

undercurrent

The Private, Exclusive Guide for Serious Divers

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Sea Hunter, Cocos Island, Costa Rica

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squadrons of sharks, one bent diver

Dear Fellow Diver:

I descended to the bottom, where everything was dark except what my flashlight illuminated. Suddenly, a barberfish (a.k.a. blacknosed butterflyfish) sped by, swimming for its life, as a white-tip reef shark chased it down. The white-tip, a nocturnal hunter, maneuvered more quickly than I expected, and within seconds, it caught and devoured the barberfish. A dozen other white-tips sped about, looking for meals of their own. I caught up with the rest of my dive group, and minutes later, a ten-foot-long, heavy-bodied Galapagos shark circled us a couple of times. While this might be the beginning of a neophyte's nightmare, it was exactly why I returned to dive remote Cocos Island.

My trip began in early January with an overnight in Costa Rica's capital city of San José, then a comfortable two-hour shuttle ride to the port in Puntarenas, with the garrulous driver, Rudy, relaying anecdotes and pointing out different species of trees along the way. After boarding the M/V Sea Hunter and receiving an orientation and safety briefing, we began our 36-hour steam to Cocos Island. I had plenty of time to set up my dive gear, and while it takes me a couple days to get my sea legs, even on calm crossings while wearing a Scopolamine patch, I spent a lot of time lying down. I just wish my mattress was more comfortable.

Upon arrival, I joined the checkout dive in the protected waters of Chatham Bay, where



M/V Sea Hunter



I saw a huge female sea turtle and some white-tips, but no large sharks. It was different two hours later at Manuelita Outside, where, besides more white-tips, several scalloped hammerheads, a tiger shark and a Galapagos shark or two passed by. And this was only my second dive! Divemasters stay with the group throughout the entire dive, pointing out interesting creatures and sharks approaching from the distance; they are there if you need them but are not overbearing. On calmer dives, our group would disperse a bit, with buddy teams moving apart from one another to better see the wildlife.

Divers make this long trip to swim with sharks. On some dives it's just a couple of white-tips, but most times there will be more. For example, I descended the mooring line at Alcyone and joined other divers atop the sea mount to watch at least a score of scalloped hammerheads come in to be cleaned by barberfish and occasionally a king angel-fish. They remained at a distance, wary of so many bubbles. After waiting 15 minutes in chilly 72-degree water (it was 81 degrees above the thermocline), divemaster Mauricio ("Mau") motioned us to begin our ascent. Suddenly, 45 feet off the seamount, just at the edge of visibility, I saw the much-sought-after "wall of hammerheads," consisting of at least 100 sharks.

After a 15-minute panga ride, I was back aboard the Sea Hunter, drying off with one of the large towels provided after every dive, then I headed inside for their hot pizza lunch. One will not go hungry with the Undersea Hunter Group; they offer plenty of dishes at their buffets. Lunch and dinner entrees are warm (no cold, white-bread sandwiches here), fresh fruit was always available, and green salads were piled with toppings like avocado, tomatoes and hearts of palm. Meal options included huge portions of grilled steaks, chicken and sustainably-raised/caught fish. I let the boat know ahead of time that I was a vegetarian, and they provided plenty of fresh vegetables (sautéed zucchini, carrots, buttered potatoes and more), and even made me soy meat substitutes so I was able to enjoy a burger for lunch with the rest of the crowd. Desserts included freshly-baked tres leches cake and ice cream sundaes. Cookies, crackers and fresh fruit were available around the clock, as were sodas and beer.

My two previous trips to Cocos Island were on the MV Argo, another of the Undersea Hunter Group fleet, to assist biologists in tagging turtles and sharks. I made four dives per day on those trips, but on this one, I was disappointed that we were only doing three dives on most days, plus a fourth dive on two nights. Divemaster Federico explained that three dives is usual for regular Undersea Hunter Fleet trips, but the biologists run four dives when they charter the Argo. So I used my additional free time to process photos, read, nap and watch movies from the boat's DVD collection on the large flat-screen TV in the lounge.

This trip, 20 guests -- five women and 15 men -- filled the 10 cabins. There were Americans, Germans, French, Israelis and a single Brit, ranging from late 20s through age 60. Everyone spoke passable, if not fluent English, and the crew communicated in English. I was traveling with my spouse and four friends, so we tended to eat and hang out together. Four of the other guests were traveling alone, and each would sit at different tables during meals to get to know the others. When not working, the crew typically kept to their quarters. It was a friendly crowd, though two guys, perhaps a bit lonely, would often start chatting as I was reading or watching a movie. Toward the end of the cruise, the crew treated us to a wine and cheese happy hour as they hawked t-shirts and other merchandise. Then Mau

Tax-Deductible Cocos Dive Trips, and Others Around the World

My two previous trips to Cocos Island were on the *MV Argo*, another of the Undersea Hunter fleet, to assist biologists from the U.S.-based Sea Turtle Restoration Network (STRN; www.seaturtles.org) and the Costa Rican group PRETOMA (www.pretoma.org). Our mission was to tag sharks and capture sea turtles at Cocos' iconic dive sites, which meant I had to override my "programming" of not harassing sea life. Capturing a meter-long turtle to take it to the surface is exciting work. They are such powerful swimmers, we needed two to four divers to hold a turtle and immobilize its flippers, lest it rocket us to the surface in an attempt to escape. Once hauled onto the panga, we transferred the turtle to the *Argo*, where biologists gave it a quick health check, then weighed, measured and usually equipped it with an acoustic and/or a satellite tag so its movements could be tracked over the following months. Another part of this work was using a spear-gun-like device to anchor acoustic tags at the base of sharks' dorsal fins. White-tips are not tagged, as they typically do not leave their small home range, so the larger sharks were the target. No one in the groups I have been diving with has been able to tag a shark.



STRP and PRETOMA have been tagging and tracking turtles for years in an attempt to map their migration routes. Biologists have placed acoustic receivers at six locations around Cocos to record the presence of tagged animals. The final task for divers during the tagging trips is to recover the receivers, download data, replace the batteries and reinstall the receivers in their underwater locations. There are additional receivers near the Galapagos and the Central American mainland to track migration routes so the turtles can be protected. -- S.L.

* * * * *

STRP has more turtle-tagging trips at Cocos scheduled for this year and next. There's room for one male diver on its next trip, May 26 to June 5; everyone else can book for December 9-19, and then in February or July of 2015 (<http://seaturtles.org/article.php?id=1703>). The price is \$6,250 plus airfare.

We did a travel feature last November on one diver's trip with the New England Aquarium aboard the *RV Coral Reef II* to tag and collect fish in the Bahamas. You can do the same trip October 18-28 (www.neaq.org/education_and_activities/programs_and_classes/members-only_programs/bahamas_collecting_trips.php).

The Reef Environmental Education Foundation (REEF) regularly hosts weeklong "field survey" trips that teach divers how to identify fish and collect data for REEF scientists. This year's trips are clustered in the Caribbean, from Honduras's Bay Islands June 21-28 to Nevis December 6-13 -- but there is a cold-water option at British Columbia's Hornby Island September 14-18 (www.reef.org/trips).

Earthwatch's goal is to get more people helping with scientific field research and education, so it sponsors expeditions for people with no special skills to become "research assistants" and work alongside scientific pros. They run many expeditions, from swimming with sea turtles in the Bahamas to monitoring endangered manta rays at Australia's Lady Elliott Island. (www.earthwatch.org/expedition).

If you have the time (and money) to go halfway around the globe for a good cause, Blue Ventures, a British-based marine conservation nonprofit, is always looking for divers to spend six weeks helping its scientists chart and study the remote southwestern reefs of Madagascar. Rustic, most likely, but one-of-a-kind volunteering experience, absolutely. (www.blueventures.org)

To get a tax deduction, any volunteer trip must be run by a nonprofit with a 501(c)(3) tax-exempt status (because Blue Ventures is based in the U.K., American divers would be out of luck). The IRS "insists" that the volunteer work must have no "significant" element of personal pleasure or recreation (but, rest assured, there will be no tax man there to look over your shoulder when you order a cold one). This means you'll need to volunteer about eight hours a day, five days a week to qualify to deduct the airfare or other travel expenses. If you tack on a couple extra days to visit the hotspots, the regulations do not allow you to deduct the airfare. However, you will still be able to get a tax break for the program fee, meals and supplies directly related to your time spent volunteering.

did several magic tricks and one guests told some pretty good jokes, which added to the camaraderie.

