

undercurrent

The Private, Exclusive Guide for Serious Divers

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Turneffe Island Resort, Belize

concierge diving on a remote private island

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Dear Fellow Diver:

The Oceanic Society claims Turneffe Atoll "is the largest and most biologically diverse coral atoll in the Western Hemisphere." Tiny (20 room) Turneffe Island Resort sits on the atoll's southern end, on its own 16-acre sandy island. I arrived by resort boat just before dinner, and thanks to a nicely spiked rum punch made by Jorge, the affable resort bartender, I survived the choppy boat ride with a mild buzz.

The pot of complementary coffee quietly set outside my cabin revved me up the next morning. As a coffee lover, I requested strong coffee. My insulated carafe was labeled "strong coffee" and indeed contained it. But only minutes into my 9 a.m. checkout dive the next day, I felt more of a buzz, as in, "What the . . .?"

Unusually bright white, icicle-like fingers poked up from the substrate -- "stalagmites" with a tightly latticed surface. (My marine life mentor told me after the trip that it was a "white cone sponge" and "not in the book.") Ten minutes later, divemaster Marcel was letting a fearless little neck crab crawl over the back of his hand. On the rest of the dive, typical reef fish like queen angels, stoplight parrotfish, mutton snapper and squirrelfish were also easy to spot, though in somewhat sparse numbers (a puzzling exception was small sharp-nose puffers). Toward the end of the dive, a rough-head blenny posed for a macro shot. Except for my night



The Dive Shop at Turneffe Island Resort



dive, all were very mild drifts. Throughout the week, my divemaster was friendly Marcel McNab, a Belizean whose Gallic name set the mind on a journey of its own. After each dive, Marcel noted our depth and dive times. Our panga was driven by a Belizean whose English name was equally intriguing: Burley Bradley Garbutt. Both were family men in their 40s whose wives helped run the resort's kitchen. On my afternoon dive, Marcel offered a speared lionfish to a big green moray when a second large moray suddenly appeared. Instead of fighting for the fish, the two nuzzled, almost mugging for the camera like a pair of green goof-offs before one undulated away along the sandy bottom. Their antics had us all shaking our heads.

Our boat was the Osprey, a 25-foot open boat driven by a V6 200hp Yamaha four-stroke. A radio and safety gear were on board. She could hold 12 tanks but we never had more than five divers. I backrolled in, but the stern boarding ladder could not support me fully geared. Both Brad and Marcel carefully handled my bulky camera rig as coached, without a trace of a "we know, we know" attitude. I removed all my gear except my mask before boarding; Brad did the heavy lifting. This required timing when the winds whipped up two- and three-footers. Dive sites were only 5 to 15 minutes away. We returned to the resort to spend surface intervals to rinse off and use the bathroom. My camera was usually the only one soaking in the freshwater rinse tank. Reverse-osmosis-purified water throughout the resort was crystal clear, potable from all taps.

The next day started with a dive at the Elbow, the southernmost dive site in the atoll. I captured wide-angle shots of huge deepwater sea fans sifting the current at prominent locations. I was happy to see staghorn coral, a species decimated by disease in the 90s, and I was jazzed when Marcel pointed out a white-spotted toadfish, found only in Belize. On our last dive that day, I watched four eagle rays pass at the edge of open blue water. Wide-angle lens in place, I amused myself trying to arrange dramatic lighting on a refrigerator-sized barrel sponge, sea fans against the sun, and orange branching vase sponges with divers in the background. Another free-swimming moray eel made its way across the reef.

Weather in mid-April was problematic. Winds were usually 10-25 knots, which kept the no-see-ums and horseflies off, but stirred things up enough to occasionally feel surgy down to 40 feet or so. Clouds and wind, plus heavy rainstorms some nights, held visibility to between 50 and 75 feet. Water and air temps hovered around 80 degrees (77 at the Great Blue Hole).

Despite choppy conditions, my spouse returned from her afternoon snorkeling trip grinning ear to ear. While sipping sundowners on a beach swept bug-free by the wind, she told me that she had seen as many small reef fish as I'd seen on the deeper reefs, including clouds of blue tang and grunts. Carlos had guided her group to the edge of mangroves, where she watched a five-foot-long crocodile he had been feeding since it was a baby.

On a few calmer nights, we enjoyed sundowners on our cabin's screened-in porch. The cabin's pale yellow exterior had a cheerful Caribbean feel. Inside, its mahogany flooring and paneling almost glowed, highlighting the room's spotless cleanliness. It was air-conditioned and contained an overhead fan, plenty of 115-volt outlets and a mini-refrigerator. A small table served as my camera station. A door off the vanity led to a separate bathroom/indoor shower. A back door opened onto a large private outdoor shower, which featured a long drying rack. Each morning, the songs of birds overhead in the palm trees introduced the day, as if Walt Disney had designed the place.

It's amazing to think that the resort was ravaged when Hurricane Richard struck in 2010. Now its beaches and grounds are tended by staff that left not a fallen leaf or burnt-out bulb in sight. Carved wooden animals made my minute-long walk between the cabin and the air-conditioned main lodge a pleasant stroll. The outdoor pool was clean; even the "beach toys" were in good shape. I'd often see kayakers paddling to a nearby atoll, or a couple whizzing by on the Hobie Cat.

Before I could fall into a repetitive rhythm, we voyaged to the Great Blue Hole on my third day. Even with choppy seas, we made the 26-mile journey in relative comfort by 9:30 a.m. in one of the resort's two 48-foot cruisers. As we arrived, other dive boats, many from Ambergris Caye, were putting divers into the water, adding a commercial feel to the experience. I

looked at this as an exercise in buoyancy control and discipline more than a typical dive, so after photographing a stalactite at 135 feet (where it was once dry land), I didn't mind boarding with more than 1000 psi after a dark, rather featureless dive that lasted 37 minutes. For the unobservant, the Blue Hole is worth little more than bragging rights, but it is a unique experience in a unusual geological feature.

Then, on to Half Moon Caye Wall, where I saw my first sharks of the trip, black tips patrolling in the distance. Afterwards, we docked on nearby Half Moon Caye. Resort staff spread linen on picnic tables, where we feasted on fried chicken, tuna salad, homemade bread, pasta salad and fruit. I hiked a nature trail leading to a rookery of red-footed boobies, then departed for dive number three at Long Caye Wall. I spotted another black tip, and tarpon passed by like a string of slow silver torpedoes close enough to touch. Back on board, my snorkeling spouse told me about all the sharks she had seen, including a nurse shark, a Caribbean reef shark and a hammerhead.

Turneffe Island Resort, Belize

Diving (<i>experienced</i>)	★★★★
Diving (<i>beginner</i>)	★★★★★
Snorkelling	★★★★★
Accommodations	★★★★★
Food	★★★★1/2
Service and Attitude	★★★★★
Money's Worth	★★★

★ = poor ★★★★★ = excellent

Caribbean Scale

Maui Boat Captain Fined for Diver's Death

A Lahaina boat captain was ordered to pay \$4,000 in fines after pleading guilty on April 30 to negligent homicide and other charges in the death of a diver who was struck by an inflatable boat in waters off Lanai two years ago.

