

undercurrent

The Private, Exclusive Guide for Serious Divers

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Cuba, by Land and by Liveaboard

two disparate diving worlds

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Dear Fellow Diver,

This month, two of our intrepid undercover writers report on their trips to Cuba, one for resort diving at Maria La Gorda, the other aboard the Jardines Aggressor. Their diving, their accommodations, their food, and the prices they paid couldn't have been more varied and their destinations far apart. Since Cuba is only beginning to open up for American travelers, we'll pay close attention and report again early next year.

- Ben Davison

Maria La Gorda

When I opened an email offering a combined REEF-Neal Watson trip to Havana in early June with 3.5 days of diving in Maria La Gorda, Cuba, I jumped on it, since I have always wanted to see this long-forbidden country. Research taught me not to expect much in the way of infrastructure, food, or organization; however, the long waits, low-quality hotels and food, and a profoundly disorganized dive operation set me back on my heels.

My buddy and I were required to arrive four hours in advance of our Eastern Airlines flight



Accommodation at Villa Maria la Gorda



(yes, that one, a charter airline who bought the logo and name), then wait in the shabby old F terminal in Miami. Bring patience, and maybe extra pillows. But, bring more than 44 pounds of luggage, including carry-ons, and you're slapped with a \$2/pound surcharge. My buddy and I, never light packers, paid \$296 extra, mostly for two bags of scuba gear. Too much later, I did the arithmetic and realized we had been overcharged by more than twice.

The Havana hotel, Quinta Avenida Hotel Habana, is rated five stars in Cuban terms and maybe worth 2.5 in world terms. One night, the air conditioning did not work; the large, spare rooms have tile floors and minimal bedding. Breakfast was excellent, however,

a buffet that never ended. Expect improvements: soon the hotel will be managed and renovated by Marriott/Starwood.

On day two, we boarded a Chinese-built motor coach for the 5.5-hour ride to the southwest hamlet of Maria La Gorda, where the Villa Maria La Gorda houses a dive operation. The roads were rough, the countryside lush and green, and the route wound through the famed tobacco-growing region, Pinar Del Rio. The trip was not helped by the last lashings of Tropical Storm Colin, which dampened our first couple of days.

Once at the hotel, we dragged our bags down dirty paths and up three flights of stairs to our mildew-smelling small room in one of the "new" buildings. The walls were spotted with dead insects, two lighting fixtures hung by wires, and the TV and fridge did not work. Housekeepers had folded towels in fanciful shapes, but the bedside rugs were dirty. Since almost all flooring is tile (including around the dive shop), it was slick when wet. My buddy and both I endured some nasty falls, and, as I type this, my right elbow is still swollen and sore.

But what of the diving? The resort was overwhelmed by divers, many from Mexico, who came for a photography contest. The shop had promised a boat just for our group, but instead we were crammed in with another 20 divers, so most trips had 36-40 divers. Our guide, whose name was Abbot (very un-Cuban!), was excellent, but he could do nothing about the crowding.

Perhaps owing to the number of divers, the dive schedule constantly changed. Our checkout dive at Yemayá, a nearby site with swim-thrus and nice sponges, left at 5:40 P.M. It was pouring rain and the viz was low. I noticed how much reef-building halameda algae abounded at this, and at most other sites, although I also noticed considerable hurricane damage and algal growth.

On day two, our 8 A.M. dive finally left at 10:40. I had to skip this dive thanks to slipping down a flight of wet stairs, but was OK for the afternoon dive at Cabeza de Ludo. It featured high profile coral bommies and swim-thrus; the second afternoon dive, at Cabeza de Marcelo, was the most enjoyable of the day, partly because fewer divers crammed the boat.



The busy dive dock

Meals were crowded as well. The buffet included a wide variety of food, but common sense dictated avoiding salads and raw veggies. Ingredients were generally low quality, particularly meats, though the dessert table groaned. Our guide told us that diabetes is common in Cuba, and maybe the dessert table offers a clue why. I found the food bland, excepting the *ropa vieja*, a slow-cooked spiced chopped meat. You could get eggs cooked to order at breakfast, although the very hot grill tended to burn them. I got enough food -- supplemented it with power bars I brought from home -- but can't say I enjoyed it.



Vintage cars often with Russian engines

The prettiest dive was Paraiso Perdido, aptly named Lost Paradise. There was some current, but the upside was schools of grunts and snappers, and a surprising density of three species of chubs. Cero and mackerel streaked between schools of boga and Creole wrasse, all set off by a lush drop-off festooned with deep-water gorgonians and sponges. Another dive at Cuevas de Pedro offered a scenic series of swim-thrus, starting at 50 feet and ending around 80 feet. My buddy watched a three-spot damsel hide from a lionfish, which made me wonder whether the reef fish were at last learning about these predators. On a drift dive between El Jardin de las Gorgonias and El Patio de Vanesa, I saw two seriously big greater amberjacks muscle their way over the patch reef. Wow. Particularly on the deep sites (which were in better shape), I could have enjoyed far more bottom time had Nitrox been available, but air was the only option.

Diving with Reef Environmental and Educational Fund fish surveyors means joining some keen and informed eyes. Our first day, the group identified 144 species. By the end of 3.5 dive days, the count came to about 180, with a few fish yet to be identified; because lionfish aren't culled, they were seen on every dive. (In the region that includes Cuba, 445 species have been recorded in Roatan, with 418 species recorded in Cozumel, but both have had far more surveyors.)

Dolphins in Grand Turk Home Swimming Pools?

At a time when Sea World has discontinued its orca-breeding program and aquariums around the world are removing cetacean exhibits and building natural marine sanctuaries instead, the government of the Turks and Caicos Islands is strangely out of step with world opinion.

A proposal to build a dolphinarium on Grand Turk has been met with horror by the Turks and Caicos Reef Fund, an all-volunteer organization that provides funding for reef education, research and conservation programs. A review of the Dolphin Cove Environmental Impact Assessment revealed that, driven by commercial considerations only, it used unqualified 'experts,' nor was adequate consideration given to the well-being of the captive animals. (Their marine mammal 'expert' only has a high school degree and no formal science training.)

For example, they propose to use local swimming pools to house the dolphins in the event of an emer-

gency — not only is it impractical and stupid, but it is also illegal under TCI's Marine Mammal Regulations. Furthermore, no provisions are made for pools to isolate sick, injured or pregnant dolphins, a requirement of local regulations and international standards. The authors of the Environmental Impact Assessment have only money in mind.

While TCI has been at the forefront in releasing captive dolphins back into the wild in the past, and in Providenciales, Jojo, the only entirely wild dolphin to be subject to study, has raised public awareness, it seems foolish to discard that good work and might well have a negative financial impact if the public stays away from TCI in protest.

It appears that Carnival Cruises is the main driver to push for dolphinarium and indicates that the Carnival Corporation cares little when it comes to environmental issues. If you care about this you can sign a petition here: www.thepetitionsite.com/269/123/327

Between the lionfish and the leaching of untreated sewage, one must wonder how long the Cuban reefs have before they are overgrown with algae. According to reports I read from The International Coral Reef Initiative (www.icriforum.org) and NOAA's Coral Reef Conservation program (<http://coralreef.noaa.gov>), Cuba's reefs are affected by the bleaching event of 2015, runoff from fertilizer and sewage, storm damage, overfishing, and particulate pollution. The shoreline around Havana is particularly foul, thanks to two rivers, laden with untreated sewage and garbage, emptying into Havana Harbor. However, some areas, particularly on the south side of the island, are protected by long, shallow plateaus that take the brunt of the land-based damage before dropping off in what everyone in the REEF group agreed were healthier deep reefs. For whatever future foreign development may come, the government should stipulate that they must incorporate new, non-polluting, enclosed state-of-the-art sewage systems. This would mitigate some effects of increased tourism, and though it would not address agricultural runoff and particulate pollution, it would at least keep new developments from adding to sewage pollution.