At 130 feet, Argo is the largest of the fleet, but because the stern is devoted to carrying a submarine, it has less room for divers than the next-biggest boat, the 115-foot Sea Hunter. Its larger dive deck and lounge make it more comfortable, even though it carries two more passengers than the Argo does). The camera area is better situated on the Sea Hunter, where it is out of the way of traffic. On both boats, the cubbyholes are large enough even for housed DSLRs and accessories, and there is plentiful 110- and 220-volt power. Two dedicated rinse tanks sit toward the rear of the dive platforms, and there are two post-dive hot showers. All three of the Undersea Hunter's fleet (the Undersea Hunter is the oldest and smallest of the fleet) make regular trips to Cocos, although it's the Argo that is chartered for research or filming crews. I enjoyed stories our divemasters told about when, say, Howard and Michele Hall or Sylvia Earle was aboard.

My days started with a 7 a.m. breakfast that varied from day to day. In addition to plenty of fresh fruit and toast, they cooked up eggs (sometimes scrambled, sometimes over-easy), pancakes, bacon and "Gallo Pinto," the Costa Rican specialty of rice and beans. An hour later, I headed off for the first dive of the day. They split us 20 divers between the two 24-foot covered pangas, with one divemaster each (we left our gear and tanks onboard between dives and at night). The pangas are just large enough for each diver to sit in the center and don/doff gear. At the back of the pangas is an easy-to-climb ladder, and the drivers would always help me with my gear when entering or exiting.

Backrolling into 81-degree water, I descended the mooring line at Punta Maria, one of more than a dozen sites. The current was so strong that if I let go the line, I would have been unable to make my way back and would have had to surface for pickup. But it's these currents that bring the big guys. When I arrived at the seamount at 93 feet, several large Galapagos sharks were hanging at a cleaning station. But at my next dive, at Punta Maria, there was virtually no current, and therefore, no big sharks. As with most dive sites around Cocos, it was teeming with reef life -- a variety of morays, marbled rays with wingspans as wide as my outstretched arms, Mexican goatfish, blue and gold snappers, puffers, trumpetfish and the omnipresent white-tip sharks. Several times I encountered a school of hundreds (or maybe thousands) of big-eye trevally; once I swam into the middle of the school and the fish closed around me so that I couldn't see anything else. By the way, the bottom is composed largely of boulders and rocks, most dotted with dull, brown hard coral and an occasional gorgonian. At Small Dos Amigos, it's just a lot of barnacle-encrusted rocks.

Sea Hunter, Cocos Island

Diving (<i>experienced</i>)	★★★★★
Diving (<i>beginner -- not recommended</i>)	★
Accommodations	★★★★1/2
Food	★★★★1/2
Service and Attitude	★★★★★
Money's Worth	★★★★★

★ = poor ★★★★★ = excellent
World Scale

Cocos Island itself is enshrouded in lush greenery. Five miles long by two miles wide, it rises almost straight out of the ocean to an 1,800-foot peak. Its only inhabitants are a group of rangers and a few volunteers; divers can hike on the island once or twice during their trip, but you'll give up at least one dive. I went ashore on a previous trip and was startled by the Genius River Bridge, built by Costa Rican artist "Pancho" out of miles and miles of discarded fishing gear.

Daytime temperatures topside are usually in the 80s. Cocos averages more than 20 feet of rain per year, so it was no surprise to see it coming

down as I geared up for my second of two night dives. Although it was only a five-minute ride to Ulloa, I was soaked and chilly in my 5mm wetsuit when we arrived. The 79-degree water felt comfortable in comparison. Moreover, all thoughts of weather left my head when I saw the hunting white-tip sharks. They gathered in schools of 20, 50, or more -- it was hard to tell because I could only see the animals that were in the beam of my flashlight. At times, it looked as though the sea floor was moving, there were so many sharks. They wriggled in and out of crevices, looking for a meal. And when they found one, all the nearby sharks joined in, ignoring the divers hovering above. It's completely crazy -- and completely exhilarating. Forty-five minutes later, Federico gave us the signal to ascend; because we were only in 15 feet of water, there was no need for a safety stop.

Dinner was waiting upon returning to the boat. I filled up on spaghetti (with choice of vegetarian or meat sauce), fresh green salad and garlic bread. Finally, it was time for a well-deserved rest. The Sea Hunter has eight cabins below deck and two on the upper deck. My spouse and I shared the smaller of the two upper cabins, but it was spacious with its double bed (and room to add a bunk, should cabin mates choose to sleep separately), desk and ample storage space. Each cabin has a toilet, sink and curtained stall shower with plenty of hot water.

While it was easy living on board, some dives gave me quite a challenge. At Big Dos Amigos, my dive buddy and I were at 80 feet and reached the beautiful arch before the others. Moments later, the current kicked up, and the rest of the group had to pull themselves along the rocks to reach the arch. None of us could exit the far side due to the current, so we returned the way we came.

As you can probably tell, diving Cocos is not without risks. Half my dives were in the 95- to 105-foot range, and they might have been deeper had all divers not been on Nitrox. Slow ascents, a strict no-deco policy and a maximum 60-minute dive time are enforced. Even so, accidents do happen. On our second-to-last day of diving, the conditions were good so the captain took the Sea Hunter to anchor at the south end of the island. Our group headed for Shark Fin Rock, a rarely diveable site due to waves and strong currents, but today the seas were calm and the current mild. Scalloped hammerheads cruised by in twos and threes, a yellowfin tuna appeared, and I lost track of the number of eagle rays at 12. After returning to the boat, the second panga hastily arrived from the dive at Alcyone with an injured diver. The crew had him on oxygen and brought him on board; the captain quickly contacted DAN. The injured diver was a middle-aged Israeli man. He was unable to urinate but a fellow passenger, who happened to be a physician, catheterized him. It sounded like a central nervous system oxygen toxicity hit because the man was also unable to walk (we were not given much information about him -- a patient confidentiality thing, I suppose). The boat headed toward the mainland, 36 hours away, while DAN arranged for a fast boat to meet us en route 22 hours later and take the patient to shore. The crew then turned their attention back to us, and headed to Caño Island on Costa Rica's Osa Peninsula for three final dives. (And Undersea Hunter Group gave each of its passengers a \$500 credit towards a future trip).

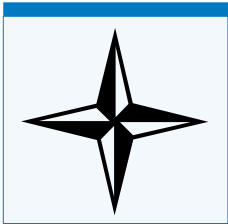
Cocos Island is a wild place, 300 miles from civilization. I've seen more sharks on any one dive here than I've seen in weeks on Caribbean and

Hollis Recalls Some Explorer Rebreather Models

Hollis has recalled certain counterlungs for its Explorer rebreather. "We have traced this problem back to one production lot of counterlungs that had weak welds around the retainer fitting, and affected counterlungs can develop leaks over time," the company said in a press release. It has published the serial numbers on its website, and divers with affected counterlungs should contact their local Hollis rebreather dealer; the company will send a free pair of new counterlungs. For more details, go to www.hollis.com/news/cat/notices/post/explorer-quality-notice

Indonesian trips. This has to be what the oceans looked like a century ago, before humans started decimating shark populations. I've already booked my return trip.

-- S.L.