The *Maui News* reports that Eric Olbrich, 44, of Lahaina also was ordered not to operate a vessel within a mile of Lanai as part of his one year's probation. He was sentenced after pleading guilty as charged to the misdemeanor charge of third-degree negligent homicide. He also pleaded guilty to the violations of careless operation of a vessel, operating a vessel in excess of speed restrictions within 200 feet of a diver's flag, operating a vessel in excess of speed restrictions within 200 feet of a

swimmer and operating a vessel within 100 feet of a displayed diver's flag.

The death occurred the morning of July 31, 2011, when Lanai resident Alan Amoncio, 51, was freediving just outside the break wall at Lanai's Kaunalapau Harbor. Amoncio's wife, Kittrick, was diving with him when she saw the boat owned by Ultimate Rafting quickly approaching the harbor entrance. She was 50 to 70 feet away from her husband when she saw him surface and saw the boat drive over him. Alan Amoncio had marked his position with a red diver-down flag with a diagonal white stripe, according to court records, and he suffered fatal injuries from being struck by the boat propeller.

As part of his sentence, Olbrich also was ordered to pay \$8,483 in restitution and \$275 in fees.

Family-style dinner that night was at 7 p.m. as usual, following happy hour at the outdoor tiki bar (beer and wine are \$4 to \$5 a glass; liquor starts at \$8 a shot and cocktails are \$12!). Dishes were brought to the three large tables by the kitchen staff. The guests, about 20 in all, were a mix of outgoing Canadians, French and Americans, mostly professionals, and some children. Conversations were friendly, creating a cordial and relaxed atmosphere. That Turneffe Island Resort is a fishing (mainly catch and release) as well as a dive resort made for contrasting perspectives. The pleasant thirty-something management team consisted of Belgian Alain Allemeersch and his Israeli-born wife Maya Gilgal, who ate with the guests. How they met (at a dive resort) and overcame their families' barriers (she's Jewish, he's Catholic) was interesting.

Breakfast was served at 7:30 a.m. I helped myself to juices such as pineapple and freshly-squeezed orange juice, papaya, cantaloupe, melon, watermelon and pineapple, and cold cereals. Staff brought eggs made to order and/or a daily special such as banana pancakes, sour cream coffee cake, cinnamon pecan waffles or French toast. Lunches were mini-dinners, like pork and plantain fajitas, grilled chicken Caesar salad, fish and chips, or pizza. I could help myself to coffee, tea, lemonade and snacks throughout the afternoon. Dinners featured entrees such as red snapper, coco soup and ginger carrot bisque, followed by a grilled pork tenderloin smothered in Jack Daniels apple sauce and roasted garlic mashed potatoes. The tomato mozzarella pie on the night of my Blue Hole trip was my favorite. Desserts I wanted more of included a coconut caramel pecan pie, tangy strawberry margarita pie and a rich carrot cake.

On my fourth full dive day, we returned to the Elbow. Just as I was musing about declining fish densities throughout the Caribbean, I drifted into a huge school of horse-eye jacks, surrounded by big eyes and yellow tails. On the 11 a.m. dive, I switched to a 105 macro lens and captured portraits of yellow and bluehead wrasse, blue-striped grunt, four-eye butterflyfish, honeycomb cowfish, bicolor damselfish, doctorfish, porkfish, fairy basslet, butter hamlet, another hawksbill turtle and a spotted moray or two. At dive's end, we handed a couple of anchors we'd rescued to a group of local fisherman.

After lunch, I photographed polyps protruding from a pale yellow, smooth flower coral and a three-foot barracuda that was shadowing me. My macro lens couldn't do justice to another big staghorn I came across, so I captured delicate translucent polyps emerging from the branches. I enjoyed seeing a loggerhead and one of the cutest fish in the sea, a little bridled burrfish, its puppy-dog eyes filled with a galaxy of iridescent flecks. Marcel speared a large lionfish, attracting the barracuda. It ripped the lionfish off the spear, heading off with the entire thing.

Even with my critical eye as an undercover Undercurrent reporter, making hundreds of dives at Undercurrent favorites over a number of years, I slowly came to view Turneffe Island Resort's on-shore diving facilities as among the best in the Caribbean. Compressors, tanks and rental gear storage areas were behind the scenes. The "dive shop" contained nothing for purchase (limited items were available in a T-shirt shop). Its exterior had the same look and feel as the cabins. Before or after dives, I could get water in a room decorated by a hand-painted mural featuring local marine life. A painted dive site chart hung outside. I suited up on a large patio shaded by overhead lattice, sitting on a varnished deck chair. An adjacent breezy drying room offered plenty of pegs for the BCDs and regs, with shelves for bags, fins and masks. After a dive, I'd rinse off in the freshwater shower next to the drying room, and churn my



Our Writer's Cabin at the Resort

The Resort's Off-Putting Documents

One of the unique aspects of Turneffe Island Resort is also of its worst. I understand the need for rules, regulations and limitations, but unlike any other place I've stayed, the resort's pre-trip orientation and policy forms supposedly had to be agreed to, signed and faxed back to its rep in Houston even prior to confirming our reservations. One of the policies read, "No alcohol is allowed to be brought to the island. All alcohol must be bought and consumed on island." The catch is, although meals and beverages are all inclusive, alcoholic beverages are not, and they're pricey.

Another sheet required answers to questions that included, "Any prescription medication currently being taken?" and, "As a SCUBA diver have you ever suffered from" conditions that included asthma and diabetes. I understand their concern for their guests, who are going to be 35 miles offshore from Belize City, but my reaction to all this was WTF, mind your own business! I wondered whether the resort could guarantee the sort of privacy regarding personal medical information that is required in the U.S. I wondered whether the resort would line up our bags for inspection upon arrival, or whether the house-keeping staff would snoop through my baggage in the room during my stay. I'm a privacy advocate, in case you couldn't tell, and the whole thing made my blood boil.

Now for the good news. First, Caradonna, the travel agency I used, had already confirmed my reservations. Second, having been cleared for diving by my physician at my last annual visit, I assumed I could take responsibility for my own health, revealing as much or as little as I thought prudent, without giving those items a second thought. And third, not wanting to be dishonest to save a few bucks at the bar, I let the resort's agent in Houston know that I wasn't comfortable with the "only purchase alcohol here" policy. She emailed to say that as long as I didn't bring containers to the pool area, I could BMOB. End of mini-drama.

Throughout my stay, I was discreet about any use of booze not purchased at the bar. Having seen episodes of the TV docu-drama *Locked Up Abroad*, I didn't want any local legal hassles. Even now I'm not going to admit to anything or advocate any illegal conduct, but you can come to your own conclusions. There was no inspection of baggage, and I never felt anyone at the resort went into my closed suitcases while I was away from the room. Calculating the per-drink cost of a single liter of Crown Royal at \$12 a shot -- but bought duty-free in the U.S. on the way down for \$25 -- I'm making a big deal out of this because if you decide to go to this resort, you could learn from my first-hand observation, which could save you more than \$350 in bar tabs and tips alone.

-- S.P.

suits in a large container filled with a clean-smelling sanitizer. Suits were hung on a long bar running next to the drying room, using one of the plentiful specialized dive gear hangers, all just a few steps from the dock.

