netherlands," they write. The highest value - 50.1, reported in May - stands as a world record. "No one in the world has ever hit 50," Dailer said in a phone interview.

By no means does she discount the nitrogen contributions from other sources, such as cesspools and agriculture. Still, she points out that coral cover in the area affected by the Lahaina plant has declined from 55 percent coverage to 33 percent (a 40 percent drop) over the last decade "as algal (invasive and native) abundance in the area has increased." Given the sheer volume of nitrogen that the injection wells represent – up to 457 pounds per day of total nitrogen -Dailer says, the injection wells have to be seen as playing a major role in the blooms. -P.T.



Summer bloom at Kahekili from 2006





PHOTOS COURTESY: MEGHAN DAILER

Algae samples in cages over freshwater seep at Kahekili

Link Unclear Between Ocean Water, Infections

If sewage effluent that has not been disinfected reaches nearshore waters, it stands to reason that at least some of the bacteria it contains will be carried there as well. But to date, few studies have been done to investigate the link.

Neither the recent USGS report, by Hunt and Rosa, nor the *Marine Pollution Bulletin* report, by Dailer and others, tackles the subject of pathogens that may be in nearshore water that receives sewage effluent.

However, there is anecdotal evidence aplenty. When the Environmental Protection Agency had hearings on the Lahaina injection well permit last August, Robin Knox, an expert in water quality analysis, testified that she and many others she knew had developed methicillin-resistant staph infections (MRSA). "I have to worry about getting sick when I go to do my job," she said. "My co-workers are sick. They have the antibiotic resistant staph infections. It's from diving in the places where the injection wells are, [where] effluents are coming out on the reef."

Dailer, corresponding author of the *Marine Pollution Bulletin* article, has also had many staph infections, despite taking precautions. "We cover ourselves in liquid antibacterial soap before putting on our wetsuits," she said in a phone interview. A disinfection protocol was added to the dive plan for nearshore work. Now that her permanent sites are installed and she doesn't have to stay in the effluent affected areas as long, the problem of infections has gone away.

Darla White, an employee of the state Department of Land and Natural Resources' Division of Aquatic Resources, worked with Dailer in collecting samples



Photograph depicted a cutaneous abscess located on the back, which had been caused by methicillinresistant *Staphylococcus aureus* bacteria, referred to by the acronym MRSA.

for the USGS report. She, too, had had MRSA infections – "seven times, three of which have been confirmed by hospitals, with one minor surgery," she testified. "And I have a number of colleagues and friends who are also water researchers, water people, who are constantly getting sick."

Maui from page 1

The plant, operated by Maui County, takes in about four million gallons a day of sewage. On a good day, about a fourth of that is treated to the standard of irrigation water (R-I) and is used to irrigate golf courses and landscapes along the West Maui coast. The rest is shot into four holes, or injection wells. The wastewater, which is only minimally chlorinated - just enough to keep the wells from plugging up with gunk - is more buoyant than the surrounding salty water, and so it rises to the top of the aquifer, spreading out in a kind of a horseshoeshaped plume. Eventually, in, say, two or three weeks, it flows to the sea, entering the marine waters through seeps and springs right along the coast.

Past efforts to trace the wastewater flows from the plant were not conclusive. For one thing, they tended to look too far out to sea for evidence of the presence of wastewater. For another, the researchers involved assumed that the wastewater plume headed directly downslope of the sewage treatment plant. Samples of water taken immediately west of the plant, where the plume was presumed to emerge, failed to turn up a smoking gun pointing to wastewater contamination.

The USGS study, however, began with reconnaissance sampling along a much

longer stretch of the coast. Sure enough, strong evidence of a plume emerged - a few hundred meters south of the area where early modeling had predicted it would appear, diverted "possibly by a buried valley fill from an ancestral stream course," Hunt and Rosa speculate. In any event, they write, "the core of the effluent plume is clearly evident near Kahekili Beach Park. Wastewater presence was confirmed at submarine springs there by detection of carbamazepine and sulfamethoxazole, as well as two synthetic musk fragrances, a fire retardant, and a plasticizer compound, all of which were present in effluent sampled at the treatment plant."

Discouraged, you head south to Kihei, hoping to catch a little surf at Kalama Park. Actually, Kalama Park is at the center of the mile-wide plume of wastewater coming from the Kihei sewage treatment plant, which lies about seven-tenths of a mile inland. Authors Hunt and Rosa also sampled seawater along this coast and found that the model predictions of where the plume would emerge were spot-on. As at Lahaina, wastewater presence at the Kihei beach "was confirmed by detection of the pharmaceuticals carbamazepine ... and sulfamethoxazole ... and by elevated nitrogen and phosphorus concentrations within the plume footprint."

Yecch.

The Signature of Sewage

The USGS report follows close on the heels of another study, this one by a team led by a researcher with the University of Hawai'i Botany Department, that examined nitrogen in algae in nearshore water around the island to look for evidence of land-based nitrogen sources. Their conclusions, published in January, strongly support the idea that injected effluent from the three sewage treatment plants operated by the county – at Lahaina, Kihei, and Kahului – is released into the ocean in close proximity to areas used by the general public for swimming, snorkeling, paddling, and other recreational activities.

Meghan Dailer, principal author of the UH report, and her colleagues employed a relatively recent discovery - that bacterial action on nitrogen changes the ratio of 15N (a naturally occurring isotope of nitrogen, with eight neutrons) to 14N (seven neutrons). While the ratio in the water column itself can fluctuate in a short time period, the ratio of the two isotopes in algae can provide a more stable record of the nitrogen profile in the water over time. By measuring the ¹⁵N: ¹⁴N (or ∂ ¹⁵N) in algae samples, then, it is possible to map the extent of effluent in the seawater, which is naturally poor in nutrients and has a very low ratio, from 0 to 1. (The ratio itself is expressed in parts-per-thousand.)