Divers Compass: My ten-day trip was \$5,885 per person, double occupancy, and lower deck cabins cost \$5,235; additional charges included a \$245 national park fee and \$60 for transportation . . . Crew said, "You can tip whatever you feel appropriate," so we tipped \$500 each, roughly 10 percent; a credit card is OK . . . Crossings can be rough, so make sure to bring seasickness meds . . . Ask the shuttle driver to stop at the local grocery store before boarding the boat if you would like to buy hard alcohol for the trip, as there is none onboard; wine is available with meals for a charge . . . U.S. plugs/voltage are available throughout the boat, there is also 220-watt power in the camera stations . . . If the *Argo* is at Cocos, you may have the chance to go on a submarine ride; it's expensive, but worth it . . . Bring gloves, as you may need to hold on to barnacle-encrusted mooring lines and rocks; also bring walking shoes, sunscreen, and bug spray if you plan to visit the island . . . DAN insurance is essential in case of a medical emergency; and bring your C-card or Nitrox card . . . Website: Undersea Hunter Group -- www.underseahunter.com

Baja California, Fiji, Montserrat

pesky politics and squirrely harbormasters

Those Blasted Mexican Military Drills. Seasoned divers have learned that no matter how much you want to dive certain sites, some days it's just not going to happen. While weather and other factors come into play (more about that next time), government rules (also known as "politics," which, heaven forbid, might even mean corruption) get in the way at times. The *Nautilus Explorer*, a Canadian-flagged vessel, has had its share of problems in Mexico, most recently at the Revillagigedo Islands, as Michael J. Millet (Dublin, CA) reports of his January trip. "This was my seventh trip to the Socorro Islands aboard the *Nautilus Explorer*. Due to exercises by the Mexican Navy (perhaps a few chin-ups), we were unable to dive at Socorro Island. A disappointment because Cabo Pearce is a very nice dive site. Nevertheless, we had five good days of diving, with two days at San Benedicto and three days at Roca Partida." (www.nautilusexplorer.com). However, the *Nautilus* should not be singled out, because the Mexican-flagged *Solmar V* couldn't make it either in January. David Machese (Hummelstown, PA) writes, "Socorro was off limits due to Mexican military drills, so we spent three days at San Benedicto and two at Roco Partida." (www.solmarv.com)

The Sea Escape. Military exercises at Socorro aren't continuous. The month before, Jennifer Widom (Stanford, CA) dived both sides of the island while aboard the *Sea Escape*, which she says is "a well-run, well-priced liveaboard. It isn't especially luxurious, but it's clean, comfortable and the crew did a good job. Our trip had only 11; the boat might feel a bit crowded with its full complement of 18. The cabins vary in size, configuration and location. The food was interesting and tasty enough . . . There is a pleasant indoor lounge adjacent to the dining tables, and the upper deck has a large shaded outside area with comfortable chairs. My family did the PADI Nitrox course on the crossing (Nitrox is critical for the dive profiles) . . . Roca Partida is the high-energy site, with tons of fish and sharks. The Boiler is the magical site, where eight giant mantas circled us closely. Socorro Island was probably the least interesting, though we did see dolphins underwater, a couple of mantas and a hammerhead or two. We dove four times most days, with no night diving permitted (www.seaescapeliveaboard.com). I used Ksenia Makeeva at Dive and Cruise Worldwide to book the trip." (www.dive-and-cruise.com)

A New Baja Liveboard. By the way, another boat has entered the market in Baja, diving both the Revillagigedos and the Sea of Cortez. It's the *Valentina*, owned and operated by Fun Azul Fleet. She accommodates 20 guests, departs from La Paz and offers five-night trips with three- to four-tank dive days in the Sea of Cortez (with a complimentary open bar, which will probably keep a few passengers out of the water) and longer trips to the Socorro Islands. We know nothing about the *Valentina*, so if you take a trip, please send us a reader report (www.fun-azulfleet.net/lapaz)

Back to Those Political Delays. Vickie Sterne and Chrisanda Button (Wesley, AR) were on Grand Komodo's *TemuKira* in September and report that two German divers whose checked bags failed to reach Indonesia were told they would have to wait two days in Manokwari while their luggage caught up with them. Wilson, the cruise director and dive guide, told them the *TemuKira* could not wait for them. "So those two gentlemen flew to Sarong after their bags arrived, and Grand Komodo took them to its Raja Ampat Dive Lodge on Mansur Island. Meanwhile, back on the boat, the harbormaster of Manokwari would not clear the *TemuKira* to sail at the scheduled time. We lost at least half a day's diving while Wilson bargained with the officials. Two divers were visibly and sometimes volubly unhappy. Grand Komodo offered each diver a million rupiah credit or rebate to apologize. That's US\$100, but the million did make an impressive stack of bills when Wilson handed the money to us. We did not get to dive in Cendrawasih National Park as long as we had expected. We suspect the itinerary was reshaped so we could pick up the divers we had left behind in Manokwari."

More Squirrely Harbormasters. Frederick R. Turoff (Philadelphia, PA) boarded the *Amira* in Ambon last May and "when we were to depart, the harbormaster wouldn't give us permission to leave, so we did two dives in Ambon Harbor and got underway the next day . . . Sadly, two of our group got decompression sickness, so we had to scrap our last two dives and head overnight to Maumere for medical assistance at Diver Alert Network's direction. We were offered a final muck dive in Maumere Harbor. The DCS divers departed the day after we arrived in Maumere, with symptoms diminished but not gone completely. One of the victims was American and had DAN insurance, so he was flown by DAN Travel Assist to Singapore, where he had recompression treatments, which resolved his symptoms."

Now, I can't speak about those two harbormasters, but in Papua New Guinea a while back, I saw my captain hand a wad of Kinas to a so-called harbormaster, and other dive boat captains have told me they had to grease the palm of Third World harbormasters. So that's one reason why you pay through the nose these days to dive in exotic waters.

A "New" Easy-Diving Destination in the Caribbean. Well, not so new, since I dived it 18 years ago, a month before the island's volcano erupted and covered everything in deep ash. Montserrat has taken

Dengue Fever in Fiji: Should Divers Worry?

Fiji has reported more than 10,000 cases of dengue fever since October last year, including 11 deaths. It's the worst outbreak in 16 years. Even though New Zealand officials report that 24 of their 35 cases this year have come from people traveling to Fiji, Fijian officials say it's no cause for alarm for tourists -- most cases have been reported near the capital, Suva, and in inland areas. There have been no outbreaks around the coastal resorts. Authorities have been spraying insecticide across the country to try to eradicate mosquito-breeding areas, and have started a public health campaign to remind people to clean out water containers.

Dengue fever is a viral infection that causes flu-like symptoms like fever and joint pain, and sufferers can occasionally develop fatal complications. Treatment usually involves rest and rehydration, with those badly affected sometimes put on an intravenous drip. Illness can last up to 10 days, but people can feel depressed and tired for weeks.

There's no vaccine, so the only way to prevent dengue fever is to avoid being bitten by mosquitoes. If you've got an upcoming dive trip to Fiji, use bug repellent both indoors and out, and when possible, wear light-colored long sleeves and pants, a hat and shoes. If you return from the islands feeling unwell, go to a doctor.

a long time to recover -- only 4,000 people remain today. However, "except for algae, diving compares favorably with Dominica for the variety and health of the coral and fish," says Mark A. Magers (Oakland, CA.) "We spent five days diving with Emmy and Andrew of Scuba Montserrat. Many healthy soft corals, gorgonians, barrel sponges and sponges of all kinds. Lots of juvenile fish. I saw thousands of scad about five inches long on a shore dive; they were being hunted so the action was incredible. We took surface intervals at isolated Rendezvous Beach. I never saw another soul there, but I did see large turtle nests, and often there were fresh tracks from the previous night . . . Scuba Montserrat shares a small open boat with local fishermen, sufficient for four divers. It was fine by our standards, given the untouched reefs we saw. Above water, there is plenty to do if you like hiking, kayaking and exploring." While Montserrat isn't adventurous diving, it is a chance to visit a unique island with a storied history, just a quick flight from Antigua. (www.scubamontserrat.com)

A Quick Note from Fiji. Wayne Joseph (San Mateo, CA) writes that the dive managers of Fiji's dive-oriented Wananavu Resort have been terminated, after the arrival of a new resort manager. "Chris and Vicky had done a great job of expanding the services, scouting more dive sites, including the muck dives in front of the resort. I can only speculate that perhaps this manager wants to focus more on weddings, meetings, etc., than on the diving, especially if the boats aren't full." (www.wananavu.com)

-- Ben Davison

The Decline of Dive Training: Part II

it's being dumbed down at all levels . . . but there's hope

Here's the second of dive veteran Bret Gilliam's two-part story on dive training and where it's headed, both for better and for worse.

Another major factor in the dive industry's floundering, the proverbial "elephant in the room," is the increase in online equipment sales at the expense of the local dive retailer. This trend seriously threatens the survival of traditional dive stores, and we're seeing shops close at an alarming rate. This is particularly harmful to dive training because these facilities are the primary source of certification programs that bring new folks into the sport and foster their continued interest.