Maria La Gorda, Cuba

Diving (Experienced).....★★★

Diving (Beginning)★★★★

Accommodations★★

Food.....★★★

Service and attitude.....★★★

Money's Worth.....★★★

★ = poor ★★★★★ = excellent
Caribbean scale

After another a bus ride back to Havana, with a stop at a tobacco plantation (cigar lovers rejoiced!), we arrived at the Quinta Avenida Hotel for a night on the town, which included a floor show at the Hotel Nacional, offering a modestly clad, Vegas-style musical version of Cuban history, all in Spanish. You can forget visiting the national aquarium, where the sea turtles are crammed into tiny bare tanks and the fish tanks dirty and missing animals.

I've been pondering my trip. On one hand, despite its discomforts and poverty, it is a lush island, and there is a thrill to going there as an American. The classic cars are for real and provoked aficionados to call out sightings like "'54 Plymouth" or "'57 Biscayne." On the other hand, it is a lot of trouble, not that cheap, involves long waits, mediocre food, rough travel, and where I visited, average diving. I am glad I've checked it off my bucket list, but next time I head to that part of the Caribbean for land diving, I'll go to Cozumel and the Yucatan. Or perhaps, consider a Cuban liveaboard, as another Undercurrent reporter, traveling just a month before me, had a better trip.

-- A.E.L

Our author, a longtime supporter of REEF, and has dived all over the world, making about 150 dives per year, divided between the Caribbean and the Indo-Pacific. Previously, A.E.L. wrote about the Caribbean Explorer II.



Diver's Compass: the cost, including airfare from Miami, was just under \$2000/person, including most meals, five dives, and transfers; for other meals, dives, and drinks, I spent \$400. . . . Extra dives at Maria La Gorda cost \$22.60. The rainy/hurricane season runs from June-September, and when it's wet, it's unpleasant. . . . Water temps were around 80F in June. . . . There is no shore diving. . . . the dive shop has some rental gear, but not a lot. . . .A beer was included at most buffet meals at Maria La

Gorda, and I particularly liked Bucanero, a hearty brew. You can bring in duty-free booze, but be sure to try the local *mojitos*. You can return with a box of cigars and bottles of harsh Cuban rum. . . .We left for the Havana airport five hours ahead of the flight's actual departure. Cuban time is like

Indonesian rubber time. . . . Bring antibacterial wipes, since most bathrooms have no soap or toilet paper. . . . Tap water is not potable. I carried a lightweight Sawyer camper's filter that attaches to a squeeze bag to make safe water for brushing teeth and drinking; bottled water runs \$1.50 to \$2.50. . . . I brought microfiber towels from Costco and little pillows, and left them behind.

MV Jardines Aggressor

Dear Fellow Diver,

It hit me at Five Seas, the second dive of the second day, in the Gardens of the Queen (Jardines De La Reina). I felt elation and profound sadness at the same time. The reefs here were like the Florida Keys and Bahamas were 45-50 years ago. All the little guys -- wrasses, chromis, royal grammas, damselfish, and assorted butterflies were abundant. And the intermediates -- grunts, schoolmasters, snappers, and jacks -- thrived along with the bigger guys -- Nassau, black and Goliath groupers, tarpon, permits, and reef sharks. The soft and hard corals were cheek-to-cheek-to-jowl in places. The whole gang was here and healthy, the very definition of pristine. What have we done to the rest of the Caribbean in two generations?

My buddy and I arrived in April on an ABC charter flight from Miami, under the auspices of the Oceans for Youth Foundation, a program requiring several informative meetings with Cuban marine biologists. The package included two nights at the luxury Iberostar Park Central Hotel, all meals in Havana, and a day touring the city, followed by an 8:00 A.M. departure on the tour bus for the 280-mile, six-hour trip to the town of Jucaro where the Jardines Aggressor was docked.



Jardines Aggressor

It was the first time the refitted former Cayman Aggressor was cruising with a full manifest of 20 guests (18 Americans and two Aussies.) There are two master cabins forward of the main salon on the dive deck and eight cabins below. Our master had a king platform bed with lots of stowage beneath. It occupied most of the cabin, so we had to squeeze around the edge to get out the door or into the small bathroom with a stall shower. After having to clear the plumbing system three times the first day, we were told to keep the marine heads like modern record-keeping -- paperless.

The Gardens of the Queen is a string of islands 52 miles off Cuba's south-central coast, forming the southern edge of the Bay of Ana Maria. The bay averages 60 feet in depth, with extensive seagrass beds making a huge marine nursery. The reef wall, which is anywhere from 100 to 300 yards from the islands' shorelines, begins at 15 to 25 feet and drops to a sandy bottom at 65 to 100 feet. Visibility didn't exceed 90 feet and in one case got down to 25. At Gruta Del Tarpon (Tarpon Grotto), I swam down through a 20-foot opening into a passage five feet high and emerged to be greeted by schools of three-foot tarpon. As on most dives, several Caribbean sharks cruised at discreet distances. A cleaner fish patrolled the head of a green moray, young hogfish lined up at brain coral like a cleaning station, and I saw something I'd never observed before: a formation of six trunkfish.

Jardines Aggressor

Diving (Experienced).....	★★★★★
Diving (Beginning)	★★★★
Snorkelling	★★★★
Accommodations	★★★★
Food.....	★★★★
Service and attitude.....	★★★★★
Money's Worth	★★★★

★ = poor ★★★★★ = excellent

Caribbean scale

red shrimp, banded coral shrimp, a hogfish, and a large spider crab. When a blood-worm (a nuisance in places at night) touched an outstretched tentacle of a basket star unfurling in the current, the tentacle quickly coiled around the worm, pulling it toward the star's center mouth, where other tentacles assisted. The worm disappeared. I checked out a section of a cave mouth that looked like it was adorned with cross-sectioned kiwi fruits but seemed to be an anemone colony. When capturing prey, the rims extended outward then closed toward the center, somewhat resembling a diaphanous brown tulip. An obliging octopus, its body the size of a grapefruit, flashed through several color changes, giving the underwater photographers good video footage.

For the photogs, the dive deck had a spacious three-level camera table with a compressed air hose. Enough to keep the two professionals (Jim Van Gogh of Monterey, CA, and Glen Cowans, an Aussie), as well as the amateurs, happy. Almost everyone used the outlets in the main salon to charge their power supplies.

The experienced dive guides -- two accompanied each dive -- have worked for the Avalon group that holds the Jardines Aggressor franchise, but still, a few mistakes were made. On one dive, the guide led the group along the wall with the current. Not the way I learned it. I turned my buddy around, and we tooted back toward the mooring and had a great dive puttering around. The other guide, Noel, came back to keep an eye on us. The group eventually returned, grouching later about having to do hard work into the current at the end of the dive.

Typically after a dive, the 10 divers were easy to count informally, since we line up five on each side of the boat. However, at the end of one dive, while waiting for our guide to come up, someone asked, "Where's Bob?" (one of the 70-year-old divers). It turned out that underwater he had asked our guide, Noel, where the tender was, and was pointed in the general direc-

We dived from 28-foot tenders, with bench seating and a rail down the center with BC/tank set-ups bungeed to each side. The boats had narrow beams, so it got crowded gearing up, and with weight integrated BCs dropped in tight spaces, my buddy and I both had minor damage to our regulators. After crewmembers had lifted BC/tank combos from the water, divers climbed the sturdy ladders (which needed another step and an adjustment to prevent angling under the boat as a diver ascended).

Hardcore divers might be disappointed because there are only four dives per day -- 8A.M., 11A.M., 3P.M., and an 8 P.M. night dive, which was never well-attended. (One night dive was canceled due to bad weather).