There's statistical evidence as well although it does not link the incidence of MRSA in Hawai'i with ocean recreation. In the past, cases of methicillin-resistant Staphylococcus aureus (MRSA) were generally associated with being hospitalized. But over the last decade, the number of cases of MRSA seen in people who had had no involvement with hospitals or other medical facilities has grown, leading the Centers for Disease Control to distinguish between health-care associated MRSA (HA-MRSA, for short) and community-associated MRSA (CA-MRSA). In 2006, Hawai'i led the nation in MRSA hospitalizations per 100,000 population, with Maui - 188 MRSA hospitalizations per 100,000 - leading Hawai'i. On the mainland, the incidence is about 100 hospitalizations per 100,000. The figures are not broken down by CA or HA, but, according to the CDC, about 12 percent of MRSA cases are community-associated.

Whether the staph infections are a result of sewage in the water or the shedding of bacteria from other swimmers is not known. In the 1990s, Roger Fujioka of the University of Hawai'i's Water Resources Research Center discovered staph in seawater, but found that the counts fell off at night and that no staph bacteria were recovered from the Ala Wai – all of which suggested to him that swimmers were the source.

Fujioka has also studied *Enterococcus* in ocean water, and his work is largely responsible for the fact that in Hawai'i, as opposed to everywhere else in the United States, the presence of *Enterococcus* is discounted as evidence of contamination of the water with animal feces. Fujioka has argued that *Enterococcus* occurs naturally in tropical soils, so that high counts of the bacteria in surface waters do not necessarily indicate fecal contamination.

But a recent study published in *EcoHealth* in March challenges Fujioka's claims. The report, by Guy Ragosta, Carl Evensen, and

others, looked at Enterococci in Waipa Stream on Kaua'i's North Shore, extending from the mouth of the stream to high in the mountains. Ragosta and his colleagues had little luck when they looked for Enterococci in soil: "75 percent of the soil samples tested were below the detectable limit." However, the presence of cattle, feral pigs, and humans was associated with high levels of Enterococci, with levels at the stream mouth as high as 1,203 MPN per 100 milliliters of water. (The geometric mean recorded at the site varied over time, but in no case did it fall below the recommended EPA standard of 33 MPN/100 ml for fresh water.) Furthermore, by analyzing the enterococcal surface protein, Ragosta and colleagues found that some of the samples originated from human feces. (MPN stands for most probable number.)

According to Dailer, a study of pathogens in Maui's nearshore waters is in the works. -P.T.

Dailer took 600 algae samples from 130 sites along the Maui coast and analyzed them for ∂ ¹⁵N. The lowest values were found in areas of little human impact, such as in East and South Maui and along the coast of Haleakala National Park. In the most populous areas – Kihei, Kahului, and Lahaina – ∂ ¹⁵N values were high, corresponding well with areas where sewage is injected.

In May 2008, Dailer and Darla White, with the state Department of Land and Natural Resources' Division of Aquatic Resources, went back to the Kihei and Lahaina coasts, taking algae samples for the USGS study. Once more, the ∂ ¹⁵N values were elevated in areas corresponding to the presumed sewage plumes at both coasts. At Kihei, 2¹⁵N values of 15 to 18 parts per thousand were measured across the core of the modeled plume, falling off to values as light as 6 outside the plume. At Lahaina, the ∂ ¹⁵N values were greater, reaching a maximum of 39 parts per thousand at Kahekili Beach Park. This probably reflects the higher ∂ ¹⁵N value of the treated effluent leaving the Lahaina facility – 23 versus 15 at Kihei.

What's more, the algae at both sites had higher concentrations of total nitrogen than did algae outside the plume areas, "a sign that they are exposed to higher dissolved nitrogen concentrations," Hunt and Rosa write. No surprise there. Dailer and her coauthors calculate that from 1997 to 2008, the county's three sewage treatment plants in Lahaina, Kihei, and Kahului dumped into the sea 51 billion gallons of effluent, containing some 3.84 million pounds of nitrogen.

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Bad Timing for Lahaina

The reports by Dailer and colleagues (published in January in the Marine Pollution Bulletin) and by the USGS (released in February) could not have come at a worse time for Maui County's Department of Environmental Management, which runs the three county plants that use injection wells. For the last five years, the county has been discussing with the Environmental Protection Agency terms of renewal for its underground-injection control permit for the Lahaina injection wells.

In 2008, the EPA held a hearing on Maui to accept comment on a draft permit that would have changed operating conditions very little from the status quo. Most of the testimony given to the EPA officer at that November hearing was highly critical of any proposal to allow the plant to continue operations without tightening the permit standards governing concentrations of nitrogen in the effluent, limited under the current permit to 10 parts per million.

In light of the public's concerns, the EPA revised the draft permit in May 2009, reducing the allowable limit for suspended solids to 60 parts per million on average and adding a nitrate concentration limit of 10 ppm. (No nitrate limit exists in the current permit). Total nitrogen concentration limits remained at 10 ppm.

However, the EPA proposed new restrictions on overall quantities of nitrogen in the effluent, limiting the total nitrogen mass loading limits to 12,000 pounds per calendar month and 29,000 pounds per quarter, with further reductions to be attained over the life of the permit (10 years, per the draft).