Another rising trend has hurt dive stores: the practice of resorts and liveaboard vessels providing full equipment packages, including dive computers, regulators, BCDs, wetsuits, etc., at nominal rental rates or at no charge for week-long bookings. You can't blame them. This is what divers want in an age of absurd airline baggage fees: the convenience of having all the equipment they need available at their dive location. It's no muss-no fuss travel. The same model has served ski resorts for decades; only the most committed skiers buy equipment. Nowadays they prefer to organize their gear on arrival at the mountain. Many industry professionals argue that this practice works to retain participation by offering a wide selection of state-of-the-art gear without a big financial outlay, and by stimulating travel, perhaps the most effective way to keep the diver or the skier active. However, try telling that to a local retail store.

Basic Realities

I am deeply concerned about the dumbing down of dive training on all levels. Of course, the impetus originates with some agencies that see their strategy as enrolling and graduating more students. (Go ahead . . . you guess the prime offender.) But, it seems, they miss the point about customer retention. People who are not fully competent are not confident. When turned loose with a pocketful of certifications and

Sandals, the Certification King?

Here's a press release I got back in February. "The Caribbean's leading resort company, Sandals Resorts International, has reinforced their scuba diving credentials after reaching 50,000 certifications to become one of the premier dive divisions in the world. The award was bestowed upon the company by PADI Worldwide, the world's leading scuba diving authority, after reaching the milestone and now sees them become one of the world's top five companies for scuba."

I'm not sure what this press release says about the future of sport diving when it turns out that 50,000 of PADI's certified divers got their certification card at a Sandals (or Beaches) resort. Do these folks, on packaged vacations where they also are kayaking, waterskiing or parasailing, go on to become serious divers? Will they buy their own computers and regulators, get housing for Nikons, and head off on their own to Captain Don's, CoCo View or the *Ocean Hunter*?

I suspect the numbers for Sandals' graduates are very small, indeed. So next time I look at the certification figures PADI tosses out, my optimism about the economic future of the sport will be slightly soiled. You see, I suspect the Sandals' crowd won't be with us for long, and to consider even a small percentage as real divers might be a stretch for those dive businesses that use certification numbers as part of their economic planning. Surely, 50,000 is good news for PADI and Sandals, but what does it mean for other businesses?

It's like saying that the future of book stores is on the rise because last year (I'm guessing here) 274,000 university students graduated with degrees in literature. Because those graduates will probably choose to do other things besides buy books, I wouldn't bet on the bookstores either. At least, not based on a simple graduation number.

-- Ben Davison

questionable specialties, many quickly learn that their advanced or master diver status doesn't help them in a strong current, surge, reduced visibility or other stressful situation. Before you know it, they drop out and choose another sport like tennis. Once gone, they aren't coming back.

The dive industry must grasp some basic realities, key among them the firm understanding and importance of quality initial training as the acorn grows into the lasting oak tree -- the active diving participant. Agencies need to upgrade requirements for instructor/divemaster qualifications to ensure that true professionals are the result. These knowledgeable people will pass on their training and, by their example, build the strong force of professionals needed in the sport. Concurrently, changes are needed at the entry level where more supervised training is essential for newcomers. This means more dives and longer bottom times. Let's do away with four dives, as short as 15 minutes each, in return for a C-card that says you are a qualified diver.

Agencies also need to de-emphasize the collection of specialty certifications that serve only to confuse new divers with respect to their actual competency and skill level. Are you an advanced diver, with only nine dives? C'mon, we all know the answer to that. Are you an advanced skier with nine runs down the mountain, most of them on the bunny slope or easy trails? You're not advanced at anything with only nine experiences, whether it's diving, driving, photography or golf. The industry would benefit greatly by producing a more complete training package that truly qualifies people with the skills and confidence that keeps them in the sport.

Sometimes I'm hopeful, and sometimes I'm not. A recent change by SSI now allows divers to do their "open water" dives in an aquarium. Yes, you read that correctly. No current, no surge, temperate water, perfect visibility -- no stressor whatsoever. There is no requirement for a dive in the ocean, a lake or even a muddy pond. Do you really think this will prepare those divers to dive on their own? Call me crazy, but I'm skeptical.

There are some bright spots. Diving technology and equipment has never been better. The emergence of reliable rebreather models is one exciting development. This apparatus may play an important role in the sport's growth in the years to come, but proper training is critically important for those interested in using

this more complex apparatus. Rebreathers could serve as the stimulus at all levels of participation, particularly among young people who yearn for the latest tech advance and stand in line overnight just to buy a new smartphone.

However, caution needs to be the highest priority in training curriculum, along with screening divers for proper prior experience and aptitude. Rebreathers are not forgiving apparatus. If you make a mistake in pre-dive set points, maintenance and attention to detail, then you will probably die. The accident record has proven this beyond argument or debate. On a personal note, when I ran the TDI agency and initiated the first widely used certification programs for rebreathers in the early 1990s, I required instructors to have a minimum of 500 logged dives, and 100 logged dives on that particular rebreather model before we accepted them to teach other divers. For students, I required a minimum of 250 dives logged in a variety of conditions, as well as certifications in nitrox and decompression procedures.

I can't offer a solution to Internet sales. And I can't fix the continued effects that warmer temperatures, pollution and other phenomena have had deteriorating the ocean environment. Diving is still a vibrant and exciting experience that is a great family recreation, and that's key to the long-term health of the sport. Yeah, the reefs and marine life are not what they were when I started diving, but I still love it. For those just now experiencing the wonder of seeing a dolphin or a turtle that gives them a hello for the first time, it's a thrill they will remember forever. So let's give them the tools and training they need to become competent, confident and independent divers who will enjoy the sport throughout their lives.

As I have often been quoted saying, "safety is good business." But I'm concerned by what I see, and hope that these issues won't come back to haunt the current generation of diving. Still, there's time to make the adjustments and get the ship back on course. The industry needs to embrace proactive change. That starts with meaningful reform to training models that have gone askew. The best diving customer is an active diver. Not one who dropped out when his qualifications proved less than real.

Reality... it's a bitch.

Bret Gilliam is a 43-year veteran of the diving industry, with involvement in retail stores, resorts, liveaboards, cruise ships, manufacturing, publishing and hyperbaric medicine. He founded the training agencies TDI, SDI, and ERDI. and served as the Chairman of the Board for NAUI in the early 1990s. He has logged more than 18,000 dives in his career.

Legal Charges Scuttle Galapagos Liveaboards

a lawyer provides his explanation of the Buddy Dive drama

In attempting to get to the bottom of the claims, assertions, charges and countercharges made in the Buddy Dive closure in Ecuador, Undercurrent has attempted to get the facts from the parties directly. In this article, Undercurrent quotes the parties and one of their counsels, plus court and arbitration filings, and testimony. Undercurrent does not express any opinion about any of the claims or assertions, but provides the available information for evaluation by readers.

Operating a liveaboard vessel in the waters of a Third World country is not easy, especially if the owner is not a resident of that country. Aside from rules and regulations that may require ownership to be, at least in part, in the hands of a citizen of that country, some governments hassle rich foreigners, if they can get away with it. It's not unusual for payoffs to be required along the way. We have heard stories from dive operators in countries like Ecuador, Mexico and Indonesia about officials with their hands out, and stories from dive operators in Fiji, who must pay the chiefs to dive in their waters.

Ecuador is of particular interest, because for several years, officials seem to be determined to reduce the number of liveaboard dive boats and their freedom to dive the Galapagos Islands. We've heard complaints

about official corruption and required payouts. Researchers, journalists and filmmakers have documented scores of long-line fishing boats catching sharks, tuna and marlin in these waters -- where boat captains are all too happy to dish out greenbacks (the U.S. dollar is Ecuador's official currency) so that their poaching in the marine park goes "unnoticed."

All this is backdrop to the latest dive boat drama playing out in the Galapagos, where the Bonaire-based Buddy Dive-operated liveaboards, the *M.Y. Wolf Buddy* and *M.Y. Darwin Buddy*, were shut down by the Galapagos National Park Service (GNPS) in December, followed by Buddy Dive permanently stopping its Galapagos trips in January (see our February 2014 issue).