The night dive at Cuevo Del Pulpo (octopus cave) began along the wall with little

Monkey Nuggets

I find it unsettling to be sitting on the veranda of a dive resort, overlooking the house reef, and be handed a menu highlighting "fresh local" grouper or snapper or octopus. I find it just as annoying to have the same options at a publicly funded aquarium. PETA seems to agree. Fish at a Queensland, Australia, aquarium are not only swimming in the water, but in buttery sauces at its cafe, says PETA, prompting the animal rights group, on World Ocean Day, to ask for seafood to be taken off the menu. "After allowing people to look at these glorious, fascinating animals in awe, it's rather odd that you then invite visitors to stick a fork in them . . . Serving fish at an aquarium is like serving monkey nuggets at a zoo."

— Ben Davison



These saltwater crocs appeared co-operative

Fabio, the Italian head chef, included a pasta course in most dinners, and, except for steak night, where the beef was so tender you could cut it with a chainsaw, the meals were quite good. Fresh tropical fruits -- mango, papaya, and pineapple -- were served at breakfasts and lunch. At least four meals included local lobster. Though there was no lettuce, there was kale, cabbage chiffonade, and a type of spinach for salads. Veggies included sweet and regular potatoes, carrots, and cauliflower. (The one vegan seemed quite satisfied with her choices.) After the guides shot several lionfish for shark chum, I asked if the chef could turn some into ceviche. It was tasty.

The dining room was above the main deck. It had a small bar aft of the forward bulkhead and four tables that each sat five guests. It was a gregarious group, so there was no established seating pattern. Outside was a covered after-deck, gas grill, and the prerequisite Aggressor jacuzzi. Above the dining deck, there was a shadeless sundeck with a great view.

tion. Bob and his buddy had both been doing photography, and, as is often the case in that situation, they were buddies only in the sense that they were in the same ocean. Without enough Nitrox or power to get back, he was spotted floating 100 yards away with a failed safety sausage. In calm water, he wasn't in much distress, but was glad to be picked up. (By the way, he has a nice 13-minute video of the trip at bobthediver on YouTube -- Click on his picture to choose the video.)

Including Tony, the biologist, there was a staff of 14, enthusiastic and eager to show us a good time.

Deep Vein Thrombosis and Decompression Sickness

Risks to us traveling divers don't end with the last dive. To avoid a case of DCS when flying home from a dive trip, we're careful to wait at least 24 hours after our last dive before boarding a plane. And after we are on the plane for the long ride home, it's deep vein thrombosis we need to worry about. In fact, over the years, *Undercurrent* has reported two cases of divers dying from DVT on a long flight home (it's thought to be prevented by periodically rising from your seat and walking the aisle).

It is commonly believed that all pressurized flights maintain a cabin pressure equivalent to somewhere between 7000 and 10,000 feet, although often an aircraft might take some time after take-off to achieve that pressurization, depending on the rate of climb.

P. Buzzacott from the University of Western Australia and A. Mollerlokken from the Norwegian University of

Science and Technology have begun a project to determine if cabin decompression might favor the formation of vascular bubbles — deep vein thrombosis — in commercial air travelers.

Cabin pressure was monitored and analyzed in 30 commercial flights. The greatest pressure differentials between model tissues and cabin were estimated for half-time compartments ranging from 20 to 120 minutes. The time to decompress ranged from 11 to 47 minutes. It was found that the drop in cabin pressure was commensurate with that found to cause bubbles in man. The median overall rate of decompression found during this study was five times that prescribed for U.S. Navy saturation divers, meaning that it was more hazardous to take a lengthy commercial flight. So can aviation-related deep vein thrombosis be a form of decompression sickness? Research continues. (Source: www.ncbi.nlm.nih.gov/pubmed/27106903)



Cuba Tips

To book a trip on commercial airlines, U.S. citizens must affirm that you meet one of the 12 travel criteria for U.S. citizen travel to Cuba . . . ABC Charters, Eastern, and Marazul run flights out of Miami. Most divers had to go through intermediary countries (Caymans, Panama, Mexico, and the Bahamas) to reach Havana. . . American, Frontier, JetBlue, Silver, Southwest, and Sun Country will begin flying to airports other than Havana in September. . . Visas are required for travel to Cuba, and there is a departure tax . . . It can take hours to retrieve your luggage in Havana, as each piece is screened. . . . Cuba has a two-tier currency system. The Cuban Peso (CUP) used by the general population is worth less than four cents. The Cuban Convertible Peso (CUC, pronounced Kook), used by foreign visitors, is supposedly on par with the U.S. dollar. There is a 13-percent surcharge and fee for converting U.S. dollars, so convert greenbacks to Euros or Canadian dollars at home to save money. . . . If you book with a group and prepay, you will save the 13 percent. . . U.S. credit cards will generally not work in Cuba, and few places accept credit cards. For complete information, visit <https://travel.state.gov/content/passports/en/country/cuba.html>

Cruise Director/Bartender Yoel makes a mean mojito. Beer choices were Cuban-brewed Bucanero Fuerte (strong) or Cristal (lighter.) Tell your friends you spent a week swigging Cristal and eating lobster and they'll know you were living large. After night dives, hot chocolate was served with or without a splash of Santiago de Cuba rum.

To get near a Wi-Fi hotspot one day, we took an exhilarating boat ride through the mangroves to the Avalon base where the Tortuga Barge Hotel was moored. We weren't invited aboard, but we did connect with their Wi-Fi to send messages home. Another day, we visited an island to feed iguanas and hutias, a rodent reminiscent of a beaver without the big tail. Twice after the 3 P.M. dive, we boated to the mangroves to snorkel with saltwater crocs. Cooperative subjects, they allowed some decent close-ups. I heeded the advice to keep my camera between the crocs and me, though I wasn't sure how my little GoPro would dissuade a six-foot crocodile from doing a taste test. There was also an afternoon pre-dive drift snorkel on the incoming tide between the islands, where the shallows were strewn with conchs and starfish.

On the last morning, we dove El Farallon (The Cliff), the goal being to dive with silky sharks. The guide led us through two 90-foot-deep cuts in the reef, wending through the narrow canyons, where just a bit of light filtered down from the surface. A nice hawksbill was outside the second pass, though. Our guide mistimed our return to the boat, leaving little time for observing the sharks, and the big breathers only had time for a safety stop before surfacing.

I didn't mind, since I don't like organized shark dives; they teach sharks aberrant behaviors. And I didn't like their strategy. They lowered a chum box on a line from the tender, bringing silky sharks under the boat. Then, when all divers were on board, they pulled in the box and threw carcasses to the silkies next to the boarding ladders. Entertaining to watch, but maybe not such a good idea when future divers climb up the ladder and the white bottoms of their feet get mistaken for bait.

To get to the Havana airport for afternoon flights, we departed from the boat at 4 A.M. As a third world insurance policy, an empty bus trailed the passenger bus in case of breakdown.

Jardines De La Reina is a huge marine preserve, an underwater Garden of Eden. Where else would I see more than a hundred young tarpon streaming by? Or see a spur jutting out from the reef that looks like a moving yellow wall because the whole projection is covered with a massive collection of porkfish, schoolmasters, and grunts? Clearly, the reviewer in our first article missed the best of Cuba, though I paid about three times as much to see it.

- J.A.S.

About the author: I've been diving more than 50 years, having learned at age 12 from Mike Kevorkian, whose name is on the base of the Christ of the Abyss in the Florida Keys, long before certification was required. I've seen the Florida Keys and Bahamas before they were spoiled, dived throughout the Caribbean, as well as Cocos, Galapagos, and Palau. In my youth, I had the good fortune to meet Captain Jacques Cousteau and board the Calypso to advise the crew about where to look for blue holes in the Bahamas. How many high school kids get to meet their heroes?