My only task was to make sure I carried my mask and fins to the boat before a dive. Brad and Marcel rinsed BCDs and regulators after every dive, and made sure everything was ready for each dive. Neither scolded for tardy arrivals; they'd knock at a cabin door instead. Neither would let me help with the chores. When I started to lift an empty tank at the end of the dive onto the dock to assist Marcel, he asked in a friendly way to let him do that, because, as he said, this was "your vacation."

On Thursday's morning dive, I stared at a hammerhead off in the blue. Marcel estimated its length at 14 feet. At the end of the dive, both the dive and snorkel groups experienced "wow" moments. Marcel and I saw a swirl of fish in the distance. Finning over, we entered a vortex of hundreds of permit. We eventually surfaced in a wide circle of small fishing boats. Brad said we just missed a real show -- a fisherman had hooked a permit, but then a shark tore into it, triggering a feeding frenzy involving nearly a dozen sizable sharks, all seen by the divers already on the boat. That adrenaline rush energized me enough to snorkel off the long main dock between dives. Brad warned me not to swim on the side bordering nearby mangroves; in the past, a small saltwater croc had snapped at the fins of snorkelers. But the

bottom of the other side of the dock held attraction enough: It was carpeted with hundreds of upside-down and mangrove upside-down jellyfish. Some looked like little birthday cakes studded with wobbly blue candles. Moments into one of my second morning dives, I came across a humongous southern stingray half-buried in the sand, measuring some eight feet from nose to tail tip. Another hawksbill turtle sighting was followed by Marcel pointing out a dainty juvenile spotted drum. A pale branching anemone displayed a ghostly beauty.

I did a night dive after dinner. Marcel told us our lights would attract what he called blood worms. He was right. Thousands of small, fast-moving creatures swarmed around my underwater light. Switching to my red beam cut the swirling mass tenfold. The red light made the eyes of the red night shrimp I photographed shine like beacons. The star of the show was another white-spotted toadfish. The bewhiskered, big-lipped rarity hunched across the sandy bottom in fits and starts.

The dives on my last day were morning dives. The first included another hammerhead. I shot a tiny solitary gorgonian hydroid attached to a gorgonian's spine. It resembled a delicate purple-shafted parasol with bare, curling ribs. After my last dive, I found Brad and Marcel flushing divers' BCDs internally, sluicing fresh water into the corrugated exhaust hose. I was the only one witnessing their professionalism -- it wasn't for show.

Looking back, I'd have to say that typical reef fish were not plentiful -- about on par with much of the Caribbean these days. Though the diversity was impressive, the reefs themselves were a bit ho-hum. Most were on the edge of a sloping ledge, between 45 and 75 feet (nitrox territory), without the topographic excitement of swim-throughs, deep walls, pinnacles or dramatic chutes. The cloudy weather and stirred-up water couldn't hide the drab browns and greens that prevailed.

I felt that I'd seen enough for the week, but couldn't let go of my spouse's snorkeling stories about clouds of blue tang and big schools of grunts. So after lunch, I joined her on a guided snorkel trip. The water was choppy and the sky overcast, but I saw more sergeant majors and grunts than on my dives, and this was the only place I saw a red-lip blenny and long-spined urchins. Back on board, Carlos passed out towels and orange slices, as on my dives. Alain later said we could have dived any of these shallow areas; the divers only had to agree and ask. OK, live and learn.

Unpacking back home, I stared at the dive log I had received from Marcel. A large spreadsheet listed each dive, the depth, time, site, main things sighted and more, and a chart of the resort's dive sites. It will be a while before I can afford to return to Turneffe Island Resort. If I do, I'm pretty sure it will still be holding my rating as top concierge diving resort in the Caribbean.

-- S.P.



Divers Compass: My seven-day trip set me back a hefty \$3,760 for me and \$2,975 for my snorkeling spouse, plus about \$400 in tips, and \$150 for my 15 nitrox dives; pricing included all meals, a private cabin, my dive package (Lighthouse Reef / Blue Hole trip included), taxes and all transfers . . . Additional dives are \$99 each, but kayaks, a Hobie Kat and two guided snorkeling trips per day are included . . . Airfare for a one-stop United Airlines flight from the Midwest through Houston was \$1,020 plus extra baggage fees; the airfare already included a little over \$30 in departure taxes per person . . . Resort staff picks you up at the airport and transport you to the dock, where the lodge boat carries you to Turneffe . . . Use the fixed price ranges provided by the resort, not the percent of your bill, as your tipping guide if you want to

Key Largo, Maui, New Zealand . . .

maiden voyage kinks in Thailand, a rude photo pro in Bonaire

I like to keep you abreast of developments at popular destinations and new opportunities, and of course, we have cautioned in the past about rushing to board that new liveaboard in a new location. Last summer, the maiden month of voyages on the *Carib Dancer* faced all sorts of problems, and had plenty of unhappy divers (read our story about that in the October 2012 issue). The *Thailand Aggressor*, which also just got underway, has its headaches, says Gale French and Shaya Zucker (Austin, TX) of their April tour. "We just returned from a seven-day voyage on the 'new' *Thailand Aggressor* in the North Andaman Sea. The first four days was diving around the Similan Islands. The 'yo-yo' divemasters searched to show the divers something. There were no schools of fish and very little sea life, just huge underwater rocks and boulders. The famous Richelieu Rock dive site had some sea life, mainly sea anemones on the rocks. There were nine liveaboards anchored there, and a traffic jam of divers underwater. During the entire trip, we did not see a shark or a manta ray. We saw just two turtles, few tropical fish, some small sea fans, and no whale sharks or coral reefs. What we did see were commercial fishing boats at night in the national park . . . We were all appalled with the conditions of the boat. The toilets and water stopped working for two days out at sea. After they started working again, the cabins and hallways smelled like sewage. The nitrox mixes were never consistent, so the additional fee charge for nitrox was dropped. The one person diving air found that nitrox had been mixed into her tank, so she had to analyze her tank each dive, but never had a reading of more than 21 percent air. The inflatable skiffs were small and unstable for entry to and exit from the water. After nearly sinking in the skiff, the entry into the water was changed to a grand stride. Divers were instructed to swim away from the boat "as fast as you can" to avoid the propellers. There was no ladder off the back of the boat, the rinse-off showers were scalding hot, and the dry-off towels were never washed. Gear was tossed and piled into the skiffs when exiting the dive sites. One couple canceled their second week on the boat due to the disastrous boat condition and lack of sea life . . . Upon returning home, we sent complaints to the *Aggressor* owners. Their response was they were sorry that our trip didn't give us the full 'Aggressor experience.' Their letter did not fully address our list of safety concerns. They sent vouchers for \$1,000 off another *Aggressor* trip to be taken within the next 12 months."

Elizabeth Russell (West Mifflin, PA), aboard on a subsequent trip, writes, "Just got back from the South Andaman Sea itinerary. Gale and Shaya hit the nail on the head about the condition of the boat. We booked cabin 1 and ended up in cabin 9, due to lack of air conditioning in the former. The sewer backed up several inches into our shower room. We had a sporadic water supply for two days. I'm just glad we didn't do their itinerary. At least we only had one other liveaboard at Richelieu Rock's mooring site.