"I have been the object of abuse and breach of trust. All I got for the tourism operations was \$8,000 to subsist on."

When we got word of Buddy's closure, we heard two stories: the boats were being confiscated by the Ecuadorian shipyard that built them for failure to pay, or Buddy was trying to get the boats out of Ecuador to avoid handing them over to the threatening-to-sue shipyard. We contacted Paul Coolen, Buddy Dive's general manager in Bonaire, who confirmed they were rumors, but offered no further explanation. Either way, Buddy is no longer operating in Ecuador, and passengers who had booked future trips were transferred to other boats there.

We called the shipyard, Varadero Maridueña SA, to get their story. Our call was returned by the shipyard's lawyer, Sohar Romero, who claimed Buddy Dive was guilty of more than owing the shipyard money -- he cited coercion, fraud and money laundering as well. Ecuador will only give Galapagos travel and tour-operating credentials to people living in the country. According to Romero and numerous Spanish-translated-into-English documents he sent us, from court orders requesting seizure of the liveaboards to testimony in an Ecuadorean arbitration/mediation court, Buddy Dive apparently got around legal procedures by making two impoverished fishermen the official owners of its liveaboards -- who are now on the hook after things went sour.

According to the arbitration court testimony, Ecuador sponsored a contest in 2008 for fishermen to exchange their jobs for ones as local tour operator, and contestants could partner up with experienced tour operators. Two fishermen named Luis Culqui and Alfredo Bolaños, who both were having a hard time financially, got into conversation with Franklin Romero, a local tour operator (apparently no relation to the lawyer), and the three agreed to enter the contest together.

The two men testified that their group won permission by the government to start a tour operation in the Galapagos, but that Franklin Romero made them sign a series of documents, from operating agreements to mortgages for liveaboards to be built in Ecuador, that he didn't give them time to read, ask about or get a second opinion. Culqui testified that the documents had names of foreign investors on them, and that on their behalf, Franklin Romero would handle their activities in the Galapagos. One of the documents he signed was a marketing agreement, which was co-signed by Martinus Van der Valk, listed as representative of Sapias Holdings B.V. Van der Valk is also the owner of Buddy Dive. Besides Romero and Van der Valk, the other investors' names were the Antillean Finance Company B.V. and the Bonaire-based bank Maduro & Curiel's. Culqui testified that Franklin Romero told him that the mortgage documents were a mere formality as the bank had canceled the debt. "There was no objection on my part for I was confident that he knew all the right procedures," Culqui said. "So I signed the papers."

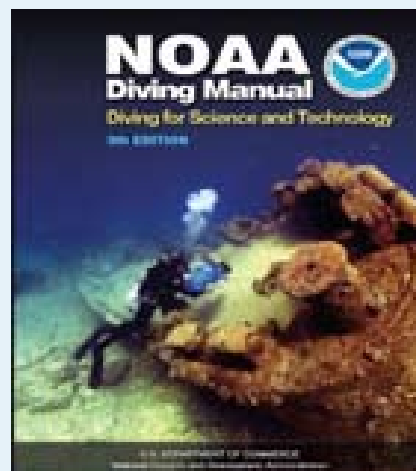
Now that Buddy Dive had the official Ecuadorian owners of its Galapagos branch in place, it could build its boats. Sohar Romero says Buddy Dive hired the Maridueña shipyard in July 2010 to build two liveaboards, made of aluminum. But after the boats were finished in 2011, Buddy Dive refused to pay \$3.9 million of the bill, contesting many matters, including a tax levy of 12 percent.

NOAA Diving Manual

For years, the NOAA Diving Manual has been a mainstay in the library of every professional diver and plenty of us serious divers, as well. Hands down, it is the industry's major, unbiased diving reference. Last published in 2001, it has been updated into the all-new Fifth Edition. The NOAA Diving Manual, in full color, with 875 pages, is the most detailed diving reference book available, yet written in lay language. NOAA, the acronym for National Oceanic and Atmospheric Association, has gathered more than 100 authors and reviewers from a diverse spectrum of experts in recreational, commercial, military, scientific and research diving, to address complex diving issues. They cover all aspects of diving, including new gear, operational techniques and details to help the diver dive safely. The technologies of rebreathers and mixed gas diving, including nitrox and heliox, are included (new to this edition are NOAA's EAN/Nitrox dive tables and rebreather checklists). Diving physics, physiology, decompression and diving medicine have also been

updated to reflect recent developments in the diving industry. This reference text is not just relevant for professional divers and NOAA staff, but for any sport diver who loves the sport.

Add this book to your library by going to www.undercurrent.org and purchasing it at Amazon (you can download the e-book version at Best Publishing at www.bestpub.com). At \$124, it's pricey, but this is one complete volume. In addition, our proceeds from this book's sales will go to coral reef-protection.



Romero also alleges documentation approving the purchase and transfer of boats from Maridueña to the ship owners (legally, the two fishermen) was falsified so Buddy Dive could take them without paying in full. Romero says that in April 2012, a judge ordered the liveaboards' seizure, but Buddy Dive's lawyers in Ecuador got the seizure revoked. That didn't deter Maridueña, which filed additional suits against Buddy Dive. However, Romero claims that during the trial, Buddy Dive's lawyers presented two deeds of mortgages on the boats that showed the owners as Culqui and Bolaños.

Besides using the fishermen as owners so it could run its dive operation, Buddy Dive had set up other companies in Ecuador to look legitimate, Romero charges in the timeline letter he wrote to *Undercurrent*. But he says that all the income generated from them was ultimately sent to the bank Maduro & Curiel's in Bonaire. Romero filed complaints with government agencies and forwarded documents to the boat's official owners, the two fishermen. According to their mediation court testimony, that's when Culqui and Bolaños found out they were named in eight lawsuits, and had multiple bank accounts listed in their names.

Bolaños testified that Buddy Dive's lawyers never told him about any of these trials. Only once had a lawyer approached him for his signature, saying there was nothing to worry about. He said Buddy's lawyers also made him sign a form authorizing them to defend him against a charge for money laundering. But he said he was told "it was a complaint from the Minister for Environment, malicious intentions that had no foundations."

Romero says he presented his complaint to the GNPS about Buddy Dive's illegal appropriation of dive tourism permits and permissions, but that it rejected his complaint. He says the permissive attitude of the GNPS's former director, Edwin Naula, allowed these businesses to thrive. But the GNPS got a new director, Arturo Yzurieta, last year, and he stopped operation of Buddy Dive's liveaboards in December. In a press release, the GNPS stated that the operators had not submitted semiannual reports on their performance regarding their environmental management plan, they had not presented environmental compliance audits, and they had not paid a required annual fee to the park.

That's when Culqui and Bolaños came forward and said they were being used by Romero and Van der Valk. "I have been the object of the abuse and breach of trust," Culqui testified on January 31 of this year.

“All I got for the tourism operations was \$8,000 to subsist on. Since I was no longer exercising my profession as a fisherman, I had to live on something. They cut all communication with us. Even the boat crew was not paid in December, but their office sent them to collect their salary from us.”

Romero says that during his filing process, Van der Valk tried to take the boats out of Ecuador to avoid the lien Maridueña had requested. But afterwards, when the GNPS made the injunction to stop operations, Buddy Dive’s boats were stopped by the port captain.

On January 17, Maridueña won its case to have the boats seized and were awarded \$3.8 million by the jury. (Buddy Dive announced it was exiting Galapagos 12 days later.) However, because the boat’s official owners are Culqui and Bolaños, there is no money to be won. Romero says that on February 10, the chief of Ecuador’s fiscal laundering unit went to Maridueña to seize the ships, and that the criminal procedure was initiated when Ecuador’s Environment Minister wrote to the Attorney General that there were “international mafias operating in the Galapagos.”

Romero says Van der Valk didn’t show up for his trial, and that Ecuador is considering arrest charges against him for money laundering, tax evasion and misappropriation. “But the results of the criminal process are unfortunately affecting my client, Maridueña, because the seizure of the ships will cause them to pass to the Ecuadorian state,” Romero told *Undercurrent*. “The two humble fishermen have no assets, and my client will lose money. Remember that Sapias Holdings, Buddy Dive and all those companies have disappeared from Ecuador and cannot be litigated because apparently they did not own the ships. It becomes very unlikely that we can, through legal actions, seize their goods. They changed legal representatives, and there is no place where you can locate the companies because they never had formal ownership or legal vessels.”