Diver's Compass: Hotel, meals, diving, tours, and transfers ran \$5400 per person, plus airfare from home. Up to \$2500 of the trip package and \$1000 of the airfare may be tax-deductible, according to the group purpose. . . . There were no 100-cf tanks for heavy breathers. Some Nitrox tanks were differentiated only by a green piece of tape with Nitrox written in black marker. We all analyzed our own fills. . . . Nitrox is \$100 for the week, prepaid with your reservation. . . .Tipping on the boat is cash; dollars are acceptable. . . .You can't get gear repaired on board, thanks to

U.S. policy that doesn't allow one to buy goods and services, so the Aggressor provides free new Aqualung loaner equipment. There are no T-shirts to buy on board, though they can be ordered through the Aggressor website.

Raja Ampat; The Top Resorts and Liveboards

possibly the best diving in the world?

Raja Ampat, at the easternmost part of Indonesia, translates as "Four Kings." A small cluster of islands dotted around the western end of West Papua (formerly known as Irian Jaya), they became the focus of attention of the world's diving community when ichthyologist Dr. Gerry Allen counted more than 283 different fish species on the Cape Kri dive site alone. In 2012 Dr. Allen again broke the world record count for most biodiverse reef on the planet, with 374 different species of reef fishes identified during a single dive.

Max Ammer, from Rotterdam, first set up an eco-resort dive in 1998 on Kri, an island at the center of a confluence of currents in the Dampier Strait and for years was the lone voice promoting the destination. In 2001 the Nature Conservancy and others decided that Raja Ampat was the site of the world's richest coral reefs.

The diving isn't necessarily easy. Some of the currents are not only powerful, but can go both up and down. A reef hook is an essential piece of equipment for any diver at the better sites. U.S. forces bombed one such site, Mike's Point, during WWII because the little island produced such a wake in the current; it was thought to be a Japanese warship disguised and under way. The payoff is remarkable coral growth and spectacular amounts of marine life.

Many resorts have since been built on other islands, and Ammer



Misool Island Resort

has added the luxurious Sorido Bay Resort to Kri. Now, divers have many resorts and liveboards for diving platforms, so the destination is on every diver's bucket list.

Let us, with the help of our readers, give you an indication of some of the best venues, so that you don't waste your hard earned time — expect 24 hours of travel from the west coast of the U.S. — and money, which will add up to thousands of dollars.

C. Leroy Anderson (Salt Lake City, UT) visited **Sorido Bay Resort** at the end of 2015, and reported, "Perfect coral and tons of colorful reef fish. Some unusual dive sites such as the Passage with abundant soft coral and extremely varied, abundant, and healthy coral and fish. Good shark and pelagic encounters. I have gone several times with different operators, including two liveboard. Max and the staff stand out. The customer's agenda is their agenda. I asked to see a wobbecong shark, and they found five wobbecongs; the dive guides seemed eager and pleased to do so. The food was great and the lodging fine indeed." And Michael N. Hofman (San Francisco, CA) adds, "Dive sites about 20 minutes from Cape Kri, and just a tad longer to Manta Sandy, rides are easy in the dive boats, which are all equipped with sun protection, towels, and coffee and snacks." Subscriber Leoline Grower (London, UK) went to Kri this February, and said: "the food at Sorido Bay was excellent (apart from on Saturdays) considering how remote Kri is, with plenty of fresh fish and sashimi."

Of course, people review food differently, and others were less satisfied with the meals. George S. Irwin (Bloomington, IL), visiting last October, said, "This is an expensive resort. The food was roughly similar each day — a dinner buffet of overdone fish, chewy chicken and beef of some sort, the worst resort food I have experienced. All resort services stop on Saturday [Seventh Day Adventists], so you have paid for a full week but really only get six days of services and diving. Cape Kri is the house reef for Sorido Bay and is a spectacular dive, but there were at least two liveboards diving this spot each day."

But, one goes for the diving, and Sandy Falen (Topeka, KS) was ecstatic. "In thirty years of diving the Caribbean and the Pacific, I have simply never seen anything like Raja Ampat. The diversity of coral, the quantity of healthy hard and soft corals, and rather than drifting along hunting for fish to photograph, I was visually bombarded with more fish than my eyes and brain could register . . . We saw liveboards daily, diving the same sites we were — so you'll get liveboard diving without the liveboard price or confinement." www.papua-diving.com

The Misplaced Optimism of Some Camera Manufacturers

"The idea of taking underwater photographs with a quality camera can be exciting, what with the beautiful things you might see and be able to capture. On the other hand, an expensive camera is probably one of the last things anyone wants to take near water, let alone under it."

That's what Polaroid says about its latest foray into the world of underwater photography. It's launched a polycarbonate housing for a variety of popular DSLR cameras, but alas, its designers have failed to understand the different conditions faced by underwater photographers compared to those working on land. In fact, it looks suspiciously like those inexpensive housings made by Mekon in China and suffers the same problems in that it has a fixed flat glass port, not long enough to encompass a macro lens, and it's not a dome port, needed to work with a wide-angle or fisheye lens. It's "rated to 165 feet" so it should keep the water out, but it's more suited for use in the surf than as a diver's camera housing. At roughly \$350 (not including

the camera), it may be good value for those with lesser expectations.

Leica's new release, the 16-megapixel waterproof X-U, misses the point if they intended to introduce it to the scuba market. It can be used down to 49 feet for up to one hour (it's unclear why there would be a time limit!), so that excludes it from being useful to most divers. Though it has a fabulous Summilux lens, with a wide aperture for use in low light, its long focal length is not good for getting close and reducing the amount of water between it and the subject. The built-in strobe is positioned so close to the lens that every picture you produce will look like you shot it in a snowstorm — thanks to the backscatter it provides. Priced around \$3000, for underwater use it's a design tragedy.

Olympus follows the trend with its all-new Stylus Tough TG Tracker, putting the built-in video light right next to the lens. It may be good to go to 100 feet deep but turn that light on and you'll record nothing but backscatter.

— John Bantin

Misool Eco Resort on Batbitim Island makes a good alternative to Kri, with easier diving. It's in a pretty setting around a small, enclosed bay, and the operators have worked with the local government to establish a 465-square-mile marine protected area with a shark and manta sanctuary. This past February, Mario Mizrahi (Mexico City) stayed there with a group of 20 divers. "The resort is beautifully kept; the rooms are very nice and spacious — especially the villas. You'll need a good insect repellent." Misool is even more remote than Kri, about 12 miles from the nearest village and 105 miles from the port of Sorong. www.misoolcoresort.com

Jim Willoughby (Bend, OR) stayed at **Papua Explorers Resort** based on another small island in the Dampier Strait. After an April visit, he wrote, "the service is exceptional, and the dive op is one of the best that I have experienced. The rooms were spacious and clean. The food was great. The setting was beautiful." However, he also warned, "The visibility was pretty poor on many of the dives. No fault of the resort, of course; the current could be ripping, which made photography a challenge." www.papuaexplorers.com

Most of our readers seem to prefer liveaboards, and their popularity is such that the Indonesian government has limited the number of licenses to operate in the area to 40! This means there is a downside — simply the number of divers.

The whole area of Indonesia is now known as the Wallacea region after the famous Victorian naturalist, Alfred Russel Wallace, as it was he who first described the unique fauna. Operation Wallacea is an organization funded by tuition fees that runs a series of biological and conservation management research programs operating in remote locations across the world.

Keith Brashear (Indian Harbour Beach, FL) chose the Wallacea liveaboard *Ambai* in January, but was disappointed that there were so many underwater photographers on board. "On a full boat, the photographers tend to bunch up, flashes and lights going everywhere, and limiting views and sights for those who are not taking pictures but just want to enjoy the underwater scene. It would be nice to know that there is a trip [with no underwater photographers] where just those wanting to look at the whole scene and not just through a view finder could do so." www.wallacea-divecruise.com/boat/ambai

In our full review of the *Arenui* in August of last year, we were critical of this luxurious boat for not having full air-conditioning, which they corrected shortly after our review was published. Mark Rosenstein (Cambridge, MA) joined the *Arenui* this January, and writes, "The boat is the most luxurious liveaboard I have been on. Lots of carved wood; every cabin is different, artwork, a good amount of space and high-end fixtures. The only oddity is that you have to walk through the salon to get between the dive deck and the tenders."