Luxury Safari in the Maldives. The Maldives now boasts the largest "safari yacht/dive boat" on this planet. The Polish Company Scuba Spa has just launched a 167-by-37-foot craft. Its ad states, "Exclusively designed around your total well-being, Scubaspa combines scuba diving on board a luxury safari vessel, immersing you in one of the most beautiful and inspiring oceans in the world, while at the same time offering a comprehensive range of the finest treatments in a luxury spa. Every experience, delivered by a team of professionals, is created to give you deep relaxation, tranquility and joy." Rates begin at \$2,000 for a week, and the maiden voyage is this month. But you know what we think about maiden voyages, or a month of maiden voyages, for that matter. And a "spa boat"? (www.scubaspa.com)

Buddy Dive Resort, Bonaire. It gets a lot of return business, thanks to its shore diving and its early innovations in providing rental vehicles to tourists and a drive-through air station, but one *Undercurrent*

subscriber who stayed there four times says there may not be a fifth, thanks to the photography pro's attitude issues. He "seems bent on criticizing camera equipment that he doesn't provide, and photographers who don't seek his opinion. I have been insulted, reprimanded and shouted at over the past three trips, even when I have quietly rinsed my cameras at the docks with my 13-year-old son. I cannot seem to escape his unsolicited negative comments. Not much for repeat customer satisfaction or interpersonal skills! It is a shame to have a good resort tainted by a rude instructor." Buddy, are you listening?

(P.S.: We get reports of gear being swiped from balconies, which is not an uncommon problem on the island, so don't leave your stuff unattended at any Bonaire resort.)

Mike Severns Diving, Maui. Owner Pauline Severns keeps on performing at the highest level year after year. Wayne Joseph (San Mateo, CA), there in March, says, "Pauline, a marine biologist, and her crew give

Lionfish Update: The Good and Bad News

At a recent event sponsored by the Reef Environmental Education Foundation (REEF), I learned firsthand why this invasive species is so successful in the Atlantic and Caribbean. As REEF's executive director Lad Akins dissected one, its fitness was revealed. Large fat deposits allow the fish to survive long periods without food. Thirteen venomous spines line its dorsal ridge, plus two pelvic and three anal spines. A sophisticated swim bladder allows it to hover near prey, and long fins can herd it. A maw so large that it can expand to gulp animals its own size, and worst of all, hold huge rafts of eggs. Lionfish spawn every three or four days, releasing two flotillas of up to 40,000 eggs that males quickly fertilize. The egg masses float to the surface, and may have some element binding them together that keeps them from being preyed upon.

This apex predator has no competition in the Atlantic and Caribbean. No fish or crustacean eats it, despite attempts to feed captured lionfish to grouper and snapper. I've seen piscivores gobble down chopped-up lionfish (spines removed) offered by divemasters, but so far, the big fish eaters don't go after living lionfish. Indeed, there is debate about the wisdom of hand-feeding these nasty fish to the big guys. Akins showed an image of one diver who nearly lost a finger to a barracuda who had been conditioned to expect handouts. In *Invasive Lionfish: A Guide to Control and Management* (available for download at www.REEF.org), James A. Morris cites studies that make clear how problematic this practice is in conditioning fish to go after divers' fingers. Akins noted that success of these invasive animals may owe much to how they got here in the first place, probably as aquarium fishes. That means they survived capture in the Indo-Pacific, transport and probably a pet shop -- a journey that only the strong survive. In addition to their particular genetic robustness, the lionfish here seem to have far fewer parasites than their siblings in home grounds and, of course, no predators. Worst of all, no one knows yet what keeps them in check in the Indo-Pacific.

That's the bad news. The good news is that consistent culling can keep lionfish populations controlled. Every lionfish removed means more native fishes remain. How many is enough? Models vary from 15 to 65 percent removal of adult lionfish as ideal, which is virtually impossible, given the range of the creature. However, sites in the Florida Keys, Bahamas, Cozumel, Caymans, Bermuda, Puerto Rico and Bonaire with active lionfish hunting supported by marine parks and government agencies are succeeding in keeping native biomass sustainable. The other good news is that lionfish meat is delicious. As long as the creatures are not culled from a ciguatera hotspot, the lean white meat makes a mean sushi, fritter or steak. Caymanian bumper stickers tout "Put some sting in your ting" while Bermudians say "Eat 'em to beat 'em." In Bonaire, the Japanese restaurant Osaka offers the Bonairean Caterpillar, a decorative lionfish sushi garnished with avocado. REEF sells *The Lionfish Cookbook* for home chefs, and according to the New York Times, some restaurants stateside offer invasive species on their menus (Miya in New Haven, for example, has an all-invasive menu of sushi).

Sport divers can help. Many dive shops and organizations sponsor training in safe capture and handling, and lionfish derbies have removed thousands in one day. Find out more at www.reef.org. PADI offers a lionfish hunting certification. Roger Haug of Habitat Bonaire tells me the shop there is starting dedicated lionfish dives, that let divers search for and divemasters capture the creatures.

Mary "Mel" McCombie is a professor at Trinity College in Hartford, CT, and a REEF board member.

great dive briefings, describing what critters and marine life interactions we may see at each site. It had been about five years since I last dived with them, and Pauline still has as much interest and excitement with her dive briefings as she did 25 years ago. I saw a flame wrasse, anthias, frogfish, Hawaiian lionfish, octopi, turtles, different nudibranchs, and one eel that just had octopus for breakfast and still had part of one tentacle around its head. I encountered whales and a pod of dolphins on our way to and from Molokini." (www.mikesevernsdiving.com)

The Molokai Crossing. I should also mention the unique diving around Molokai, where rough water means dive boats from Lahaina rarely reach it (in my scores of dives off Maui, I made it only once). Jeff Renner (Sammamish, WA) made it in April with Lahaina Divers, and says, "The crossing to a small pinnacle off the north end of Molokai was rough, with seven- to 10-foot swells, but Sean, the captain, handled it with aplomb. We were well briefed by our guides for what would be a demanding entry into choppy water with a significant current. The dives were amazing. The coral and fish alone are well worth the dive. But within a couple of minutes, we were heading away from the pinnacle into blue water and saw sharks -- hammerheads and Galapagos, certainly more than a dozen on the first dive, and at close range. One Galapagos probably approached me within 25 feet. Good photo op! On the second dive, there were probably a dozen. The dive guides could make more regular 'air checks.' A mix of enthusiasm, fatigue (I haven't been able to dive more than a half-dozen times in the last year) and perhaps old, slow fins caused me to use air faster on the Molokai dive. But I compete in triathlons, so I don't think my overall conditioning was an issue." (www.lahainadivers.com)