In addition, by December 31, 2011, all wastewater injected into the wells would have to be disinfected to a standard of no more than 100 MPN (most probable number) of fecal coliform per 100 milliliters. Last, but by no means least, the new permit would require that by December 31, 2011, all wastewater, including the effluent injected, be treated to R-I standards (a level allowing its use as irrigation water) by ultraviolent disinfection instead of chlorination. "EPA believes the use of ultraviolet disinfection will allow the county to increase over time the percent of wastewater from this facility that is reclaimed for beneficial use," the EPA wrote in its statement justifying the new

draft permit terms. "Moreover, since the LWRF [Lahaina Wastewater Reclamation Facility] was initially constructed as a reclamation facility, using federal grant money, EPA finds it appropriate to place reasonable conditions in the permit that will shift practices at LWRF from injection to higher levels of reuse," the EPA wrote.

Still, the conditions were not strict enough, and the permit's duration was too long, to please the members of the public who turned out in force last August at the EPA's hearing on the revised draft permit. Mayor Charmaine Tavares led off the testimony, agreeing that the ultimate goal was tion 401 of the Clean Water Act. (That certification basically says that a given operation is not harming water quality.)

Out of Bounds?

The county administration was clearly unhappy with the proposed permit terms. Although in the spring of 2009, Tavares had committed to phasing out injection altogether by expanding reuse, by August, her administrators were telling the EPA that the county could not possibly meet the timelines set forth in the draft permit without violating state and county procurement laws. A month later, it accused the EPA of exceeding

"If the algae problem is attributed to the operation of the injection wells, a critical issue will focus over the compliance requirements of the Clean Water Act." – State Department of Health, 1992

reuse of effluent – ideally to feed algae that could be converted to fuel – but that in the meantime, the county should "not be required to spend scarce resources to reduce nitrogen in our treated wastewater now."

Most of the public testimony was in strong opposition, however, led by members of a newly formed alliance called the DIRE Coalition (Don't Inject – Redirect!). They objected to the proposed 10-year term of the permit, called on the EPA to require the county to obtain a National Pollutant Discharge Elimination System (NPDES) permit, mandatory whenever there are discharges of pollutants from point sources to waters of the U.S., and demanded that the EPA not award a new permit until the state Department of Health gave the county a water quality certification, pursuant to Sec-



Meghan Dailer deploying an array in a seep at Kahekili

its statutory authority in the draft permit conditions.

"The purpose of underground injection programs is to 'prevent underground injection which endangers drinking water sources," Cheryl Okuma, the director of the county's Department of Environmental Management, wrote in a September 21, 2009, letter to David Albright, manager of the EPA Region 9 Ground Water Office. The EPA statement justifying tighter treatment standards, she continued, "acknowledges that the only nearby public water systems are upgradient and will not be affected." Also in that statement, the EPA had pointed to a proposal for a downslope well that would be used mostly for air-conditioning purposes, but some fraction of which would be put through a reverse-osmosis system for drinking water use. "This proposed well," Okuma wrote, "is not described with any specificity, but we are unaware of any finding that this proposed well would constitute a 'public water system' under the statutory definition of that term."

In a document given to the Maui County Council a month earlier, Okuma suggested that the EPA had no scientific data to back up its rationale for the permit changes. When questioned about this by skeptical council members at a meeting of the committee of the whole on September 17, Okuma deferred to deputy corporation counsel Jane Lovell. Lovell alluded to "some very serious scientific questions and debates that are at the heart of the Lahaina situation.... [T]he issuing agency is required by law ... to have some scientific connection between the specific parameters that they are imposing on the permit – whether it's



Kahekili Beach Park

the timeline, whether it's limitations on particular chemical components, or anything else."

At the time, Lovell expected the EPA to issue the permit soon after the deadline for comment (September 21, 2009) passed. When that occurred, she told the council, "if the county has concerns about any of the permit conditions... the county would have 30 days within which to appeal any permit conditions to the Environmental Appeals Board in Washington, D.C. Given the complexity of the technical issues, the very large amount of money at stake, and a forum in which my office doesn't routinely practice ... the corporation counsel may be asking the council at some point for authority to engage outside counsel to assist with any appeal." That, she said, was why "we've brought this issue to you, just as a headsup."

Complications

The final permit has still not been issued, but it would be wrong to assume that the EPA has backed off its concerns about the Lahaina plant. If anything, its interest in seeing further restrictions placed on the plant's operation seems to have been redoubled, along the lines suggested by the DIRE Coalition's testimony.

The jurisdiction of the underground injection control program is, as Lovell suggested, limited to protection of underground drinking water sources. And, again as Lovell pointed out, the impact of the Lahaina plant on underground drinking water sources – situated as it is less than a mile from shore – is admittedly minimal. In fact, no one *Environment Hawai'i* spoke with can remember exactly why the EPA became involved in permitting the Lahaina plant in the first place; although all three of the county's wastewater plants on Maui use injection wells, the only one that the EPA has issued a permit for to this point is Lahaina.

When Dave Taylor, manager of the county's Wastewater Reclamation Division, was asked about this, he had no explanation. "If you can find out," he said, "let me know." No one at the state Department of Health, which does issue UIC permits for all three Maui plants, could explain it.

David Albright, the EPA's regional Ground Water Office head, acknowledged that this was a question raised several times during the course of hearings on the Lahaina permit renewal. "This certainly predates my time with the Ground Water Office," he said. "When we first permitted Lahaina, in the early 1990s, my understanding is that at that time, there were concerns about the facility and its potential impact on the West Maui coastal environment. I understand there were algae blooms that were occurring. People were assuming the Lahaina facility had something to do with it. My understanding is that, driven in part by greater concerns about that facility and its impact, it was decided by EPA that we would call that facility in for a UIC permit." All the county's injection wells are Class V under the EPA rules, he said, a type which doesn't require federal UIC permits, just one from the state. "Federal permitting," he said, "is discretionary."