When we asked Buddy Dive to respond, Paul Coolen e-mailed back, “You are quoting the lawyer of a party in a civil court case against the owners of the mentioned ships, and he is trying to abuse the media to influence public opinion. We are at this moment not able to disclose facts because of several legal actions taken against this party and the lawyer. It seems, however, that we can inform you with a full story later this year.” When we then asked for details about the legal actions Buddy Dive was taking, and whether we could see the paperwork it filed in public court, Coolen did not reply.

Whether or not we hear back from Buddy Dive about its side of the story later, what’s known is that this is one big legal mess that made scapegoats out of two simple fishermen. And if Ecuador is indeed investigating “international mafias in the Galapagos,” any fallout from that will certainly affect divers.

– Vanessa Richardson

Gas-Integrated Computer Transmitters

why do we avoid them? and a few recommendations

Let’s admit it. We divers are a funny lot. Although we are often seen as being very adventurous, we are usually very unadventurous when it comes to equipment innovation. This hard-to-understand state of affairs probably stems from newcomers being taught by instructors who have their credibility invested in long-established ideas. New ideas have to be adopted by these usually older divers and instructors, and that can take time to diffuse into normal practice. For example, why do so many sport divers dismiss gas-integrated computers out-of-hand? A bit of history is in order.

Back in the early ‘60s, divers used tanks with J-valves. When the air was depleted, the regulator became harder to breathe. The diver then pulled the J-valve release, which allowed access to the last quarter of the tank’s supply; the regulator freed up and it was time to ascend. Then came submersible pressure gauges,

which were met with similar resistance. Some divers saw them as an additional failure point, thinking they could easily explode with so much pressure inside them. A legacy of that is seen today when trainee divers are still taught to hold the gauge away when they first turn a tank on.

Then came resistance to horse-collar-style buoyancy compensators. Many believed it was too easy to inflate them and they would inadvertently send a diver hurtling to the surface. When conventional BCs replaced them, divers resisted them because they might float an unconscious diver face-down at the surface (unlike the horse-collar that worked more like a life jacket). Nobody asked why the diver would be unconscious. Presumably it was because he had lost control of his buoyancy and hurtled to the surface.

Drysuits were another advance for cold-water diving, but again, some resisted that idea at first. True, there was an internationally publicized case of a British scientist snorkelling alone in a Scottish loch who became helplessly inverted and drowned in a few feet of water. However, few took into consideration that a diver who was warm and comfortable in cold water made better judgments, making it safer overall. They concentrated instead on what happened if air in the suit was not vented efficiently during an ascent.

In the mid 80s, diving computers hit the market, and boy, did they cause a fuss. Instead of a diver running his finger along the wrong line of a hard-to-read Navy dive table and coming up with the wrong answer, or instead of a diver misreading his watch and his depth gauge, computers timed the dive accurately, and calculated decompression or reduced no-stop times based on the diver's actual profile.

I remember doing a no-stop dive to 100 feet deep for 20 minutes with two other divers. I used my computer but they insisted their Navy table method was safer. They were bemused when I made a stop 10 feet deep and they did not, but my computer had registered that we had gone deeper than planned and dived

To Sharks, Divers Plus Lionfish Equals Food

We warned in last month's issue about how sharks and eels are now going after divers culling lionfish, and here's further evidence.

Jason Dimitri is a former North Carolina police officer who had only been diving for five months when he saw his first shark during a Grand Cayman dive trip on March 13. He and his buddy were at a site near Breakers, culling lionfish at 70 feet. They had seen a reef shark earlier, but continued to cull for 30 minutes when the shark suddenly appeared and bumped Dimitri, who was wearing a GoPro camera and carrying a container filled with lionfish.

Dimitri filmed three minutes of the shark repeatedly circling and bumping him, which he responded to by smacking it on the nose with his fins and spear. "I was just trying to defend myself," he told the *Caymanian Compass*. "I tried to stay calm and make sure I didn't bolt to the surface." Only when he dropped the lionfish container did the shark swim away.

Dimitri's run-in may have been the result of previous divers feeding sharks from spears, thus teaching them to associate lionfish cullers with food. That type of encounter is becoming more common, so Cayman officials are advising divers to stop culling and end their dives if they see sharks.

Steve Broadbent of Ocean Frontiers on the East End saw Dimitri's video and told the *Caymanian Compass* that the shark was behaving normally, acting "competitively" toward the diver and interested only in the lionfish as food. "As soon as the shark had deduced that the food was no longer present at the diver, she returned to the bottom and remained there." Besides aborting a dive, divers should use clear containment devices and drop their catch immediately if a shark or eel shows interest, said Broadbent. "The diver held on to his catch for an excessive length of time and led the shark to the surface."

The upside for Dimitri: After he posted his "Shark Attack" video on YouTube (www.youtube.com/watch?v=Mujmrv_KF24), it has received nearly a million views and media attention worldwide, and a Saudi prince even invited him to come shark diving in Dubai.

He says he regrets labeling the video "shark attack" and did not blame the shark. "I wish I had called it 'shark interaction,' but I can't change that now, unfortunately. I wouldn't want people to go out and try to harm sharks because of this." Dimitri says any YouTube ad revenue he gets will go to shark research and conservation efforts.

for longer than they thought. This Luddite resistance to the technology is something hard to believe in an age when almost every diver now uses at least one computer.

It didn't help that the first two electronic computers on the market suffered design problems. Orca's Edge used proprietary 9-volt batteries that it chewed through at a rate of knots. Some suffered faulty pressure sensors that caused incorrect computations of deco times, and bent divers brought some high-profile legal cases. The Decobrain used the rechargeable battery technology available at that time, and the gradual build-up of gases within the case during the charging process eventually caused all units to leak. These considerations caused many to shy away from the technology.



Suunto Vyper Air

Divers have been using conventional diver propulsion vehicles (DPVs) since the times of Cousteau. Many years ago, I met a young man from California who had perfected a system that propelled the diver via propeller nacelles and attached to the lower legs, powered by a battery that fitted to the tank. I tried a pair and they proved excellent. When I next met him, I asked him how things had gone. It turned out he hadn't used his devices because European divers had laughed at him when he strapped them on to his legs. They convinced him to do without them.

Later I got myself a Pegasus Thruster, a DPV that straps on to the tank and allows a diver to fly through the water hands-free, which means you have the opportunity to handle a camera. My Thruster has been borrowed by BBC wildlife cameramen because it gives them the chance to get smooth tracking shots. Other divers have laughed at me when they see me don my rig, but I laugh at them as I piss past them underwater, especially if there is a strong current.

Air-integrated computers have been with us for some time. Of course, they too were resisted at first. They made a prognosis of remaining air-time based on a previous breathing rate and the actual depth, but many divers denied that such information might be useful. They declared that they preferred to know the remaining pressure in their tank, as if that information was not available -- which, of course, it is.

Trained divers should certainly understand the concept of remaining air-time in minutes balanced against the total ascent time required, rather than rely on some pressure reading that requires an estimate of how long it would last. However, it took time for this advance to become accepted because of a general distrust in technology. That's ironic when we trust technology so much in so many other ways.

Old habits die hard. Despite initial resistance, air integration by radio transmitter finally took off in Europe. It's only just beginning to fly in America, where air integration by high-pressure hose, just like a traditional submersible pressure gauge, has been more popular.

I was recently aboard the *Truk Odyssey* and doing some deep dives with double tanks in Truk Lagoon. Each tank was independent from the other, and both regulators' first stages were linked to separate Suunto computers by separate radio transmitters. Another passenger on board stated that he could not believe I was diving without a "proper" pressure gauge. I retorted that submersible pressure gauges have more failure points because they have more O-rings and, well, one could even blow up in your face! (I was joking, naturally, though there might have been an instance or two years ago.)

Of course, there were some defects in gas-integrating transmitters when they were brought to market, notably an occasional loss of pairing between transmitter and wrist unit. Today's computers pair permanently with their wrist units, so the case of failing to get a tank reading underwater with one that needed to be paired immediately before diving has faded into the past. There was also talk of photographers' underwater strobe units interfering with the signal. I have never encountered that, and I've used many different strobe units combined with many different computers.