Conch Republic Divers, Key Largo. This Florida Keys town has become the most popular wreck diving site in the U.S., and Terence Taylor (Lutherville, MD) had great dives with Conch Republic Divers in February. "Specific nitrox percentages were available to accommodate each wreck -- the *Spiegel Grove*, *Duane*, *Eagle* and a few others. Typically, we dove a wreck first in the morning, and a shallow wreck or reef in the late morning or early afternoon. The first several dives were fairly difficult, with six-foot waves, strong current and low visibility -- not the place for a novice. We were fairly horizontal on the downline, and one diver lost her mask on the safety stop due to her snorkel. The crew was fabulous, laying out proper lines, making the dive as reasonable as possible (dives were canceled the day before I arrived and several days following my departure dives). On my third and fourth days, the seas calmed to four feet, and the visibility improved to 30 feet. The last morning the seas calmed, and we had 65-foot visibility on the *Eagle*. When it's calm, it would be excellent dives for all divers. Conch Republic worked with other dive ops that had only a diver or two in order to get enough for the boat go out. They called all of us several times, and developed a three-dive agenda that started at 10 a.m. to accommodate everyone's priorities. I brought my own equipment, including tanks, and they happily hauled my equipment around, and reasonably dropped the trip price. I did nine dives in four trips, and the price ran about \$365, including six 28-percent nitrox fills. The 38-foot *Republic Diver* is not set up for photographers -- no photo table, but there was a photo rinse tub. Since the boats only had five to 11 divers, there was plenty of room on the front shelf for my dry items and camera. We were just at the fringe of the season, so a full complement of divers would be problematic." (www.conchrepublicdivers.com)

Dive Tutukaka, New Zealand. There's spectacular diving in New Zealand, and Paul Pruitt (Half Moon Bay, CA) was there in March (the equivalent of our late September), when the visibility ranges from 60 to 120 feet, and the water temperature from 62 to 67 degrees. "Dive Tutukaka is an outstanding operation that serves New Zealand's best dive site, the Poor Knight Islands, three hours north of Auckland. Excellent dive boats are matched to the divers' ability and desires. They stress the cold water, but to those of us from Northern California it was almost tropical; winter diving I am sure is much colder. We wore 5-mm suits but no hoods. Poor Knights is about an hour-long boat ride from the harbor in Tutukaka. They rent everything needed, or mix and match with your gear. The area is pristine, with every size of marine life. The biggest surprise was the three-foot stingray resting in the sand between walls of the reef. Meditation Rock is the living aquarium of the South Pacific, with corals, fans, sponges, nudibranchs, worms, and tropical fish.

Diving in the cave is a special experience. Micro heaven, schools of tropicals that should not be here, but the East Australian Current (think *Finding Nemo*) is the water river that flows just off the islands and delivers tremendous variations of life to their protected bays and caves." (<http://diving.co.nz>)

Until next month, I wish you good diving.

--Ben Davison

Is Your Dive Computer Correct?

for depth and temperature, it may not be so accurate

Your diving computer monitors and calculates your decompression schedule for each dive, based on continuous measurement and recording of pressure and time, and the depth displayed on your computer is an interpretation of the pressure measured. In the past, studies have discussed how the conversion of a pressure-to-depth estimate can be affected by environmental factors, like altitude. But what about factors like temperature and salinity?

The European standard used in many dive computers largely overlooks the fact that total accuracy with regard to depth can only be achieved through converting pressure readings in a combination of measured physical parameters, mostly water density and temperature. Only Cochran computers are capable of automatically adjusting for salinity changes. Most dive computers don't have that capability -- they have assumed calibrations for water density built in, letting the user switch between "freshwater" or "seawater." And almost no manuals don't explain their assumptions for pressure-to-depth conversions.

Elaine Azzopardi and Martin Sayer of the UK National Facility for Scientific Diving in Scotland wanted to investigate how dive computers display depth when exposed to a number of pressures, and when set to seawater and freshwater modes at typical densities in both water types. Many computers also display water temperature, so those recordings were also studied.

The Testing

They bought 47 models made by 14 different manufacturers (Apeks, Beuchat, Buddy, Citizen, Cressi Sub, Delta P, Mares, Oceanic, Scubapro, Seeman, Suunto, TUSA, Uemis and Uwatec), and each one was immersed in a tank of either seawater or freshwater. The tanks were placed in a standard recompression chamber, which was compressed to a simulated depth of 165 feet. Then pressure was released to the depths of 130 feet, 100 feet, 65 feet and 30 feet before surfacing. Five to eight trials of each test were carried out in both freshwater and seawater. After each test, the stored dive profile of each computer was downloaded for analysis.

At the same time, the temperature tests were carried out over a simulated range, in water ranging between 50 and 60 degrees Fahrenheit. As before, the computers were downloaded after each test; however, downloaded temperature data was not recorded or displayed in a uniform manner between different brands of computer, or even between different models of the same brand, because not all downloads gave the maximum and minimum temperatures recorded during a dive. A number of brands -- Mares, Oceanic, Citizen, Beuchat, Seeman Sub, Scubapro and the Aladin Pro Ultra -- only gave the minimum temperature recorded during a dive. Suunto downloads gave the temperatures at the start and end of the dive, as well as at the maximum depth, although occasionally supplemental information could be obtained from the temperature readings in the profile list. Cressi Sub, Tusa and Apeks computers only gave the water temperature at the maximum depth. Most of the Uwatec models, except the Pro Ultra, gave a temperature profile throughout the dive, as did the Delta P and Uemis

Cause of Death: A Deteriorated Mouthpiece?

Diver safety improves when we can learn the specific causes of accidents and deaths. Those don't get publicized in the U.S., but in other countries, especially those using the English system of law, do report on causes and, as you'll see in this case, are very helpful in preventing future mishaps. More specifically, traveling divers are more frequently renting equipment abroad, and while reputable resorts provide well-kept gear, problems can happen. In this case, the most unsuspecting piece of gear -- a regulator mouthpiece -- was the culprit.

* * * * *

A coroner's jury in the Cayman Islands returned a verdict of "misadventure" after hearing details surrounding the death of local diver Pamela Langevin in March 2012. Scott Slaybaugh, who is in charge of the diving program at the Cayman Islands Department of Environment, and qualified in diving safety and equipment repair, had been asked to examine the equipment used by Langevin when she went with a buddy on a shore dive from behind the Cracked Conch in West Bay. He said Mrs. Langevin's dive computer showed her having been in the water for 34 minutes, to a maximum of 63 feet, in a combination that was generally safe to prevent decompression illness. However, there was a rapid ascent from 30 feet, which was inconsistent with safe diving practice. The regulator was mechanically functional, although it appeared in need of servicing. The brass filter between the starter and the first stage of the regulator was corroded. Inhaling through the second stage required more effort than usual, Slaybaugh explained, although it was not inherently dangerous for shallow dives.

The most significant defect was the mouthpiece, which was badly deteriorated and had a tear more than half-way around the circumference on the bottom. It is possible to breathe through a regulator with a torn mouthpiece, Slaybaugh said, but there is risk of inhaling water, which may result in coughing or choking. Ideally, the diver should switch to the back-up regulator. He indicated that sudden ascent may have been preceded by panic after inhalation of water.

Judith Steinbock, Langevin's dive partner, said they had been returning to shore on a gradual ascent. She received no indication from Langevin that she wanted to go up, but when she looked again, her friend was on the surface, so she went up. She observed that Langevin was using her backup regulator and was in distress. She was wheezing and her speech was laboured. Steinbock had difficulty reaching her because of the waves. She got to Langevin and held her head up, but her friend was unconscious at that stage. She was kept on life support until the next day when a series of tests confirmed she was brain-dead. The autopsy showed that her lungs were heavy, weighing 1,650 grams when the expected weight would be around 850 grams. There were also tears in the bottom of the right lung.