But if any discharge enters surface waters, the federal Clean Water Act, administered by the state of Hawai'i Department of Health, allows no such discretion. The suspicion that effluent from the injection wells was affecting nearshore waters back in 1992 was what led the state DOH to require the county to investigate the fate of the effluent in the first place and to the EPA's eventual involvement. State DOH Safe Drinking Water Branch chief William Wong informed the county in April of that year that "the serious environmental issue of the algae bloom ... has brought attention to the effluent injection practices... Please be aware that if the algae problem is attributed to the operation of the injection wells, a critical issue will focus over the compliance requirements of the Clean Water Act."(For more on this, see the reports in the October 1992 edition of Environment Hawai'i.)

At that time, the county had claimed, in an environmental assessment prepared for expansion of the injection wells, that it had consulted "with several local water quality experts" who "believe that the blooms are a natural occurrence and are not related to injection well effluent." An appendix addressing water quality, prepared by Steve Dollar, states, "in the region downslope from the Lahaina Sewage Treatment Plant ... no substantial nutrient or salinity gradients were encountered. As a result, it does not appear that effluent materials are leaching to groundwater and entering the ocean near the shoreline in the area surveyed."

Nearly two decades later, Dollar's reports carry little weight, and it now seems likely that the EPA is heading in the direction of requiring compliance with the Clean Water Act, given the recent compelling studies linking poor water quality in the nearshore environment to the operation of the injection wells.

Challenging Authority

Last January, the EPA Region 9 Clean Water Act Compliance Office ordered the county to begin monitoring the injected effluent, to sample coastal seeps known to contain wastewater, and to conduct tracer studies at the freshwater seeps at Kahekili Beach. Under Section 308 of the Clean Water Act, the EPA is authorized to require information needed to determine whether violations of the Clean Water Act are occurring. "EPA is investigating the possible discharge of pollutants to the coastal waters of the Pacific Ocean along the Ka'anapali coast of Maui," wrote CWA compliance officer manager Ken Greenberg, referring to the studies by Dailer and her colleagues and the USGS. Attached to Greenberg's letter were very specific requirements as to the level of monitoring and testing required.

Okuma, the county's Environmental Management Department director, responded on March 15, challenging the "specific authority under which the EPA is requesting this particular off-site data collection," since most "of the requested sampling would require the county to conduct testing far outside the confines of the LWRF site." In any event, Okuma continued, the county "has concerns on its ability to respond." Okuma cited the lack of funds allocated for such work and the delays involved in hiring contractors under state procurement laws. Finally, Okuma referred to a 1993 study of effluent fate that failed to "demonstrate that pollutants from the LWRF were being discharged into nearby coastal waters." What's more, she added, the nitrogen in the effluent being discharged through the injection wells had been reduced by 80 percent since the time of that earlier study.

Then on March 10, the EPA's Albright informed Okuma that before the Lahaina



UIC permit would be renewed, the county would have to apply for a water quality certification from the state for its injection wells. Under Section 401 of the Clean Water Act, before any federal permit can be issued for activities that may result in discharges to navigable waters, such certification must be obtained.

"EPA has determined that the county of Maui's operation of the Lahaina WWRF may result in a discharge into navigable waters," he wrote. "EPA has reviewed recent studies from the University of Hawai'i and the USGS, which strongly suggest that effluent from the facility's injection wells is discharging into the nearshore coastal zone of the Pacific Ocean." The county has until May 11 to submit the application.

According to a source at the Department of Health, as of mid-April, no application had been received nor had the county been in touch with anyone at the Clean Water Branch, which processes such applications. Dave Taylor, wastewater chief for the county, said he did not recall the letter specifically. "There's a lot of correspondence that goes on between this office and Dave Albright's group and the Department of Health," he said.

\$ \$ \$

A Lawsuit at Kihei

In April 2009, a coalition of native Hawaiians and others calling themselves the Puko'a O Kama Alliance sued the county and Okuma over the operation of the Kihei wastewater plant. The plaintiffs, represented by Wailuku attorney Lance Collins, sought the immediate shutdown of the injection wells. The plant is in violation of state water quality standards, the lawsuit alleges. Also, the plaintiffs allege, its operation violates the county's public trust duty to assure integrity of coastal waters, is a public nuisance, poses a threat to the plaintiffs' health, interferes with the plaintiffs' practice of their traditional and customary rights, and violates the state's law implementing the Coastal Zone Management Act.

The suit was originally filed in April 2009 in 2^{nd} Circuit Court. In August, Makena Resort Partners (which went into foreclosure almost immediately afterwards) and Keaka LLC, a company controlled by Everett Dowling (one of the co-owners of MRP) petitioned to intervene in the lawsuit. The intervention was allowed, over the objections of the alliance.

The county sought to have the suit dismissed, but the judge did not agree. Noting that no allegation had been made that the Kihei plant was operating in violation of its permit terms, Circuit Judge Joel August last February instructed the plaintiffs to commence "an appropriate action" before the state Department of Health.

According to Collins, the plaintiffs are hoping to intervene in the county's efforts to renew the Kihei injection well permit. A source at the Department of Health said that the permit expires on August 14, 2010. The county has already applied for a renewal, he added. While there is no provision for public notice in the renewal process itself, he said, under the permit's own terms, members of the public are free to intervene at any point. "No one has to wait until the permit renewals," he said, adding that the Department of Health itself can change conditions of operation anytime it sees a need to.

\$ \$ \$

At Kahului, Objections Over New Well

Last September, true to promises she had made at the EPA hearing in August, Mayor Tavares established a Community Working Group on Wastewater Reuse, whose members represented a broad cross section of interests and expertise. Among them were Irene Bowie, of the planning group Maui Tomorrow, Robin Knox, a water quality expert, and Jeffrey Schwartz, an attorney. All three belong to the DIRE Coalition.