Alice Ribbens (St. Paul, MN) had a great experience; after her trip last year, she booked again. "We saw so many wobbegongs, we almost didn't even react when we found them. We also saw many mantas and one oceanic manta that checked us out as much as we watched her. I am a total fish geek, and I was overwhelmed by the variety of species on every dive."

And Linda Rutherford (Montara, CA), aboard in February, enthused about the cruise directors, especially Lisa. "Even though Lisa had seen mantas many times, and we had spent the last 60 minutes watching five mantas circle repeatedly right over our heads, she was not interested in a rest [by missing a dive], but genuinely enjoys the thrill of diving, customers or not." Linda tempered her enthusiasm when she mentioned insufficient space for eight people using cameras and "a couple of the workstations do not have sufficient light intensity to check and clean O-rings, so bring a light of your own." www.thearenui.com

Liveaboards seasonally alter their itineraries, and Laurie Pemberton (Arroyo Grande, CA), who had once been on *Mermaid 1* off Bali and Komodo, joined the same vessel in Raja Ampat. "Some reefs had so much growth and color it was almost overwhelming. A fun part of the trip was meeting people from Europe. The dive guides speak several languages." However, she discovered a drawback when connecting to Sorong from Jakarta. "We flew Lion Air, and did not realize when I made the reservation that Wing Air



Seahorse is a typical pinisi-rigged liveaboard

(leg to/from Sorong) had a 10 kg weight limit.” Note to readers: there are many twists in arranging trips to remote Indonesian destinations, and good dive travel agents know how to negotiate them. If you book your own trip, be prepared for surprises. www.mermaid-liveboards.com

Bret Gilliam, a regular *Undercurrent* contributor and blogger, writes, “I just got back in May from an incredible trip to the southern Raja Ampat aboard *Damai II*. This vessel is pure luxury, with gourmet food, huge staterooms, superior dive launches, and even onboard massage staff. And the diving is the best in the world.”

However, last year, one of our readers, Michael J. Millet (Dublin, CA), noted that on the journey from Ambon to Triton Bay in Raja Ampat, the vessel tended to roll a lot in the open sea, which made some passengers seasick. Further, because of hazy, smoky skies, the airstrip at Kaimana was closed indefinitely, so that some guests missed their international flight connections. So, when you journey to such remote areas, be prepared for surprises, and bear in mind that this is a truly tropical destination: when it rains, it rains in biblical proportions. www.dive-damai.com/damai-ii

Peggy and José Miguel Duran enjoyed their fourth time aboard *TemuKira* last fall — they traveled from Manokwari to Raja Ampat.

“At **Blue Magic**, Mioskon and Mike’s Point, the visibility and sheer abundance of life was again incredible. We had a great night dive at the Raja Ampat Dive Lodge jetty, with even a couple of twin-spotted lionfish. We also dove the mangroves at these unspoiled islands before moving back to Mansuar to experience again the best of the best before returning to Sorong. Our last dive at Yenbuba Corner provided clouds of surgeonfish, barracudas, batfish, chubs, and fusiliers, before presenting us with a huge marbled stingray as a parting gift in our last few pounds of air.” www.komodoalordive.com

Swiss-owned *Pindito* was one of the first liveaboards to operate in Raja Ampat. Edi Frommenwiler [the owner on-board] might have only logged a mere 85 dives back in 1992 when he built his boat, but since

Mantis Shrimp Magic

The mantis shrimp is big. Typically it can be around eight inches long. Some are even bigger. Tropical divers are familiar with them and their compelling ability to smash the shells of prey with a fist-like limb. Yet few know that it is inspiring research into everything from cancer-detecting technology and polarized lenses to strong and lightweight composite materials.

That fist, or ‘dactyl club,’ can accelerate to 50 mph in just three-thousandths of a second, moving so fast it boils the water in its path. It creates a sonic shockwave that can kill or stun small prey that come too close. However, it needs to be exceptionally tough to do that. For example, its “periodic region,” at the internal portion of the club, has spiral-shaped structures that act as tiny shock absorbers soaking up energy.

Now, scientists at the University of California Riverside have discovered another region the outer

portion of this dactyl club, an extraordinary crack-resistant herringbone structure (called the impact region) that protects the mantis as it attacks its prey. This region is composed of crystalline calcium phosphate (also found in human bone) that envelops organic chitin fibers, which are pressed together to create a herringbone pattern that is notably harder than that of the periodic region.



The unique structure allows the mantis shrimp to inflict significant damage to its prey by transporting higher momentum upon impact.

Stress can be distributed more equally, lessening disastrous structural collapse.

Understanding the mantis shrimp’s structure is helping scientists to develop new super-strong materials for aircraft, armor, protective helmets and the like, all based on the small, colorful crustacean and the magic of the mantis shrimp.

then he has charted more dive sites there than any other operator. Mark Etter (Lititz, PA) was full of praise for the crew after his repeat trip in October 2015.

“I have never seen a group that was so dedicated to ensuring our safety and well-being. The diving was great when we reached the northern locations, and we were visited by groups of mantas. Kri was spectacular, and we were able to see the P-47s as well. Edi has a great boat and continues to make improvements each year.”

Ann Donahue (Salt Spring Island, BC), aboard in February, said, “It is a long journey to get to Raja Ampat, but so worth it! The density of life, as well as the diversity, makes it truly a special destination. Some areas have strong currents, but the knowledgeable divemasters of the *Pindito* always found manageable dive sites for us.” www.pindito.ch

Michel Deville and his wife, Julia, the Swiss owners of *WAOW*, simply wanted the best liveaboard ever, hence the name. The WAOW project manager, Australian Andrew Laughlin, often doubles as cruise director. The vessel was featured in *Undercurrent* July 2013.

Marc Pinto (Castle Rock, CO) was on board last September. “We’ve been on other boats marketed as luxury, but they simply don’t compare to the *WAOW*. This ship is huge, with a wide beam, which makes it very comfortable. We had the master cabin — it was enormous — with its own expansive private deck. The food was amazing and varied. Each dinner entree came with a nice sauce, and they were always quick with seconds. The service was topnotch, and they even had a massage therapist on board who doubled as a server. For sure not an inexpensive trip.” www.waow.ch

A final word from Catherine R. Mack (Washington, DC), who wrote us about her December trip aboard *Dewi Nusantara*. “The boat is huge and accommodating. The dive crew is experienced, helpful, and friendly. The four daily dives were over the top. Never have I seen so many creatures and such diversity. The currents are wicked, so it’s important to be extremely skilled or to stick with your divemaster, who, in our case, really knew how to anticipate and handle (turning us around/ hooking us on/taking us deeper or shallower) the strong currents. You must have a reef stick and a reef hook. There are places where we expected to see mantas, but they showed up in places where they were unexpected. Food terrific. Crew friendly and accommodating. Rooms spacious and comfortable. Weather perfect. What’s not to like? Coming home!” www.dewi-nusantara.com

Raja Ampat might offer the finest tropical diving in the world, but it is incredibly remote should anything go wrong, and thanks to powerful currents, the most famous dive sites are not for inexperienced divers.

Two books worth buying before going: *Diving Indonesia’s Bird’s Head Seascape* by Burt Jones and Maurine Shimlock, describing the best dive sites, and *The Raja Ampat: Through the Lens*, a visual treat by various photographers, both available through [Undercurrent’s book section](#).

– John Bantin

California Great White Shark Population on the Rise

In Southern California, the great white shark is making an amazing comeback. Dr. Chris Lowe, a shark biologist, says, “To think that is happening in America’s front yard, that it is a nursery for these sharks in the northeast Pacific, is amazing. The fact that we are seeing this recovery is remarkable.” Nearly hunted to extinction, the resurgence of their population suggests conservation is working. But we actually know very little about them. Why they bite people, for example.