Scubapro Galileo Sol

If you have insufficient confidence in this modern technology, you could always take the redundant route as you do with other items of diving equipment. Two computers are always a good idea, so why not an extra transmitter? Otherwise, there is usually room on your regulator to have a mechanical pressure gauge for use as backup if you prefer.

You are much less likely to run out of gas if you know how long your remaining supply will last. I often witness divers looking anxiously at pressure gauges with needles on the wrong side of that ominous red line, worrying about running out of gas while close to the surface. Of course, such worrying increases one's heart rate and, therefore, the breathing rate. The diver who wants to do a five-minute safety

stop with a known 10 minutes of air-time remaining is far more relaxed, and gas can last a long time for a relaxed diver in the shallows, so safety stops often get extended. It is surely better to use remaining gas at the safety stop than to rush back to the surface. Of course, these computers allow the user to build in a chosen reserve, too.

Doug Krause of Oceanic/Aeris tells me that after a long incubation period, sales of gas-integrated computers using radio links to the tank contents are finally hatching in America. They are finally becoming acceptable. It's an unusual example of Europeans being ahead for once!

If you want to join the 21st century of sport diving, let me suggest some models I've tested and highly recommend. Thanks to the likes of Bruce Wienke and others working on computer algorithms that promise to keep us as safe as possible from a decompression injury even when doing multiple repeat dives, all the computers from major manufacturers test well.

Notable for wireless gas integration are the **Suunto Vyper Air** and its siblings: the wristwatch-like **Suunto D4i to DX** range; the **Scubapro Galileo Sol** with its large, easy-to-read screen; the soon-to-be-available new **Aeris** gas-integrated computer; and the **Oceanic Atom 3**, which allows for the possibility of gas integration with multiple tanks. (Be sure to get your dive store expert to show you how to choose one of the dual algorithms of any of these computers to suit the type of diving you'll be doing with it.)

Should you go for something like the **Mares Icon HD Air** with its engagingly colorful display and rechargeable battery, just be very aware that you must be confident to keep it fully charged between dives because such displays suck up a lot of battery power.

John Bantin is the former technical editor of DIVER magazine in the United Kingdom. For 20 years, he used and reviewed virtually every piece of equipment available in the U.K. and the U.S., and made around 300 dives per year for that purpose. He is also a professional underwater photographer, and most recently the author of Amazing Diving Stories, available at www.undercurrent.org

The Fastest-Growing Segment of Diving?

freediving "is to divers what snowboarders were to skiers"

Kirk Krack, who calls himself a "reformed Trimix instructor," says he is a total convert to freediving. For him, scuba -- and the tanks that come with it -- are a thing of the past. "Freediving has a yogasque meditational aspect to it. It's a much richer, rewarding way to experience ocean and its inhabitants. You come out feeling like you've done some work, but you're on a mental high, like a runner's high, whereas in scuba, you feel tired, primarily because of decompression stress. Scuba is like getting in a Hummer and driving through the forest, while freediving is like putting on a backpack and boots to hike through the

forest.” He is one of a growing number of divers seeking to test the limits of human endurance by doing freediving. It’s growing in popularity and attention -- both by the press and by the scuba industry. But while scuba diving fatalities have leveled off in recent years, freediving deaths are just starting to be officially tracked, and more than half of those fatalities are most likely going unrecorded.

Freediving fans like Krack love the adrenaline rush stemming from plunging, tank-free, to staggering depths, relying on weights or just gravity, and seeing how long they can remain underwater before what can be the hardest part: coming back up. Competitive freedivers have set records, such as diving to 597 feet on a single breath, and remaining static underwater for nearly 12 minutes.

And freediving is the fastest growing segment of the diving industry. That’s according to the presidents of three freediving organizations that hold competitions for experienced freedivers and training sessions for novices. Robert King, a Fort Lauderdale-based professional freediver who is vice president of AIDA International, says that while it’s still hard to get exact data for the fledgling sport, he estimates an annual growth rate of 20 percent. “It’s significantly higher than the entry rate for scuba, which is fairly flat.”

Krack, founder of Performance Freediving International, which offers freediving training, says more schools and instructors are popping up all over the place. We’re to divers what snowboarders were to skiers -- we’re going to revive their industry.”

Who’s Signing up for Classes?

Krack, who says he has trained 8,000 people in the past five years, including Navy divers and even Tiger Woods, breaks students down into three groups. “One third say they’re not divers, another third alternates between freediving and scuba but tends to do more of the former, and the other third are scuba divers who are tired of carrying gear but still love the water and travel. Typically, our students are younger than the average scuba diver, more outdoorsy, more into physical fitness, and more into the adventure of diving.”

But King sees a broad group of all ages, from age 18 to middle-age and older. He says age is not a detriment to freediving; in fact, it’s a benefit. “As divers get older, their heart rate slows down over time, and that’s advantageous for freediving. In fact, one female freediving champ named Natalia Molchanova is over 50 and beating 20- and 30-year olds. You can become very good at freediving in middle age and older. But it’s more athletic than scuba, and thus good for people who want to push themselves physically.”

And don’t forget the low cost. “Freediving is much less expensive, making it a double draw for younger candidates, says Neal Pollock, research director for Divers Alert Network (DAN), and a freediver himself.

Where the Classroom Are

Most freediving training (and even freedive-specific liveaboard trips) takes place far overseas -- top sites include Indonesia, the Philippines and the Red Sea. Finding a freediving course and/or instructor is getting easier in the U.S. (see our sidebar on page 18 about finding them online). Grant Graves, president of the U.S. Apnea Association, which oversees freediving competitions

Where the Freediving Instructors Are

If you’re interested in taking a freediving course, either in the U.S. or overseas, it’s getting easier to find an instructor. Here are relevant links to freediving agencies and schools:

*AIDA, international freediving agency: www.aidainternational.org/organization/international-instructors/find-instructor and www.aidainternational.org/organization/international-instructors/instructors-list

* Performance Freediving International, a group of instructors led by Kirk Krack: www.performancefreediving.com/team-bios

* SSI’s freediving program: www.divessi.com/freediving

* William Trubridge’s Vertical Blue school: <http://school.verticalblue.net>

Bret Gilliam Asks: Can You Get Bent From Freediving?

“Most divers would answer ‘no.’ But there is no requirement that you breathe compressed air from a scuba tank to manifest decompression sickness. The malady is dependent on time and depth, primarily,

and therefore expert breath-hold divers can, in exceptional diving circumstances, place themselves within a window of vulnerability.”

Read more of Bret’s article “Freediving Hazards,” which we just posted on our blog at www.undercurrent.org/blog.

nationally, says there’s an active training scene along the coasts -- Florida and New York on the East, and Los Angeles and San Francisco on the West. SSI offers freediving courses, and both Krack and Graves say PADI is close to announcing a specialty certification in it. In the Caribbean, Bonaire is a hot spot, as is Roatan, which hosts a Caribbean Cup competition each summer. William Trubridge, a record-holding world champion freediver, runs a freediving school named Vertical Blue and often leads courses at Dean’s Blue Hole at Long Island in the Bahamas; his next one is September 15-19. (Here’s how Grotto Bay Bahamas describes diving at Dean’s Blue Hole -- www.grottobaybahamas.com/deansbluehole.html).

Krack holds freediving courses at Jack’s Diving Locker in Kona. “I see many independent freedive instructors working with dive shops, renting their classrooms and pools, to offer courses,” Krack says. But take a course with a certified freediving instructor, not just a scuba-only instructor. “You need the person to understand the specifics of freediving,” says Krack. “The physiology, application of physics, and rescue and safety protocols are different.”

Topics Covered

In many ways, freediving courses are very similar to scuba training. Topics covered include safety, risks of hypoxic blackouts, understanding your equipment, and physics (pressure changes). What’s different is the physiology and training skills covered -- you’ll be breathing different underwater, after all, which affects ascents and descents. You will cover safety and problem management (what hypoxia is, how to recognize and handle blackouts at surface and at depth), freedive-specific equipment, and breathing (muscles used, types and at-home exercise) and physiology. “In freediving, equalizing is a lot harder, so we spend a lot of time discussing that,” Krack says.