Relations between the mayor's people on the CWG and the DIRE members frayed quickly. The ostensible purpose of the CWG was to develop ideas on how to move forward with the mayor's goal of reusing 100 percent of wastewater effluent and eliminating the need for injection, but the DIRE members came to the conclusion that they would have little input into the CWG's agenda.

Among other things, DIRE members accused the administration of holding back information, including plans to drill new injection wells at the Kahului treatment plant. "Although the issue of 'replacement injection wells' came up in the CWG," the alliance states in a write-up of events on its website (<u>www.dontinject.org</u>), the project management team did not disclose to the CWG that new injection wells with a 10-30 year life were being planned for Kahului, Lahaina, and Kihei. We learned about it only when the Department of Environmental Management sought an exemption from the planning director so that no environmental assessment and no Special Management Area permit would be required for two new replacement wells in Kahului."

Having learned about it, the group moved quickly to try to prevent the action. In December, the county planning director had already determined that the project was a "minor" action and exempt from requirements for public notice or preparation of an environmental assessment. DIRE and another group, Save Kahului Harbor, have appealed the decision to the Maui Planning Commission.

In their appeal, the groups argue that, among other things, the county is violating the Clean Water Act by not having an NPDES permit covering the discharge of pollutants into the ocean. (Dailer and her colleagues found strong indicators of wastewater entering the nearshore waters just off the Kahului plant.)

"Apart from the legal concerns," they write in the appeal, "we believe that important policy, practical, and fiscal concerns make reconsideration or appeal of the [planning director's decision] imperative.... We offer one illustrative point about the wisdom of the proposed action. The Kahului plant in question has an uncertain remaining useful life. The seas are rising. The land is sinking. Part of the plant is already falling into the ocean. It is at great risk in case of a substantial tsunami. The plant is approaching 40 years old. It is not clear how long the Kahului plant's remaining useful life is. To invest in new replacement injection wells at this time in the face of this uncertainty could waste taxpayer money. Other alternatives should have been (and must be) explored."

A one-day contested-case hearing before the Planning Commission had been scheduled for April 27. — *Patricia Tummons*

For Further Reading

The USGS report, "A Multitracer Approach to Detecting Wastewater Plumes from Municipal Injection Wells in Nearshore Marine Waters at Kihei and Lahaina, Maui, Hawai'i," by Charles D. Hunt Jr. and Sarah N. Rosa, is available online from the U.S. Geological Survey Hawai'i website: http://hi.water.usgs.gov/publications/.

The report on nitrogen sources around Maui, by Meghan L. Dailer, Robin S. Knox, Jennifer E. Smith, Michael Napier, and Celia M. Smith, "Using ∂¹⁵N values in algal tissue to map locations and potential sources of anthropogenic nutrient inputs on the island of Maui, Hawai'i, USA," has been accepted for publication in the *Marine Pollution Bulletin* and has been available online since January. To purchase a copy, go to the "Science Direct" website: <u>http://</u> www.sciencedirect.com.

The article by Guy Ragosta, Carl Evensen, E.R. Atwill, Mark Walker, Tamara Ticktin, Adam Asquith, and Kenneth W. Tate concerning *Enterococcus* on tropical islands appears in the journal *EcoHealth* and was published online on March 19, 2010. To obtain a free copy, go to the Springerlink website: <u>http://</u> <u>www.springerlink.com</u>, and use the search feature to be directed to the article. The full title of the article is: "Causal connections between water quality and land use in a rural tropical island watershed."

The October 1992 edition of *Environment Hawai'i* has extensive reporting on problems at the Lahaina and Kahului wastewater treatment plants, on algae blooms in Maui, and on the county's poor history on sewage spills. The March 1995 edition reports on additional problems discovered when the EPA audited the expansion of the Lahaina plant. All are available online at <u>www.environment-hawaii.org</u>. Access is free to subscribers. Nonsubscribers may purchase a two-day archive pass for \$10.

(d)

A Perfect Storm of Factors in Decline of Maui Reefs

The decline of coral cover in nearshore areas of Maui has been dramatic in recent years. The state Department of Land and Natural Resources' Division of Aquatic Resources reported in 2006 that, since 1999, mean coral cover at nine reefs had declined by nearly a quarter, going from 35 percent coral cover to 27 percent.

In the particular case of the reef at Ma'alaea, the DAR reported "total system collapse." In 1972, the DLNR noted, a survey of coral reefs there had reported corals as "striking in their diversity," with several

"rare coral species." In 1993, estimates of coral cover at Ma'alaea were between 50 and 75 percent at the same spots where, in 2006, coral cover was barely 8 percent.

"One consequence of severe loss of living coral is that degrading reefs change from being

actively-growing and structurally complex habitats, into eroding and relatively flat areas which do not support abundant marine life," the DAR wrote. "That process is well advanced at Ma'alaea, where fish stocks are now in very poor condition."

At Kahekili, near the Lahaina injection wells, coral cover went from 55 percent in 1999 to 33 percent in 2006.

The reasons for the decline amount to a sort of perfect storm of developments. There is the presence of invasive algae, which thrive on the nutrients that injection wells and agricultural practices dump into nearshore waters. There is also the volume of effluent, which, although declining slightly in the last two years (the result of fewer visitors to Maui, perhaps), has on the whole increased tremendously over the last two decades.

Then there is the removal of important marine grazing animals from the nearshore environment as a result of overfishing of parrotfish and surgeonfish. In another study, the DAR had found that statewide, reefs where herbivorous fishes were plentiful had much less seaweed (macroalgae) than reefs where they had been depleted.