Steinbock said she rented her dive equipment, including air tanks for herself and Langevin, from the dive company Sun Divers. Langevin had her own BCD and regulator, but when she attempted to assemble her equipment and they checked each other's gear, there was a hissing noise. As a result, Langevin received a BCD and regulator for free from the dive shop attendant. They again assembled the equipment and checked it but not minutely; just the air flow, which seemed OK.

Sun Divers attendant Steven Sheed said he checked the equipment visually and it looked in good order. If he had seen any problem he would have put it to one side for the owner, Frank Ollen Miller, to repair. He could not say that the dive equipment in court was what he had lent to Langevin because each piece was not individually numbered. However, it did have SD on it, so he could say it belonged to Sun Divers.

Pathologist Shravana Jyoti said the physical cause of death was anoxic encephalopathy, related to diving. The underlying cause was pulmonary barotrauma due to rapid ascent, causing terminal ocean water submersion.

- - Carol Winkler, Cay Compass

computers. No temperature reading was obtained from the Buddy Nexus downloads, although this isn't to say that the temperature was not displayed and recorded during dives.

In some cases, there were differences in the values given in the downloaded data. For example, in Uwatec's SmartTrak software program, temperature readings occasionally differed between the downloaded logbook and the downloaded dive profile display; this was also the case with some Oceanic models in the Oceanic series.

The Results

While in the early days of computers -- the mid to late 80s -- many dive computers erred in their depth measurement; faulty measurement in the Orce EDGE computer led to many cases of divers getting bent.

The good news from this study is that today most computers gave estimated depths in seawater that were very close to the nominal values. Taken as a percentage of the nominal depth, the difference for the overall mean estimate values ranged from -0.8 to 0.1 percent in freshwater, and -0.1 to 0.9 percent in seawater. The overall maximum depth estimates for each nominal depth ranged from 4.7 to 5.9 percent in freshwater, and from 3.2 to 4.1 percent in seawater. Minimum values were -2.7 percent to -8.8 percent in freshwater, and -0.8 to -8.4 percent in seawater.

Some units gave estimated depth values that were consistently deeper than nominal, such as the Apeks Quantum, which at 30 meters read 31.4 meters. Some tended to read low over certain depths, like the Beuchat Voyager, which at 30 meters read 29.3 meters. But the majority of models produced relatively consistent and accurate results (mostly within 1 percent of nominal, and less than one meter across the depths tested and between the two water types. The Buddy Nexus unit tested did not produce useable depth data on download.

The testing showed varying ranges of estimated depth from the same model of computer. No model tested produced perfect, repeated depth estimates for every depth/trial combination; there was always some variation, either within depth or between the depths tested.

Overall for the five depths tested, 41 out of the 46 units that gave depth estimates in freshwater trials produced maximum ranges of replicate displayed depths of less than .6 meters; in the seawater trials, there were 42 out of 46 units. However, of those, only the Uemis SDA produced maximum ranges that were less than a foot in the freshwater exposures, compared with 22 of the computer models in seawater. Only the Oceanic Veo 250 was able to produce maximum ranges of the depths displayed more than one meter, and did so both for freshwater and seawater.

Diving Deep into Danger

The first dive to a depth of 1,000 feet was made in 1962 by Hannes Keller, an ebullient 28-year-old Swiss mathematician who wore half-rimmed glasses and drank a bottle of Coca-Cola each morning for breakfast. With that dive, Keller broke a record he had set himself one year earlier, when he briefly descended to 728 feet. How he performed these dives without killing himself was a closely guarded secret. At the time, it was widely believed that no human being could safely dive to depths beyond 300 feet. That was because, beginning at a depth of 100 feet, a diver breathing fresh air starts to lose his mind.

This condition, nitrogen narcosis, is also known as the Martini Effect, because the diver feels as if he has drunk a martini on an empty stomach -- the calculation is one martini for every additional 50 feet of depth. But an even greater danger to the diver is the bends, a manifestation of decompression sickness that occurs when nitrogen gas saturates the blood and tissues. The problem is not in the descent, but the ascent. As the diver

returns to the surface, the nitrogen bubbles increase in size, lodging in the joints, arteries, organs, and sometimes the brain or spine, where they can cause pain and potentially death. The deeper a diver descends, the more slowly he must ascend in order to avoid the bends.

In 1956, a Royal Navy boatswain had successfully dived to 600 feet, breathing a mixture of helium and oxygen to avoid nitrogen narcosis, but he took 12 hours to resurface. Keller, by comparison, returned to the surface after his first record dive in less than an hour. He boasted of using "secret" mixtures of gases for his underwater breathing apparatus, with different mixtures designed for different depths, but he wouldn't disclose exact figures. After an editor from *Life*, who had accompanied Keller on his 728-foot dive, wrote an article about their accomplishment, the U.S. Navy took interest. So did the Shell Oil Company.

For the rest of this great, in-depth story on commercial diving, written by Nathaniel Rich for the New York Times Book Review, go to www.nybooks.com/articles/archives/2013/feb/07/diving-deep-danger/?pagination=false

On the other hand, temperature measurements were far less accurate, as any diver might expect when comparing their readout of water temperature with other divers' computers. The measured nominal temperature was 62 degrees, but the computers' measurements ranged from 51 to 66 degrees. In general, there was little, if any, standardization in recording or displaying temperature, meaning that was probably not a primary design factor for most dive computers.

What This Means

Because only single samples of each model were tested, the two researchers admit the lack of replication in computer models. Pressure measurement is the only barometric parameter used in decompression algorithms to calculate and manage dive profiles. This means that totally accurate depth information is not an essential component for decompression monitoring. If a diver is using the computer depth display to compute decompression obligations, then this study's results show that dive computers should be accurate enough for most table depth intervals.

Temperature measurement is a different story. Some manufacturers claimed accuracies for theirs. For example, Tusa, Apeks and Mares computers, with the exception of the Mares Nemo Sport, all claim an accuracy range of 4 degrees Fahrenheit in temperature recording. Suunto also claims that same accuracy, but only within 20 minutes of the temperature changing, whereas the Cressi Sub accuracy claim was for within a 10-minute change. Citizen claimed its models were accurate within a 4.5 degree envelope.

- - Vanessa Richardson

What to Tip on Your Next Dive Trip: Part I *and the myriad of factors that determine the amount*

There's probably no topic that brings up as much debate and diverse opinion among divers as tipping. How much, when to tip, who to tip, and how many people to include. And depending on what nationality divers are and what country they're visiting, it's about whether to tip at all.

The variables are endless, but think of the people who serve you. On day boats, you've got a captain, a dive guide or two, the people who fill and tote the tanks, and maybe even a guy who washes out your wetsuit. At resorts, you've got another tier to deal with -- bartenders and waitstaff, room cleaners, bell-hops, etc. And, to complicate matters, if you're at some dive resort and certainly on liveaboard, diving, eating and accommodations are all part of the same operation, and you've probably paid a fixed fee for your stay.

If you're diving in Florida, you might think differently about tipping than if you're in Indonesia, for example. No American in that crew is going to work for Indonesian wages, so there is a pay disparity. And if you're from somewhere other than a tip-happy country like the U.S., you may not think about tipping it at all.