King notes that you can’t freedive after scuba, because of decompression. “Rapid ascents in freediving are not safe after you’ve been doing a lot of dives with compressed air.”

You won’t see many dive shops promoting freediving, but Krack says it’s slowly coming around. “I started my training company in 2000 and back then, when I went to dive shops in Florida, I was seen as a cowboy. Freediving was associated with spearfishing. It was similar to getting Nitrox, a ‘witches’ brew,’ in the early ‘90s. Now dive shops are finally starting to understand it, because they see the trends, and they see their bottom lines.”

Dive shops are seeing that younger people entering freediving means continued growth for them. “The scuba industry sees us as competition,” Graves says. “But because we’re bringing more people into the sport, they should embrace us as family.”

Health Scares and Death Risks

Still, the dangers of freediving are clear. According to DAN, some 70 freediving deaths were recorded worldwide in 2012, up from more than 50 in 2011, and DAN believes many other deaths went unreported. Neal Pollock said the number of recorded deaths is likely only a quarter of all freediving deaths that actually occur (DAN’s last official tally of annual U.S. scuba fatalities, in 2008, came in at just under 120.) DAN has maintained a breath-hold incident database from 2004 onward

and it sees between 50 and 60 fatalities annually, with roughly half of them happening in the U.S. We are probably only capturing a fraction of the cases," Pollock says. "The lack of physical evidence associated with many breath-hold incidents makes it easy for miscategorization and, very likely, incomplete reporting."

High-profile freediving casualties include California surfer Jay Moriarity, who was the basis for the movie *Chasing Mavericks*, and French record-setter Audrey Mestre, who died in the Dominican Republic in 2002 while trying to emerge from a 561 foot-dive when a balloon she was going to use to propel her to the surface apparently failed.

At formal freediving competitions, only one death has been recorded in the last 20 years, according to AIDA. New York-based freediver Nicholas Mevoli was that casualty. He surfaced with breathing problems and lost consciousness during a competition at Dean's Blue Hole on November 17 and apparently drowned. AIDA officials said they believe Mevoli, 32, suffered a depth-related injury to his lungs. Freediving record holder Alexey Molchanov told the Associated Press that AIDA should also perform medical tests on athletes before and after diving. "(Mevoli) was pushing himself, and he had injuries from previous diving. Now we know that there are people who can push so much that they don't pay attention to lung injuries."

Pollock says the largest hazard in freediving is excessive hyperventilation. "While a small amount can substantially increase breath-hold time, it does so by reducing the margin of safety that exists between the normal urge to breathe (driven by carbon dioxide accumulation) and the level of oxygen in the body below which loss of consciousness can quickly develop. It does not take much hyperventilation to retain the crucial (irreplaceable) warning mechanism.

He says the freediving community tends to underplay hyperventilation as a hazard, and not identify it as such. "That possibly [increases] the risk in less-experienced divers who do not appreciate the fine line between reasonable and hazardous practices."

"The public perception right now, unfortunately, is 'How crazy is this sport?'" says Krack. "They don't understand we've spent years in training. As freediving is more understood and more people participate, they'll see it's not as crazy, there's a whole science behind it. When it's done properly, it's very safe. As soon as you equalize two or three times and go down 15 feet to see some reef fishes, you can call yourself a freediver. That's why scuba divers are primed for this market."

-- Vanessa Richardson

A New App for Coral Sea Diving

Bob Halstead is the pioneer of Papua New Guinea diving, and after diving and photographing the Coral Sea for more than 40 years, he knows a little something about the area. So his Coral Sea Fish Guide app, available on iTunes, is worth checking out.

With 2,000 color photos of more than 850 marine species (probably all of which Halstead has personally encountered), the guide is an easy way to identify and learn about reef fish, predators and critters in Papua New Guinea, the Great Barrier Reef, Solomon Islands, Vanuatu, New Caledonia and beyond. Whether you know what you're looking for, or need to place a name to the fish you've just seen, iPad and iPhone users can use images to quickly browse different species, or

search for species under their "Common," "Scientific" or "Group" name.

In the "My Reef" section, you can log your own notes or create a list of favorite animals seen on a Coral Sea dive. For hard-to-identify creatures, there's a "Rogue's Gallery" of photos and info about unusual marine life.

If you haven't had a chance to dive with Halstead in PNG and get his expert take on diving and his salty Aussie view of the world, then Bob Halstead's Coral Sea Fish Guide is the next best thing, and you'll still have a rich source of information for your next dive trip in those environs. Download the app for \$5 at <https://itunes.apple.com/us/app/bob-halsteads-coral-sea-fish/id809624974?ls=1&mt=8>

Flotsam & Jetsam

Coral Bleaching Makes Fish Behave Recklessly.

Fish on bleached coral reefs are fearless, according to a study in *Journal of Animal Ecology*. Instead of staying hidden at home, they stray out, making them easy prey for predators. Scientists at the Australian Research Council released fish onto both live and dead coral, and found that those on dead coral took more risks and moved further afield. While the smell of an injured mate prompted fish on live coral to take cover, their counterparts didn't react -- the death rate was 75 percent higher on dead coral. Apparently, dead coral masks key chemical signals, so the fish move away to access them.

Plastic Bag Fund to Fight Lionfish. The Cayman Islands supermarket chain Foster's Food Fair IGA is diverting \$20,000 it raised from environmental charges on plastic bags to help fight Cayman's lionfish problem. The funds will go toward lionfish culling tournaments organized by the Cayman United Lionfish League. Foster's has also agreed to sell lionfish fillets in its supermarkets, when stocks are available, as part of a push to put the fish on menus in Cayman homes and restaurants. The Cayman Islands Tourism Association hailed Foster's for its contributions and issued a press release stating, "The funds from Foster's Food Fair came from monies collected for plastic bags in the stores as per the 'BECOME' program that started a few years ago. Foster's Food Fair committed that all funds collected for the plastic bags would go back to the community. This generous initiative will allow for funds to directly support [lionfish culling] tournaments throughout the year."

British Diver "Sliced to Death" in New Zealand.

Bruce Porter, an English civil engineer who left his native Nottingham with his wife for a new life abroad, died after a catamaran's propeller sliced him

through the head during a diving trip. Porter, who was described by friends as an experienced diver, was aboard the *Pacific Hideaway*, which runs out of Tutukaka, on New Zealand's north island. It's unclear whether Porter was ascending from or descending for a dive, but according to the British website Metro, he was in the water near the boat when he got caught up in the boat's blades. He was pulled back on to the boat with severe injuries to his face. Resuscitation attempts were unsuccessful and he died soon afterwards. Kate Malcolm, who manages Tutukaka Harbor told Metro, "In my time here, we've never had an accident like this."

Thanks, Facebook Fans. On March 19, nine months after we started our Facebook page, Undercurrent reached the magic number of 10,000 "Likes." As a thank-you, we asked our Facebook fans to try to win a free annual subscription to *Undercurrent* by answering this three-part question: There was once a liveaboard dive boat that carried more than 200 divers --name: 1) the vessel; 2) at least one year in which it sailed; and 3) and at least two destinations it visited. Maryellen Gibson (Destin, FL) is our newest subscriber; she guessed the *Ocean Spirit*, which she went on back in 1990 to do diving in Honduras, Belize and Cozumel. We're now up to 10,500 fans. If you haven't joined us on Facebook yet, please do. We post extra dive news, videos and other relevant stuff at www.facebook.com/Undercurrent.org.

I Don't Care If a Shark Bit You, Get Out of My Bar.

A New Zealand man who was bitten by a shark calmly stitched up his own wounds, then joined his friends at the pub while still bleeding, and drank a beer before heading to the hospital. James Grant was spearfishing when the shark clamped down on his leg. "[I thought], 'Bugger, now I have to try and get this thing off.'" he said. He stabbed the predator with a knife and headed back to shore, where he sewed up his two-inch-long wound. Apparently the wound did not hurt much -- Grant went to the hospital only after stopping at a bar for a pint, but it was a quick drink because the bartender complained he was dripping blood all over the floor.

Undercurrent is the online consumer newsletter for sport divers that reviews scuba destinations and equipment. We accept no advertising, and have published monthly since 1975.

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