He says that sharks either bite people for predation or defense. However, the chance that great whites are predators is slim, “because they don’t eat people. . . A shark might feel threatened by a person and bite them as a warning, but that little bite from a big shark can do a lot of damage.”

Lowe and his team have tagged more than 100 sharks from Central California down to San Diego and are constantly listening for them. They use drones to identify species and underwater cameras to track specific sharks. Lifeguards are currently using information gathered to make better decisions on how to advise swimmers.

Lowe says that the Discovery Channel has done a great job at convincing the public that great white sharks are all about attacking and this fear is hard to overcome. “We really have to do a lot more to educate the public about how to share the ocean.”

(source: *Quartz Video*)

A Tragically Glamorous Underwater Shoot

leaves super model dead

The tragic death of Taiwanese super-model Olivia Ku while underwater modeling for a photographer back in May, has left the diving community with two big questions to consider.

The first, based on the allegation she suffered an asthma attack, is: Should someone who suffers with asthma be scuba diving in the first place?

While some U.S. training agencies totally disbar anyone from learning to scuba dive if they suffer from asthma, others differentiate between different forms of asthma, while others don't seem to care. In other countries, for example, UK divers can obtain a medical certification if they do not need a bronchodilator within 48 hours of diving and they do not have cold-, exercise- or emotion-induced asthma. In Australia, the most conservative country, all divers are expected to pass lung function test to exclude asthma before certification.

It is reported that Olivia Ku was the subject in an underwater mermaid photography session near Hengchun in Taiwan when she died, apparently of drowning. The diving community there was baffled — she had been diving three years and had regularly volunteered for seabed cleaning projects, and, therefore, should have had no problem handling her breathing.

However, a second question arises when we consider an extra dimension of the accident. Ku might have removed her scuba equipment and become separated from it in order to look the part of a mermaid, after being instructed to do so by the underwater photographer for whom she was posing.

When regulated film companies shoot actors underwater, ostensibly without any breathing apparatus, they go to great lengths to achieve a high level of safety with at least one diver in the water alongside the subject (but outside of the shot), armed with a regulator at the end of a long hose and attached to a pole so that it can arrive at the actor's mouth almost the instant it is required.

Some people have expressed concern that a plethora of pictures of attractive young people wearing complex dresses or mermaid costumes, and without any form of breathing apparatus in sight, have been flooding the Internet during the past few years. In fact, in some quarters, it has

become almost fashionable to take underwater photographs of people inappropriately dressed for diving and behaving as if they were on terra firma, not only in the benign conditions of swimming pools but also in the environs of submerged wrecks and even with scavenging sharks.

Undercurrent asked Mike Seares, an underwater technician with experience working with British moviemakers, what precautions would normally be taken in the simplest scenario where there is an artist underwater without her own air supply and in just a swimsuit.

He told us, "There should be a dedicated safety diver with a long hose close by at all times. The secondary air supply should also be self-contained, i.e., not from the safety diver's own air supply, but a second cylinder. This setup would be perfectly fine to look after that person in ideal conditions down to, say, five meters.

Why So Many Maui Shark Attacks?

Maui seems to have far more shark attacks than any other Hawaiian Island — 20 in the last four years, mainly on snorkelers and swimmers — and researchers wondered why.

Well, it turns out the results are pretty simple. There are just more sharks there. In fact, tiger sharks favor the waters there — they have historically — and it just happens, so do humans, says Carl Meyer, a researcher at the Hawaii Institute of Marine Biology. The researchers tagged tiger sharks off Maui and Oahu and tracked them as they swam around the island chain, discovering that they favored the waters between Maui, Lanai, Molokai, and Kahoolawe islands.

"Together, Maui and nearby islands have more preferred shark habitat than all the other main Hawaiian Islands combined," Meyer said. "Maui sharks tend to stay in Maui waters, and those that normally live near Oahu even make the trek to Maui during mating season. A real shark hotbed, Maui is."

“Deeper, there should probably be a second safety diver with air source halfway up the water column to assist should the artist head for the surface and the safety diver on the bottom cannot get to them quickly enough. If the artist is tied down in any way, it should be with a quick release buckle, and there should be another safety diver whose sole purpose is to release that buckle if required.”

Richard Bull, the veteran safety officer on so many BBC productions that have been seen worldwide, said, “The sort of shoot can be a real minefield. The regulator on a stick has always been a possible solution, but the problems of a person

breathing compressed gas underwater are still there. At least one in-water standby dedicated to the model would be essential in addition to other in water assistants/standbys.”

We wonder if the likely-to-be-amateur underwater photographers who take these pictures are building in sufficient safety precautions. They might have an assistant with them in the water, but how quickly can someone swim from out-of-shot to deliver a freely flowing regulator to the mouth of someone who urgently needs it?

Let’s hope we don’t see more of these tragedies.

When Things Go Wrong...

Undercurrent readers disagree on cancellation compensation

Last month we told the sorry tale of how *Undercurrent* subscriber Jeanette Hartshorn was disappointed and angry to arrive in the Galápagos to find her prepaid liveaboard trip had been canceled and she had not been informed. She received a full refund and had other expenses covered, by the *Galapagos Sky*, which accepted full responsibility, but she and her partner were out of pocket airfare and other expenses, saying they would have canceled the whole trip had they been informed of the cancellation and felt the compensation was inadequate.

Two other guests booked through a diver agent also arrived unaware of the cancellation; they were compensated similarly to Hartshorn, and chose to make a return trip on the liveaboard *Galapagos Sky* later in the year.

We asked you “Do you think Hartshorn and her partner received fair compensation from *Galapagos Sky* for the unusual cancellation of their cruise?” and provided a means to vote and comment. More than two hundred of you responded, with almost 2:1 believing that the *Galapagos Sky* had provided proper compensation for the major blunder.

However, comments were mixed. Here are some of those that accompanied the survey results. One reader who felt that Sky fell short said, “I feel that she would never have just booked the land portion of this trip. The *Galapagos Sky* was the highlight and when she was not notified of the trip cancel-

lation, the tour company caused her to take a trip she would never have booked. Peter Hughes made a good faith effort to make the situation right, but given the circumstances, it’s just not enough.”

One reader suggested that if the Sky were a U.S. business, any lawyer in the USA would have been able to recover all trip-related expenses, including the extension, parking doggie kennel, as well as legal fees and possibly more for the inconvenience and disappointment.

On the other hand, another reader commented, “If Hartshorn had declined to stay in the Galápagos and returned home immediately, she would have had a fair case to demand a full refund of the whole trip. As it is she got a free week of land-based diving, which is obviously not as good as the *Galapagos Sky* cruise would’ve been – but it was free! She had to pay for the airfare but I think the cost of hotel, food and land-based diving offsets that.”

Another made the same point. “They should have gone home right away. Instead, they stayed and included the extension. If they really wanted to dive, they should have taken the credit and come back [later]. Everyone deserves a second chance.”

One reader was philosophical about such events, saying, “I would’ve have been happy with the outcome and understand the wish for more. Travel is an adventure.”

The hard fact is that Hartshorn did not get the diving trip she had planned. One reader was less stoical. "They made the best of it, but when they're plunking down that kind of money for a once-in-a-lifetime trip, they should be fully refunded, and then some." Another reader suggested, "Sometimes things don't go as planned. Seems *Galapagos Sky* did everything they could to arrange an alternative experience."

Yet another reader made the point, "These are not easy places to reach and the effort in planning is Herculean. So I believe that there should be compensation beyond all expenses incurred just for the time and effort put towards planning this as also the lost days due to cancellation."

Clearly, people disagreed: One wrote, "She was not fully compensated for all the time and cost," while another wrote, "Extremely fair. Why should she get a refund for the portion that worked?"

A majority of readers surveyed thought that they had been treated well. One wrote, "Kudos to the *Galapagos Sky* personnel for not only covering all the land expenses, including upscale accommodation, diving and personal expenses for the week – plus refunding the full amount for the liveaboard

trip. This is extremely generous and complete compensation."