Reasons to Tip

The primary purpose of tipping is to give a reward for a job well done, as evidenced by the e-mails from dozens of divers who responded to our request for comments about their tipping practices. But as Greg White (Cobden, IL) puts it, it can also make up for the low wages many workers earn. "It has been my experience that employees at dive resorts and on dive boats work hard and don't get paid a whole lot. I'm fortunate enough that I can afford to take these trips, so I am glad to help out to some extent." He says he used to tip about 10 percent of the resort or liveaboard portion cost, but recently has been tipping 15 percent.

But you should also tip when crew go above and beyond, like saving your life, says Mike Boom (Oakland, CA). "I was on a three-day liveaboard trip in California's Channel Islands, in really rough weather. On a night cruise between islands, the waves tore off the bulwark on the bow, water started sluicing down the side of the cabin and into the bunks, and the engine went out, making for very hairy conditions. The crew worked like Trojans, and got us back safely into port, although a day early. We got a refund for the day we missed. Most of the passengers didn't tip because they were upset about missing out on a day of diving. I tipped extra because I think they saved our lives. I don't think it's right to blame the crew for boat malfunctions that probably have more to do with the owners' maintenance philosophy."

Who to Tip

Some divers count the people who helped them with their dives -- the divemaster, the panga driver, the tank filler -- and come up with a proper sum for each based on how many dives they did. But don't forget the non-dive crew -- dining and housekeeping staffs at dive resorts are also relying on tips.

Taking a dive trip is similar to going on a cruise when it comes to the number of people who serve you during your visit -- and figuring out how to tip them all appropriately. On many luxury cruise

How Many Calories Do You Burn Diving?

Recently, we came across an article in *Shape* that scuba diving was the newest celebrity fitness trend. We were interested to know that Sandra Bullock and Katie Holmes love their new underwater workouts. We were even more curious when the story said the average woman could burn up to 400 calories in just 30 minutes, and that it's not uncommon to burn 500-plus calories during one workout.

And according to the website CalorieCount.com, a 150-pound person can burn 475 calories per hour, equivalent to burning off either a McDonald's Big Mac with cheese, six glasses of wine, or 1.7 Snickers candy bars.

We've always debunked the notion that diving is a high-intensity sport because one typically moves so slowly underwater. But with all these places touting 500-calorie workouts, we had to find out if they were right, and why. So we went to the American College of Sports Medicine (ASIM), which produced Allan Goldfarb, an exercise physiologist who teaches at the University of North Carolina, as its expert source. He says that a wide range of activities are measured in metabolic equivalents (METs), which is the ratio of the work metabolic rate to the resting metabolic rate. One MET is defined as 1 kcal/kg/hour, roughly equivalent to the energy cost of sitting quietly. In the "Compendium of Physical Activities," co-created by the National Cancer Institute, scuba diving has an average level of 7 METs, although "moderate" diving has 11.8 METs, and "fast" diving has 15.8 METs. (Compare that to leisurely swimming, which has 6.0 METs, and "general jogging" which has 7.0 METs.).

"The range of oxygen usage in one's maximal aerobic capacity, or VO2 max, is from 25 to 50 liters, so for the diver, it depends on the velocity of movement, the rigidity of the fin, if they have a wetsuit on (that adds weight and drag), how big the tank is, and the diver's experience," says Goldfarb. "The increased energy demand is placed on breathing above normal to move the air, and with greater resistance to the movement needed to overcome water resistance. Thus the higher energy cost."

A newbie diver will probably burn more calories than an experienced one, as the former may flail through the water with all body parts moving, and struggle to keep up with someone who glides easily through the water. No matter your experience, keep in mind you are using your whole body when swimming against resistance (what makes it less strenuous is the fact that you are partially suspended). Compare that to traditional weight lifting -- you're working single body parts at one time, resting and sitting between sets and using only one part of the body for 10-20 seconds at a time -- which simply does not burn many overall calories.

As PADI communications director Theresa Kaplan told *Shape*, "Scuba diving provides a full body workout that combines cardio and strength training to burn calories, tone muscles and even improve breathing. Maneuvering through water requires constant motion by your entire body, thus toning and strengthening muscles in your thighs, shoulders and your core."

So we stand debunked, but still skeptical. How is it that so many people write to us to complain that they gained five pounds on their last dive trip?

lines that offer all-inclusive service, the tips are built into the fares. If only they could do that with liveaboards. But some cruise lines have started placing automatic service charges on shipboard accounts, averaging \$10 per person per day. According to Greg Stauber, a writer for the cruise review website CruiseCritic.com, a big reason why was the rising number of passengers from countries where tipping is not customary. Still, it's anyone's guess just how much of the daily charge on one's account will go to a particular steward or waiter.

Stauber says it's customary to tip room stewards, and bar and dining staff on the last night of the cruise. He always tries to tip around 10 percent of the cost of his cabin, which includes that \$10 daily service charge, so he typically budgets \$15 to \$20 per person, per day, on top of that. Housekeepers get \$5 a night. Same goes for his regular bartender and dining room waiters. For shore excursions, he gives the guide \$2 for a half-day excursion, \$4 for a full day. "If the guide has spoken with me at length individually or confided to me places for dining or shopping after the trip, I tip him \$5 for a half day and \$10 for a whole day," he says. If he's in the room when his bags are delivered, Stauber gives the handler \$1 per bag. Spa servicers get between 18 and 20 percent.

"I've been told by several crews that they don't see the money for months if tips are put on credit cards. So by giving cash, I'm more certain that staff will get it faster."

How Much to Tip?

How much should one reward for good dive service? More than half the divers who responded say they tip 10 to 15 percent of the dive costs, whether it's a liveaboard or shore-based operation.

Other divers think about tips in dollar amounts. Most said they tip \$5 to \$10 per tank, while a few give \$20 to \$25 for a day's worth of good diving. David Dornbusch (Berkeley, CA) has a two-tier tipping policy. He'll tip \$5 to \$10 for minimal service on a two-tank dive day. For him, "minimal service" includes a clean boat stocked with emergency gear and water, and a divemaster who picks safe, uncrowded dive sites, gives good dive briefings and allows divers to dive their own profile. He then tips an additional \$5 to \$10 for "additional service," which means divemasters point out critters and explain unique things about them, and crew who help lift gear out of the water, then wash and store it. "And if anyone in my group uses a dive operator's computer, wetsuit, or any other equipment for which they don't charge me, I'll probably add an additional \$5 per item per diver."

How to Tip

How do you hand over your money? That's often the most frustrating part for Jeanne Sleeper (Laguna Beach, CA). "The stickiest thing about tipping is trying to figure out who you are tipping, how the tip pool gets divided up and if the person you intended the tip to go to actually gets it."

Many divers like tip boxes because they can drop in what they want and it gets spread around. Others are fine with giving tips to the owner to take care of the staff. Some divers go out of their way to seek out specific crew who gave them extra attention.

Many dive operators collect the tips centrally, then divide them up as they see fit, and this suits Robin Masson (Ithaca, NY). "I usually dive with the same operation for several days, but don't always get the same crew every day. If possible, I give it to the guys directly on a daily basis; otherwise, I give it to the shop and ask them to split it equally between the two. If all tips get pooled, I give it to the shop, recognizing there are folks on shore who contribute to the smooth operation."