In an effort to prevent what happened at Ma'alaea from happening at Kahekili, last year the DLNR established a Herbivore Fisheries Management Area offshore of the beach. Rules governing the management area prevent the taking of parrotfish, surgeonfish, rudderfish, and sea urchins.

DLNR administrator Laura Thielen described the decision to establish the reserve as "an immediate management action ... to intervene in the rapid coral reef degradation that has been documented in this area."

But DAR staffers themselves see a need for more action. Last August, at an Environmental Protection Agency hearing on renewal of the permit for the Lahaina sew-

age plant injection wells, Russell Sparks of the DAR pointed out that protecting herbivores addresses only part of the problem. "We do not expect the reef to come back if we're not able to address this holistically," he said. "And

Sign notifying public of Kahekili Herbivore Fishery Management Area

> so we really do need measurable steps taken to reduce the factors that promote algae growth and degradation, i.e., land-based nutrient loads."

> Sparks pointed out another aspect of the injection wells that had not been discussed much to that point. "Although much concern has been placed on nutrient loads," he testified, "marine scientists have also expressed concerns that high volumes of fresh water entering marine ecosystems can alter water chemistry and adversely affect coral reef health. This concern is especially important in areas where coral reefs have evolved in the absence of fresh water. Real short, you can change the chemistry of the water, change the pH, and adversely impact the way corals fix calcium and build the skeleton that supports them. Reefs off of Lahaina, or outside of the wastewater injection facility, are collapsing on themselves. We feel this could be one reason why."

> Sparks recommended that the EPA revise its protocols for the Underground Injection Control Program "so as to assess impacts to Hawai'i's coastal waters." "The Clean Water Act, in addition to the Safe Drinking Water Act, must be considered when regulating existing and future injection well permit applications," he said.

— *P.T.*

Fish from page 1

National Monument. This language flew in the face of the fact that, since 2000, lobster fishermen have not been allowed to fish in the NWHI. Even so, NMFS recently decided they were entitled to \$4.3 million of the total appropriated.

'Dormant' vs. 'Closed'

Lobster fishing in the NWHI was once the most lucrative fishery in the state, earning \$6 million a year in its heyday in the mid-1980s. But within a few years of its peak harvest, signs of a sharp decline in lobster stocks, which included both spiny and slipper lobsters, began to emerge. After a number of closures throughout the 1990s, NMFS shut down the fishery in 2000 as a precautionary measure to prevent overfishing while the agency re-assessed the stocks. Shortly afterward, U.S. District Judge Samuel King issued an injunction barring lobster fishing in the NWHI until NMFS properly assessed the impacts of the fishery on endangered Hawaiian monk seals. Furthermore, President Bill Clinton's executive orders in 2000 and 2001 established the NWHI Coral Reef Ecosystem Reserve, capping all commercial catches at current levels, which for lobster fishing was determined to be zero. Had the reserve completed the process of becoming a national marine sanctuary, lobster harvest would have stayed at zero.

Even so, NMFS and the Western Pacific Fishery Management Council (Wespac) seemed to maintain some hope that the fishery would resume at some point, although

'Customary Exchange': At is March meeting in Guam, over the objections of Hawai'i council member Peter Young, the Western Pacific Fishery Management Council recommended that the National Marine Fisheries Service adopt rules that would allow communities to give fishermen fishing in the Marianas Trench and Pacific Remote Islands Areas Marine National Monuments money — or in Wespac's words, "cost recovery through monetary reimbursements" — for fishing expenses, so long as that fishing is conducted for "cultural, social, or religious reasons".

Wespac defined the practice as a "customary exchange," attempting to distinguish it from commercial fishing (which is prohibited in both monuments) by emphasizing that it is a "non-market exchange of marine resources between fishers and community residents for goods, services and/or social support..."



NMFS admitted that establishment of the reserve appeared to close the lobster fishery indefinitely. A Wespac fact sheet on the NWHI lobster fishery issued after the reserve was set up, but before the monument designation, occasionally refers to the fishery as "dormant." Also, in the years following the reserve's establishment, NMFS continued to prohibit lobster harvesting, but always maintained its intention to "conduct biological research on the status of NWHI lobster resources and examine the resulting data for indications as to the appropriate direction for future fisheries management actions," according to Federal Register notices from 2001 up to 2006.

Jim Cook, a former Wespac chair and NWHI lobster fishing permit holder, told Environment Hawai'i that he believed the lobster permit holders hoped the fishery would eventually resume. "Certainly we did," he said. "I would say that until the final sanctuary designation, we hoped it could be reopened."

When President Bush issued his proclamation for the Papahanaumokuakea Marine National Monument in June 2006, he maintained the status quo for the lobster fishery by again capping harvests at zero. In addition, the monument required all commercial bottomfish and pelagic fishing in NWHI waters to cease on June 15, 2011. This time, NMFS accepted the lobster harvest cap as final and stopped announcing any intention to continue research to direct future management for that fishery.

Economic Impact

Before Bush created the monument, NOAA's National Marine Sanctuary Program was in the process of designating the NWHI reserve as a national marine sanctuary. And in its 2004 proposed fishing regulations for the sanctuary (which favored keeping the lobster fishery closed), it concluded, "The economic impact to this [lobster] fishery occurred when the fishery was closed in 2000 by both NOAA Fisheries and through a federal court order. Maintaining a closure of this fishery will not create significant additional economic impact because it is not currently in operation and catch declined by 90 percent while the fishery was open - fluctuating dramatically as it dropped. This variability, and ultimately the decline in catch, led to an overall economic decline in the fishery from its height in the 1980s until it closed in 2000. Recent research indicates a small level of population building may be taking place, but likely not enough to support a substantial fishery."