Another commented, "I do not think the extension to their trip was the responsibility of *Galapagos Sky*. I think they assumed responsibility for what was a really disappointing situation."

One wrote, "When traveling to far-flung locales, anything can happen, and you have to be mentally prepared for that. I would have been equally upset at this turn of events, but I believe Hughes tried his best to make it right."

However, one respondent added, "as the owner of a dive shop specializing in dive travel this would be high on my list of worst nightmares. Bite the bullet and cover 100% of their expenses! If we'd have booked them we would have taken the loss and done what was needed to at least salvage them as customers."

Notably, there is one last valid point, "This has been an on-going problem with having to pay for trips in full so far in advance. One should only have to pay a 25% deposit and the balance on arrival. Paying in full [in advance] is way out of hand."

And, that's a point well-taken.

Do We Divers Need Propulsion?

Do we sport divers think kicking our legs is not enough, that we need to be powered underwater?

Entrepreneurs from the UK think so and claim they've created an underwater jetpack that could allow swimmers to progress underwater without any effort. The three-person team of innovators from Portsmouth, England, has released a short video clip showing a swimmer jetting around the bottom of a pool using jetpacks strapped to his wrists. An analog trigger varies the speed.

Each jetpack, which has a maximum speed of 6 mph, will be powered by a battery pack worn like a backpack. It is still at prototype stage. (www.supermarinnovation.com)

We've seen propulsion for scuba divers before. We're not talking about those cumbersome diver propulsion vehicles favored by cave divers for long penetrations. They often have big lithium-ion batteries prohibited from air transport.

And years ago, there were the Californian-made MST Jetboots, compact carbon-fiber-built propulsion

units that attached to a diver's lower legs. A compact nicad battery in a canister attached to the diver's tank powered them. It was light enough to take aboard an aircraft as carry-on. It appears they are now only available for military application. (www.jetboots.com)

Then there is the Pegasus Thruster, a device originally developed in Florida for disabled divers but currently adopted by the TSA for routine underwater hull inspections of vessels entering Miami harbors. (They find that a single diver so equipped can do the job done by several previously.) The Thruster is a single unit with a propeller that attaches to the tank and is controlled by an umbilical, allowing for hands-free operation. (www.pegasusthruster.com)

In every case, the manufacturers have been optimistic that scuba divers will see the attraction of these devices and sales will be commensurate, but we have yet to see any of them proliferating at dive sites, either in the U.S. or anywhere else in the world.

Would you pay four thousand bucks or more to save yourself the effort of finning?

Climate Change Wreaks Havoc on Coral

and raises more than one stink!

The Great Barrier Reef is on most American divers' bucket list, so the current coral bleaching, thanks largely to human-induced global warming, with a little push from El Niño, should be of great concern.

Officials have tried to deny it's happening, but in what appears to be a change of heart, some Australian tourism operators have broken their silence about the worst crisis ever facing the Great Barrier Reef. Previously in denial for fear of turning tourists away (GBR tourism contributes more

All mentions of Australia were removed from the final version of a UNESCO report on climate change and the world heritage sites after the Australian government objected on the grounds it could impact tourism.

than \$5 billion to the economy annually), dive operators in North Queensland apparently had refused to talk about it, not even taking journalists or Green Party senators, or any who might speak about the bleaching, beyond a small radius of Cairns.

But now, a group deeply concerned about the effect has spoken out.

In a letter to the Australian Prime Minister, signed by 175 businesses and self-styled stewards of the Great Barrier Reef, they wrote, "Australia must start doing everything it can to tackle the root cause of coral bleaching, which is global warming" ... "We urge you to rule out any government financing or investment in the Abbott Point coal terminal" ... and to "rapidly shift to renewable energy and to rule out any new coal mines to reduce global warming."

Richard Vevers, founder of the Ocean Agency — a non-profit in partnership with Google, The University of Queensland, and the National Oceanic and Atmospheric Administration (NOAA) — has been documenting the bleaching event since late 2014. He has been reported in www.vice.com/en_au, saying, "The scene wasn't just upsetting — it was disgusting. The coral was completely covered in algae . . . It was really the soft corals that

surprised me — half had disappeared, and the rest were kind of rotting. They're decomposing, falling apart."

Evidently, dying corals smell even worse than they look. They stink.

One of the biggest operators, Tusa Diving, has been showing the reef to tourists for more than 30 years. Speaking to www.vice.com/en_au, its media representative, Katrina, said she thought media reports about the death of the reef were "a bit alarmist and exaggerated," although admittedly, "this year has been a little worse than usual."

A press release issued by the Australian government, attempting to alleviate media alarm, says, "Preliminary findings from the Great Barrier Reef Marine Park Authority (GBRMPA) and the Australian Institute of Marine Science (AIMS) show approximately three quarters of coral on the Reef has survived to date. The vast majority of the impact is in the northern third of the Reef, from Port Douglas to Cape York, with the central and southern regions escaping significant mortality."

The Guardian newspaper (Australia) reports, "All mentions of Australia were removed from the final version of a UNESCO report on climate change and the world heritage site after the Australian government objected on the grounds it could impact tourism."

You see, there are still climate change deniers, such as Bob Halstead, a leader of the Australian scuba diving industry, who says the reefs are fine and has written a feature in *Dive Log Australasia* denying the global warming propagandists, insisting it is merely the result of the cyclical El Niño effect. He says "It's lots of nonsense being promulgated by Australian Marine Conservation Society."

Coral bleaching is not only an Australian problem. Twice a year, Georgia Tech climate scientist Kim Cobb travels to remote Christmas Island in the middle of the Pacific Ocean to collect core samples from coral reefs. The data help in reconstructing past climate records and improving predictions of future global warming. But when Cobb arrived on the island last month, she was stunned. The corals she had spent the past 18 years studying were largely dead or dying.

Meanwhile, coral bleaching has spread even further, and Christophe Mason-Parker, author and founder of the Seychelles Sea Turtle Festival, reports witnessing similar massive bleaching far north in the Indian Ocean. He wrote in his blog at www.archipelagoimages.net, together with endless pictures of bleached corals, “As we approach the end of April, the global bleaching event that has been devastating coral reefs along the Great Barrier Reef and western Pacific is now starting to take hold in Seychelles. Elevated sea temperatures have seen corals expel their zooxanthellae, first becoming pale and eventually a ghostly white as they struggle to cope with the conditions. . . all genera now appear to be affected.”

Authorities in Thailand have shut down ten popular diving sites, stretching from Rayong province in the east down to Satun in the far south, in a bid to let the corals recover after a survey found bleaching of up to 80 percent of some reefs.

Researchers across the tropical region are reporting similar catastrophes from Hawaii to India, while in the Solomon islands, according to Simon Albert, a senior research fellow at the University of Queensland, five islands have entirely disappeared due to rising sea levels.

Climate change now claimed its first mammal species, the Bramble Cay melomys (called a mosaic-tailed rat), which resided only on Bramble Cay, an Australian island close to Papua New Guinea. Over the past 20 years, high tide has put more and more of the island underwater, washing away the rodents’ homes and drowning many of them. The coastal vegetation that the melomys called home has decreased by 97 percent in the past decade. The last recorded melomys was seen in 2009.

The Maldives, only just recovering from the mass coral die-off in 1998, is now experiencing yet another coral bleaching event. The Indian Ocean archipelago was revered for its colorful coral gardens, but The Ocean Agency says some of the country’s most treasured reefs are now barely recognizable. “The bleaching was truly haunting,” said Richard Vevers. “It’s rare to see reefs bleach quite so spectacularly. The flesh of the corals had turned clear and we were seeing the skeletons of the animals glowing white for as far as the eye could see — it was a beautiful, yet deeply disturbing sight.”

Don’t think America has escaped. “More than 70 percent of U.S. reefs have already been hit,” says Mark Eakin, the director of NOAA Coral Reef Watch. “In some areas such as Florida, the bleaching event has lasted so long that reefs have been beset by bleaching twice and could be in for their third go-round this summer and fall.”

