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In Addition to Coral Bleaching...

Text and Photography by Robert Wintner

Worldwide, the aquarium industry generates billions of dollars based on reef animal extraction. But on January 1, 2011, Maui County's new law – passed unanimously – will require permits for reef wildlife trafficking, with fees, handling standards, tax clearances and mortality reports. Cracking down on reef exploitation by the aquarium trade, Maui County is saying no to global interests keen on these profits. The precinct of Maui County comprises the Hawaiian islands of Maui, Molokai, Lanai and Kahoolawe, as well as the islet/marine preserve of Molokini.

The stakes are huge. Hawaii's Department of Land and Natural Resources (DLNR) reports annual catch of one to two million fish but estimates of actual catch, which include poached/non-reported fish, are two to five times greater. In this business, fish sales drive hardware sales – tanks, stands, lights, filters, chemicals, pumps, hoses, plastic skeletons... you name it! Each fish retails for 10 times the dollars left in Hawaii, and every fish must be replaced when it dies.

Bottom Line Boondoggle

Reef-based tourism generates \$800 million annually in Hawaii, compared to \$20 million in the aquarium trade. Most aquarium extraction occurs on the Big Island (of Hawaii), but aquarium hunters from Oahu and Kona came last year with nets and buckets to plunder Maui reefs – at that time legally.

The high tide line delineates jurisdiction in Hawaii; the State is responsible for what's below, the County for what's above. Though County law cannot

address activities in the water, it must regulate all business occurring on the islands surrounded by it. State law prohibits cruelty to animals, though the aquarium trade's Best Practices Manual aims at optimal revenue on 'livestock' by means that are "appalling" according to the Humane Society of the United States.

For example, 'fizzing' is puncturing the fish's air bladder with a hypodermic needle to compensate for barotrauma on rapid ascent, a.k.a. bulging-eye death. 'Best practices' also include starvation, so the fish won't spoil the waterbag in which they are shipped; as a consequence many fish starve to death. Many more die of cumulative stress, brought on by a number of things, including 'finning', the practice of grasping the fish to cut-off the tips of the dorsal spine so they won't puncture the plastic shipping bag.

Aquarium collectors cry livelihood, food on the table, hungry children and the usual panoply of challenges to justify destructive pursuits.

In Maui County, nine aquarium permits are active, yet when regulations were debated only one couple testified: he's a collector on the reefs and she's a dealer, wholesaling the animals worldwide. That couple has now moved to Kona.

Many species of butterflyfish are coralivores – they will starve to death in 30 days without live coral to graze – yet they ship out daily from Hawaii with a 15-day live guarantee.

Seeing The Light

Many aquarium hobbyists are seeing the light that it's a vicious cycle for reef fish and reefs. Because a home tank requires exact chemistry, temperature, salinity, pH and a 'predatory balance', errors mean fish mortalities and a tweaking of the system for another round of fish. It's "sustainable" for the aquarium trade.

And sadly, the promotion of marine aquaria by influential media doesn't help. A recent feature in the New York Times suggested an aquarium is "a way to add movement and fluidity to an otherwise arid space". It listed reef wildlife and retail prices on Hawaii reef fish as urban décor for chic people in "one of the last surefire ways to impress their peers." One TriBeCa aquarium held a single shark. It died. Several new sharks replaced it. They died. Aquarium containment stunts the growth of most fish species, but not sharks – a point the reporter failed to mention; dead fish are just so yesterday.

The late Ed Lindsay, a Hawaiian and charismatic leader and champion of reef recovery, often recalled a trip to California, where he walked through a hotel lobby, road weary and ready to relax. He stopped at an aquarium where a Hawaiian cleaner wrasse stared out at him. These particular fish are found nowhere else in the world and in that moment Ed said he felt helpless, but he determined to tell the world that it is welcome in the land of Aloha, but it can no longer take what belongs there.

Hawaii's Department of Land and Natural Resources began in 1956 and for more than two decades the aquarium trade 'harvested' – hammered and chiseled – tons of coral and live rock. This porous substrate habitat for the small creatures critical to reef survival is a mere amusement for aquarium hobbyists. In 1978, 20 plus years into this conversion of coral reef to rubble, the DLNR began limiting coral extraction by species, until 1996, when all coral and live rock were protected by State law. That's 40 years to protect reef habitat, yet Hawaii still has no protection for reef habitués.

Gold Rush Casualties

The Kona coast was once called the Gold Coast because of yellow tangs in the surf. Now it's the gold coast for its \$25-million lots and the gold rush on aquarium fish with no catch limits. Kona reefs are now minus eight species that were present only a few years ago. The DLNR says nobody knows where they went or why.