Two months before Bush issued the proclamation, Wespac council members debated the issue of compensation to NWHI commercial fishermen. While the council as a whole

2009-2010 Compensation to NWHI Fishermen				
NWHI bottomfish permit holder Jonathan Hurd Errol K. Lanning, Sr. Robert Gomes Zenen G. Ozoa, Ltd. Imua Fish & Trading Corp. (Gary Di Wakefield & Sons, Inc. Ka'upu Ltd. (Edward Timoney)	Initial Compensation not disclosed	Extra \$507.86 \$507.86 \$507.86 \$507.86 \$507.86 \$507.86 \$507.86	Total	
Subtotal	\$2,041,460.10	\$3,555.02	\$2,045,015.12	
Range of compensation based on catch histories: \$83,000 - \$727,000				
NWHI lobster permit holder Katrina Bowyer (no vessel) Craig Yeakel (no vessel) Jerry Ray (no vessel) John Hillard, Jr. (no vessel) Deborah Prescott (no vessel) Hawai'i Protective Association (no vessel, Larry Mehau) Kristofer Knutsen Natali Fishing Inc. (Peter Lindgren) Vessel Management Association Ka'upu Ltd Pacific Seafood Pacific Seafood Pacific Seafood Viking V. Inc.	Initial Compensation \$288,000.73	Extra \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53 \$501.53	Total	
Gunn Pacific Reflection LLC	\$288,000.73	\$501.53		
Subtotal	\$4,320,010.95	\$7,522.95	\$4,327,533.90	
2007 Direct Aid	to NWHI Fishermer	n, Fishing Gro	ups	
NWHI bottomfish permit holder Gary Dill Imua Fish & Trading Corp. (Gary Di William Wakefield Jonathan Hurd Leeward Bottomfishing Hui Subtotal NWHI lobster permit holder John Myking	II)	\$11,400.00 \$32,000.00 \$36,600.00 \$30,513.00 \$92,000.00	Total \$202,513.00 Total	
Jerry Ray Subtotal		\$60,606.00	\$107,284.00	
2007 Dire	ect & Indirect Resea	urch Funds		
Gerard DiNardo (NMFS) Gary Dill & Hui Gary Dill & Hui NWHI bottomfishers Gerard DiNardo (est. total)	Study Bottomfish samples Uku dispersal Kahala ciguatera patte Tagging project Tagging project	\$221,760.00 \$262,415.00 \$145,994.00 \$120,000.00 \$250,000.00	Total	
			\$1,000,160.00	
GRAND TOTAL AID/COMPENSATION TO NWHI FISHERMEN			\$7,682,515.02	

favored compensation to those who would be affected by a sanctuary designation, some members felt the lobster fishermen would not be economically impacted and should not receive any compensation.

Then-Wespac chairman Sean Martin, however, argued at the council's April 2006 meeting that despite the indefinite closure, the NWHI lobster fishery was "an existing fishery" that could be reopened under the right conditions.

Hawai'i's congressional leadership sided with Martin's point of view. A little more

than a year after Bush established the monument, he signed the 2008 Consolidated Appropriations Act, which included an earmark inserted by Daniel Inouye, senior senator for Hawai'i, that directed the Secretary of Commerce to create a "voluntary capacity reduction program" for fishermen holding NWHI commercial fishing permits to catch either lobster or bottomfish. The program would compensate participants for "no more than the economic value of their permits" and also provide for an optional vessel and gear buyout.

The act ignored the fact that lobster fish-

ing permit holders already had an opportunity in 2005 to seek compensation for their ouster from the NWHI. And two of them – John Myking and Jerry Ray – received a total of \$107,284 in fisheries disaster relief as part of a \$5 million federal grant to Hawai'i longliners and NWHI bottomfish and lobster fishers affected by federal closures. (The longliners received the bulk of that grant, which served mainly to reimburse them for legal fees. It also provided hundreds of thousands of dollars to NWHI bottomfish fishermen.)

The language limiting compensation to the "economic value" of permits did not completely escape notice and raised concern among some NWHI fishermen. Assigning an economic value to either the bottomfish or lobster permits would require some creativity, given that the bottomfish permits were non-transferable, that the lobster fishery effectively shut down in 2000, and that all commercial fishing would end in a few years. Recognizing the possibility that NWHI permit holders could receive little or nothing given a strict reading of the act, Cook, who is also Martin's business partner, urged NMFS in 2008 to be flexible in its determination of economic value.

And it was. Because the act identified both bottomfish and lobster fishers as eligible for compensation, the agency proceeded as though the monument's designation actually had an economic impact on the lobster fishers.

When asked whether there were any discussions about how or why a capacity reduction program should apply to a group of fishers who aren't allowed to catch anything, NMFS fishery policy analyst Toby Wood (who was assigned to oversee the program after it had been established) said that none had occurred as far as he knew. Because the appropriation specifically identifies lobster and bottomfish permittees, "we were caught with having to be equitable to both," he said.

In the May 2009 issue of *MPA News*, Wood explained, "While the lobster fishermen have been held to a zero-harvest guideline in the NWHI since 2000, the permits still exist....The potential of re-opening the NWHI lobster fishery has continued to be the hope of many fishermen who still hold their permits."

In April 2009, NMFS published its proposed rules for the compensation, and, for the most part, both the lobster and bottomfish fishermen argued for more money and/or the most favorable and fair evaluation terms. Wood told *Environment Hawai*'i that some bottomfish fishers wanted more than \$1 million for their permits. While the lobster permit holders encouraged NMFS to consider their best catch years in determining the economic value of their permits, Jay Nelson of the Pew Environment Group opposed giving anything



Lobstering in the northwestern Hawaiian Islands.

to the lobster fishermen, telling *MPA News* last year, "Almost a decade after the lobster stocks collapsed, and in light of the absence of their recovery, it would be hard to argue that the remaining lobster permit holders deserve compensation as a consequence of the monument designation."