Finally, Australian Prime Minister Malcolm Turnbull said at a news conference in Queensland on the 13th of June, less than three weeks out from a general election, that his government plans to spend A\$1 billion (\$739 million) over ten years to protect the Great Barrier Reef from the effects of climate change and declining water quality.

In the United States, Republican congressional leadership has refused to put climate change on their legislative agenda and Democrats talk about it only when convenient.

So, if the GBR is on your bucket list, listen to John Rumney, who has run fishing and scuba tours there over the past four decades. He says, maybe the tourism slogan should be “Come before it’s too late.”

Nine Million Dollar Wrongful Death Lawsuit *instructor and even physician sued*

In 2015, Cindy Burns of Stayton, OR, bought her husband scuba diving lessons so he’d be ready for their trip to Hawaii to celebrate their 30th wedding anniversary. A year later, her family is bringing a \$9 million wrongful death suit against the doctor who cleared 51-year-old Tim Burns for diving and the local scuba store that led his dive.

The complaint says that on March 3, 2015, Burns filled out a medical questionnaire, noting he was taking prescription meds for high blood pres-

sure, had asthma, and had previously undergone sinus surgery. Because of his answers, Salem Scuba required Burns to have his doctor sign a medical statement saying Burns had no conditions that were incompatible with diving.

The next day, Dr. Paul Neumann signed the statement and prescribed Burns with a rescue inhaler for symptomatic asthma. He noted that Burns’ asthma symptoms were fluctuating, that he had an

upper respiratory infection and had high blood pressure.

PADI guidelines state that an asthmatic diver should show no symptoms and should be able to breathe normally before and after an exercise test. The form Dr. Neumann was given to sign indicated

Burns completed two certification dives with Mike Laharty, a Salem Scuba instructor, but the next day he suffered an asthma attack during his second dive and had to abort.

guidelines were available, but Neumann allegedly didn't review them and did not conduct an exercise test.

Two weeks later, Burns completed two certification dives with Mike Laharty, a Salem Scuba instructor, but the next day he suffered an asthma attack during his second dive and had to abort. Another Salem Scuba instructor saw Burns using an inhaler on the beach.

The following day, March 22, Laharty took Burns to 60 feet, and within minutes, he indicated he was out of air. Laharty performed an emergency uncontrolled ascent to the surface, but failed to maintain control of Burns and had to swim back down to grab him. Upon surfacing, Burns was barely respon-

sive, and Laharty called for help, but medics were unable to revive Burns.

An autopsy revealed Burns suffered from chronic bronchial asthma with early pneumonitis, dilated cardiomyopathy, and chronic emphysema. The cause of death was cardiac dysrhythmia associated with scuba diving and an enlarged heart, with chronic asthma being a contributing factor.

According to the lawsuit, Neumann should have performed tests, which would have disqualified Burns from diving, reviewed the diving guidelines, known that the blood pressure medicine prescribed was inadvisable with diving, and that symptomatic asthma was inadvisable with diving. The instructors should have known Burns was at risk of severe injury or death if he continued diving after having an asthma attack; they didn't safely monitor Burns' air supply and allowed him to consume air too quickly, which created an out-of-air emergency; and didn't maintain control of Laharty's backup regulator and buoyancy compensatory device, which allowed Burn's backup regulator to fall out of his mouth. The suit names the doctor, his clinic, the instructor and dive store owner as negligent.

Clearly, this is an unfortunate tragedy, but it reminds us that in a preponderance of diving deaths, the deceased is frequently harboring all sorts of medical conditions that worsen or become triggered when diving. When did you have your last complete medical?

(From a report in the *Statesman Journal* by Kaellen Hessel)

Flotsam & Jetsam

Whale Shark Rescue. In June, two whale sharks destined for an ocean theme park in China were rescued after an 18-month investigation by the Wildlife Conservation Society, covered by investigative photojournalist Paul Hilton. The operation, supported by Indonesia's marine police, revealed where the animals were being kept in sea pens at Kasumba Island, Ambon, by a major supplier of marine megafauna to the international wildlife trade. The suspects had recommendation letters from government authorities that allowed them to collect and breed ornamental fish.

Fish Can Recognize Human Faces. Scientists at Oxford University in the UK and the University of

Queensland, Australia, in a recent study of archerfish, found that fish can tell a familiar human face from dozens of new faces. Why archerfish? They can indicate a choice clearly (the spitting) whereas other fish cannot. There is no ambiguity in where they are shooting. Fish were trained by being rewarded with a pellet of food when they got it right. They presented the fish with the picture of the face they wanted the fish to learn and a bunch of new faces; up to 44 new ones. The fish were able to pick the familiar face correctly 81 per cent of the time.

Rebreather Reliability. The one thing that has stopped closed-circuit rebreathers (CCR) from being adopted by mainstream recreational divers has been the fear of unreliability of their oxygen-level management. Electro-galvanic sensors are so unreliable in the rough-and-tumble of life inside a

rebreather that most units have three, each of which need calibrating before each use and employ a computer's voting logic to weed out the one that fails before it results in disaster. Now Poseidon in Sweden has come up with a solid-state sensor that uses a completely different principle. It is factory calibrated and will not expire, with unsurpassed shelf life, operational time and stability — sufficient to revolutionize CCR design.

High Power Battery Warning. Subscriber Michael J. Millet told us that both his strobes blew out after he swapped to high-capacity 2450 mAh batteries. Inon, the manufacturer of underwater photography strobes, advises against the use of higher-power rechargeable batteries because of the heat they generate. Warranties can be invalidated. Eneloop 1.2v1900 mAh NiMH batteries are recommended. We get other reports from those who use Sea & Sea strobes that they, too, might fail in combination with higher output rechargeables.

All Change at Malpelo. One of the most amazing big fish destinations, part of the golden shark triangle that makes up Malpelo, Cocos, Darwin and Wolf in the Galapagos, might be losing its liveaboard operators from 2018 onwards! The Colombian government will oblige liveaboards for Malpelo to operate out of Colombia instead of Panama, which is certainly more complex to travel to, while safety may be a prime issue! So only another 18 months to discover the diving at this amazing island!

Bite Back at the Lionfish Invasion. Whole Foods has 26 Florida stores now selling fresh lionfish in its seafood departments. That might take a bite out of the population of invasive species hurting Florida's offshore reefs. It's an economically priced

fish, which has 18 venomous spines, but is safe to eat once the spines have been removed. Mild-tasting, it's become a major restaurant item on many Caribbean islands, the one fish that can be eaten without worrying about reducing reef fish population... and now it has been spotted invading the eastern Mediterranean, expect it soon in Greek and Turkish recipes!

Fish are Dying from Oxygen Depletion. Rising sea temperatures driven by human-induced climate change are causing the metabolism of marine species to speed up, increasing their need for oxygen. These rising temperatures cause layers of ocean water to stratify so the more oxygen-rich surface waters are less able to mix with oxygen-poorer waters deeper in the ocean. With oxygen declining, it's becoming harder for marine life to breathe. Researchers reckon by 2030 to 2040, climate-driven declines in oxygen levels will be detectable in all the oceans; it's detectable today in the southern Indian Ocean and the eastern tropical Pacific. Clearly, all fish are in trouble. (Source: *Scientific American/Environment & Energy Publishing/Global Biogeochemical Cycles*)

Oldest Married Divers? Guinness World Records has a category for oldest married scuba dive, but doesn't appear to identify a current record holder. Alabama born Lucy Bunkley-Williams, 67, and Ernest H. "Bert" Williams, 69, both retired marine biologists, intend to change that this summer, off the coast of Puerto Rico. While we wish them well, we'd comment that they don't appear to be very old and would hazard the guess that there might be a more elderly married couple among *Undercurrent* subscribers. Let us know if you are older and actively diving or know of a couple.

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