A typical collector arrived recently to claim his fair share. He had 650 yellow tangs and butterflyfish in his holding tank when it failed. He bagged the dead fish and froze them – so they wouldn't stink! A few months later, he tossed them into a dumpster along the Honokohou Harbour. By the grace of Neptune, the bag was made of clear plastic.

Like an inmate on lockup that aquarium hunter was morally numb. Two women saw the bag and laid each fish on the pavement. The media swooped in with dramatic effect. In terms of actual fish lost, the event offered little practical meaning compared to the big picture of one fish dying in each of the estimated 1.5 million tanks worldwide. In this particular case, legal fallout is pending. The DLNR investigated its aquarium fishery, though separate laws regulate feeding and handling of wildlife caught for the pet trade. So, this State Department investigating the Honokohou fish kill is like Mr. Fox assessing hen house management.

The DLNR, CORAL and Reef Check call the aquarium trade "important" and "sustainable," focusing on juvenile harvest. Sustainable means taking all but a few brood fish so the species won't collapse. The Kona "fishery" is now declining. Butterflyfish populations are collapsing.

The DLNR claims that no data exist to prove that collecting causes the decline.

One Reef Check director is a major reseller of Hawaii reef fish for the aquarium trade and a self-proclaimed "stakeholder" in Hawaii reefs. Reef Check solicits donations to help "monitor reef health" while urging aquarium extraction "sustainably." (see www.forthefishes.org)

Invertebrates In Line Of Fire

And fish aren't the only targets of the aquarium trade. Take featherduster worms for example. These worms bore into coral, then filter feed with their 'duster'. Aquarium hunters "collected" 33,000 featherdusters in Kane'ohe Bay, Oahu, by smashing coral to get the worms, and there's no limit to the quantity that can be taken legally. The featherdusters sold for 11 cents each. The trade update: "But we don't take featherdusters anymore!"

Then there are hermit crabs. Hermits change shells, but with hundreds of thousands of hermits taken, many reefs are vulnerable to collapse. The aquarium trade protests that it doesn't take hermits (so much) anymore. Collection permits are not required to take hermit crabs, eels and many other invertebrates. Nowadays, there's an emphasis in the aquarium trade on huge tanks, especially in Hong Kong, where demand is up for adult eels. Capture of these animals is quick with a PVC pipe closed and baited at one end. Adult eels are being shipped out of Hawaii with no limit, no count and no future – but no more from Maui.

Pet – Food?

The big difference between Maui and the Big Island is volume. Kona is the hub of Hawaii aquarium extraction with 45 permitted collectors, and growing confrontation. In the last decade collectors and catch value have increased, while the catch has decreased – profile of a collapsing fishery. The DLNR is mired here too in managing wildlife pet traffic as "a fishery," requiring that these animals be used as pets, not food.

With aquarium extraction coming to the surface, so are the consequences. Hawaii reef tourism suffers from waning reef health resulting from pollution and aquarium extraction with no catch limit, meaning no limit on the number of catchers involved and no constraint on the capture of rare or endemic species.

Maui County permit fees and fines will offset the public cost of reef extraction, we're told. The Hawaii Division of Aquatic Resources official on the Big Island at Kona pegs the aquarium catch at just two percent of the total fish catch in Maui County. As with most State 'data', this number

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conspicuously omits the difference between reported and actual catch, which reflects a two to five times multiple. More damning than painting by skewed numbers are the isolated crimes of aquarium extraction. Such as the day the fire dart fish living for years off Mala wharf vanished, to show up in a bar aquarium that same week, where they died the following week. Or, the day Anthius Rock off South Maui was denuded of its entire population.

60 to 80 percent of the entire aquarium catch are yellow tangs – herbivores that graze on coral algae from dawn to dusk. Algae suffocation now threatens many Hawaii reefs.

Statewide Ban

The Maui County law may precipitate movement at the State level. Senator Josh Green, (District 3, Kona Coast) has indicated he will introduce a bill in January to ban aquarium extraction statewide. With a new governor and new leadership in the House, Senate and the DLNR, reef recovery may be near.

As well, Maui County was set to propose a bill – killed in committee in 2009 by commercial fishing interests – at the October meeting of the Hawaii State Association of Counties (HSAC) for inclusion in the State's 2011 legislative package. The HSAC is a strong voice in the Capitol.