Creative Accounting

In September 2009, NMFS published its final rules for the compensation program, which were basically identical to the proposed rules. Without an active market for the permits, NMFS determined their economic value by taking the Net Present Value (NPV) of documented net revenues in order to calculate lost investments and future earnings. NMFS established a base value using the three consecutive years in which each fishery actively operated immediately before the monument designation. For the bottomfish fishery, those were 2003-2005; for the lobster fishery, they were 1997-1999.

"These time periods are different for each fishery in recognition of different operational and historical circumstances of each fishery," NMFS stated in its April 2009 *Federal Register* notice on the proposed rules.

For the bottomfish fishing permit holders, the NPV of each permit reflects the gross revenues for 2003-2005 for each permit multiplied by approximately 2.5 to reflect the value of future earnings. According to Wood, NMFS relied on 2003 net revenue data from the NWHI bottomfishers; that was the most recent year for which his agency had solid information on costs and earnings, he said. NMFS then used the net-to-gross revenue ratio in order to derive the NPV using 2003-2005 sales revenues for each individual bottomfish permittee.

For the lobster permit holders, whose permits were transferable, NMFS found that determining the economic value was "problematic," stating, "The NWHI lobster permit market is small, unmonitored, and has been largely inactive over the past eight years. In the later years of operation, the lobster fishery was undergoing operational changes including the formation of a cooperative to manage fishing capacity and costs, and to share revenue among permit holders. Also, some vessels were experimenting with higher valueadded production methods to allow the export of live lobsters to Asian markets. All of these factors make it difficult to determine the economic value of each individual lobster permit."

According to a 2003 *Marine Resource Economics* article by the University of Maine's Ralph Townsend and NMFS's Samuel Pooley and Raymond Clarke, the existing 15 lobster permits were excessive given the NWHI stock conditions of the 1990s, which have not recovered much since then. In fact, in the last three years of the fishery, most of the permits went unused. In 1997, only nine lobster permittees fished the NWHI. In 1998, 14 of the 15 permit holders (often referred to as the "NWHI lobster hui") agreed that only four of them would fish that season, while the rest



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would receive a percentage of their revenue. Five vessels (the four plus one non-hui vessel) fished that year, but that agreement quickly fell apart, and in 1999, six vessels fished the NWHI.

To simplify things—regardless of whether or not a permit-holder had fished, lost money, or even had a vessel anymore — NMFS calculated a net revenue value for the fleet as a whole, applying the same net-to-gross revenue ratio used for the bottomfish permittees to the average gross lobster revenues for 1997-1999.

Swift Action

To administer the capacity reduction program, NMFS hired the Oregon-based Pacific States Marine Fisheries Commission (PSMFC). In October, PSMFC finance officer Pam Kahut wrote to the remaining seven bottomfish and 15 lobster permittees informing them of the program and sending each a proposed compensation amount. All permittees had to respond before any funds were disbursed, and once they received compensation, their permits would become invalid. Bottomfish permit holders who rejected compensation would be allowed to fish until June 15, 2011.

The permit holders responded quickly, and by November 23, Kahut had mailed confirmation letters to all of the permittees, notifying them that they could choose to receive their payments in either December 2009 or January 2010.

The 15 lobster permit holders each received a check for \$288,000.73, for a total of \$4,320,010.95. Because confidential catch data from individual fishermen had been used in the calculations for the bottomfish fishers, NMFS chose not to disclose the amounts each of the seven permittees received. Although eight would have been eligible, one permittee died before receiving compensation. As a group, the bottomfish permit holders received \$2,041,460.11, and individually received pay-



ments ranging from \$83,000 to \$727,000.

On January 21, NMFS issued a press release announcing that it had completed the NWHI lobster and bottomfish fishermen compensation program.

"[B]eginning in January 2010, the commercial fisheries for bottomfish and lobsters are permanently closed in the Monument," it stated.

According to emails from NMFS, overhead costs totaled \$324,951, leaving \$11,078 unspent. In early February, Kahut distributed this among the aid recipients, sending a second check for a little over \$500 to each permittee. Although NMFS's final rule states that any leftover money would be put toward a vessel and gear buyout, Wood said it wasn't enough for such a program. NMFS chose to distribute the money to the fishermen instead because, Wood said, "Basically, it was their money." He added that the true value of the permits was "way over what was allocated."

In the end, Cook said he thought the amounts the lobster permittees received was adequate and fair. As for those who've dismissed the idea of compensating them given the state of the NWHI lobster stocks, Cook said those arguments are, "par for the course for Jay [Nelson] and the sanctuary program." He also alluded to research that has attributed the stock decline mainly to an unpredicted change in climatic conditions that affected spiny lobster larvae dispersal. Although the



Environment Hawai'i has published several articles giving more background on this topic.

• "Council Seeks Monumental Payouts for Small, Even Non-Existent Fisheries" (December 2009);

• "\$6.7M Earmark May Compensate NWHI Bottomfish, Lobster Permittees" (June 2008);

• "State to Dole Out Nearly \$5 Million in Aid to Fishermen and for Fisheries Research" (January 2007);

• "Some Funds Go to Underwrite Litigation Costs" (January 2007);

• "Northwestern Hawaiian Islands Research Subsidizes Commercial Bottomfishing Trips" (January 2007).

All are available for downloading from the Archives page of our website *www.environment-hawaii.org.* Access is free to current subscribers. Others are asked to pay \$10 for a two-day archive pass.

concurrent lobster fishing exacerbated the decline, Cook said the fishermen were merely "following the rules before them."

— Teresa Dawson