For years the aquarium trade has resisted regulations, arguing that extraction remain “sustainable” with a focus on revenue. With the new Maui County law on the books, the Kona-based Big Island aquarium trade is now complaining that opponents to aquarium collecting are “uninformed” or “uneducated” or “lying”. They concede that 99 percent of aquarium fish die within a year, many in capture and transport. “But they die at even higher rates in the wild!” industry spokespeople say. No data accompanies this claim, though a Hana fisherman told Maui County Council that he once caught ono (wahoo) that had yellow tangs in their bellies. He hasn’t seen ono in a long time because, he said, taking reef fish for an amusement industry may weaken the food chain and is an affront to Hawaiian culture. ➡



Yellow tangs at Honokohou Harbor, Kona, Hawaii, that were dumped because a collector's storage tank failed and all the fish died. The people who found the dumped fish laid them out on the ground and the media gave profile to the event and bigger story.



Reef Addict Tells All!

Exploring the spectacular diversity of Hawaii’s coral reef, *Some Fishes I Have Known: A Reef Rescue Odyssey* offers an up-close and personal look at the tropical fish that call the reef home. Diving into the more than 300 photographs and commentary, readers meet yellow tangs, threadfin butterflies, peacock razorfishes, wrasses, humuhumulei (triggerfish) and many other denizens of the tropical reefs. Your guide is Hawaii’s own Snorkel Bob, aka Robert Wintner, activist, novelist, owner of Snorkel Bob Brand Gear, reef addict, and founder of the Snorkel Bob Foundation.

Though this book is brought to life by Snorkel Bob’s enthusiasm, trademark irreverent attitude and humor, it also points out a dark undercurrent now sweeping reefs clean around the world—the aquarium trade. Keeping an aquarium, a seemingly innocent hobby, is contributing to the destruction of one of our country’s most beautiful and delicate ecosystems. “A reef needs balance,” Wintner says, “and taking tropical fish out of the reef—for enjoyment in a home or office aquarium—destroys this balance.”

It’s been estimated that up to 80 percent of saltwater aquarium fish come from Hawaii. Federal law prohibits the extraction of live coral from the reefs, but there are no protections for fish. “Massive extraction is emptying our reefs,” says Wintner. “The aquarium trade will destroy the reefs and the tourist industry. It is an affront to Hawaiian culture.”

Some Fishes I Have Known offers a front row view of reef society. It’s for anyone who loves the sea, Hawaii’s culture, activists and conservationists, students and parents – in other words, everyone. Snorkel Bob assures readers that no fish were harmed in this production, though a few were significantly entertained.

Some Fishes I Have Known – A Reef Rescue Odyssey

By Snorkel Bob, Himself – aka Robert Wintner

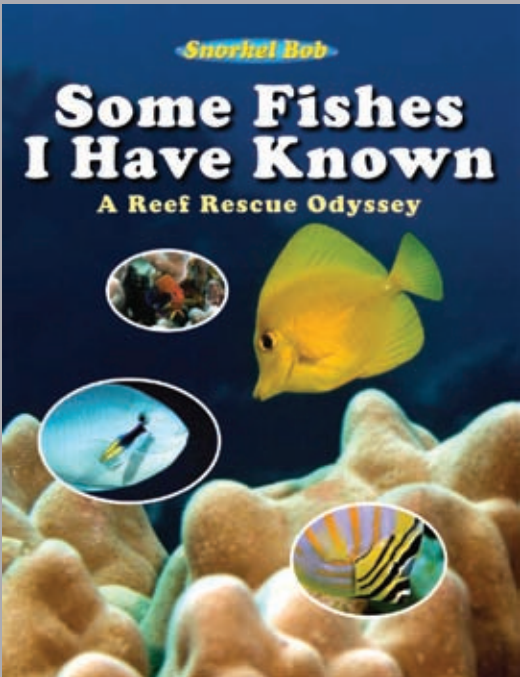
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So according to (1.19) follows:

$$\frac{t}{E^3} \approx \frac{1}{2} \left(\frac{3}{4}\right)^3 \frac{Gc^7}{L^4} \cdot (8.9 \cdot 10^{-30})^3$$
$$\frac{t}{E^3} \approx 133635$$

For $E^3 = 10^{-15}$ follows $t \approx 0.1 \cdot 10^{-9}$ sec

This means $v_{sr} = \frac{3}{4} \cdot 10^{-5} c^2 \left[\frac{m}{s}\right]$

$$= 750 \cdot 10^{-8} c^2 \left[\frac{m}{s}\right]$$
$$= 2250 \frac{1}{6} c^2 \left[\frac{m}{s}\right]$$
$$= 2250 c \left[\frac{m}{s}\right]$$

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