But that method bothers Greg White because he's not sure whether tips are distributed equitably. He remembers a trip to Wakatobi Dive Resort, where tips were collected in two envelopes -- one for dive guides and one for everyone else. "That was difficult to allocate because dive guides were a small group

versus everyone else. Some people talked about splitting 50/50, but I ended up doing something like 30/70. Service from everyone was outstanding, so this was a case where I would have preferred either one central pool or us being allowed to allocate to individuals.” Now he prefers to give cash rather than charge his tip. “I’ve been told by crews on several liveboards that they don’t see the money for several months if tips are put on credit cards. So I figure that by giving cash, I’m more certain that staff will get it more quickly.”

What if you don’t feel an employee deserves to be included in the group tip? Pretty frustrating when you can’t leave that person out, as David Cuoio (Boise, ID) experienced while diving with Ed Robinson’s Dive Adventures in Maui. “One of the divemasters chewed me out for staying down longer than an hour, but he didn’t say in the briefing that there was a time limit. It was not only what he did, but the way he did it, as if I was five and had just stolen a cookie. I related this to the head divemaster, and his attitude was ‘no big deal.’ Well, it was a big deal to me, so I asked if the dive shop tips individually or if they put everything into the pot and divide it up. Unfortunately, it was the latter, so there was no way for me financially to express my displeasure to the jerk who chewed me out. I would have to punish everyone in order to punish him, so I reluctantly gave a tip to the whole group. Dive operators ops should allow customers to have the latitude to tip or not tip an individual. I certainly understand the wisdom of putting money into the pot because it’s more egalitarian, but it’s a little too close to communism for me. A divemaster who gives great service should get a great tip, and the opposite should also hold true.”

Sleeper says she’ll tip directly in cash, after a bad experience with a Cozumel dive shop a few years ago. “I had a spectacular divemaster who had the day off on my last dive. I was sure she’d never see cash from a pooled tip, so I went into the dive shop and made a specific credit card charge for her tip, and I even had to pay 4 percent more for the fees so 100 percent of the money would go to her. When home, I sent her an e-mail telling her what I had done. She never got the money from the shop. After several emails and calls to the Cozumel shop manager, who kept blowing me off, I finally disputed the charge with the credit card company, then contacted the divemaster by mailing her a check. I can’t recall when I have had to work so hard to give someone money they deserved. If my radar says the dive operator has a dysfunctional tipping process, I bypass their system and give direct cash to every crew member on the boat, spreading it around the way I want to.”

-- Ben Davison

In Part II next month, we’ll look at the impact of tipping in Third World country, what dive travel pros recommend, and whether Americans should change their tipping ways.

Why Divers Should Know CPR

especially when you’re doing dive trips in the Third World

There are so many articles we’ve written stating how important it is to be prepared for worst-case scenarios while diving in Third World countries – medical issues, lost-at-sea situations – and know how to be self-reliant if they occur. Take heart issues – we wrote in March 2012 about how automated external defibrillators are a great medical tool to treat someone in cardiac arrest, but they’re not available on many dive boats worldwide. In that case, it’s important to know CPR --whether it’s the new version or old style, it could be the difference between life and death, as divers Bill and Hilary Greenberg found out. Here is a condensed article of their story, written by Ryan Jaslow, health editor at CBS News.com.

In April 2010, the Greenbergs, from Scarsdale, NY, took their three boys to Costa Rica for a family dive trip. They thought the Catalina Islands was the perfect setting for the boys’ first openwater dive and planned the boat trip for April 6. On the boat, the boys were given an instructor, while their parents were

in the second group with a divemaster. The first dive went off without a hitch. The next dive was going to 35 feet, so the Greenbergs assumed it would be an easy dive. The six divers got in a single-file line to move along the rock formations; Hilary was last. While underwater, the divemaster warned that a surge was coming. To Hilary, it felt like a terrible shoving -- and that was the last thing she remembered.

The group couldn't fight it, and could only move along with the wave as it took them 40 feet forward. When Bill turned around, he didn't see his wife. The group finned back and Bill suddenly spotted Hilary on the bottom, with her regulator out of her mouth. She had cuts on her arms and legs; the surge may have thrown her into the coral, knocking the regulator out. Bill and the divemaster lifted her toward the surface. She wasn't breathing, so Bill tried to get air to her through his regulator while the divemaster yelled for the boat, 400 feet away. It took 10 minutes from the time the surge hit until Hilary got on the dive boat. She still wasn't breathing and didn't have a pulse.

"Her heart was beating, but we didn't know anything, as far as her brain function, what was going to happen. What was going through my head was, 'Did I do the right thing?'"

She wasn't breathing, so Bill tried to get air to her through his regulator while the divemaster yelled for the boat, 400 feet away. It took 10 minutes from the time the surge hit until Hilary got on the dive boat. She still wasn't breathing and didn't have a pulse.

"All I can think of is, 'we've just got to do CPR,'" Bill, a physician specializing in cosmetic medicine, told CBS News. He started compressions and breathing using a now-outdated method of repeating 15 compressions followed by two breaths. (The American Heart Association now recommends a fast compression-only approach, suggesting rescuers pump to the tune of the Bee Gees' disco tune "Stayin' Alive.") Hilary's pupils were fixed and dilated, and she was blue. Others on the boat told him to stop, but he refused to give up.

After 20 minutes of CPR, a small rescue boat finally arrived but the rescuers had nothing except an oxygen tank and mask. As they began to perform compressions, Bill noticed the mask was leaking air, and oxygen was going into Hilary's stomach instead of her lungs. With a language barrier, Bill had no choice but to push the technicians out of the way, and he started doing mouth to mouth again. He continued for another 10 minutes as the boat made its way to shore, where it was met by technicians with more advanced equipment, including a defibrillator. More than 40 minutes had passed since Bill last saw Hilary conscious, and during most of that time he had performed CPR (in medical training, he had never performed it for more than 10 minutes). When the emergency crew hooked up the defibrillator, they found a very weak heartbeat. While she still wasn't breathing on her own, that was the first positive sign for Bill -- Hilary's heart had hopefully started beating at some point while he was performing CPR. Bill joined Hilary for a 45-minute ambulance ride to the hospital, and called Divers Alert to arrange for her evacuation and treatment back in the United States.

DAN arranged a Learjet to transport her to a medical center in Delray, FL, where lab tests showed she was stable, but she had six broken ribs due to the CPR, was in a coma and completely unresponsive. "She was alive, her heart was beating, but we just didn't know anything as far as her brain function, what was going to happen," Bill said. "What was going through my head was, 'Did I do the right thing?'"

Hilary was then transported to New York, where all of her body was functioning normally, except for her brain. One day, Bill got a call from his sister, who said Hilary was alert, laughing and talking up a storm. She was indeed in a laughing mood, but most of her words were unintelligible. She also had no idea that anything had happened to her. She had suffered an anoxic brain injury in which cells in the oxygen-deprived brain started to die off. One of the most important parts of rehabilitation is to get the person aware of the injury. That's because the brain has to be slowed down and not overtaxed, so doctors can find ways to tap into the brain and allow it to communicate with parts of the body experiencing deficits. So doctors gave Hilary a strategy of following basic instructions, and thinking each time before she spoke, to allow her brain to slow down.

It took her days to figure out how to use a spoon, longer to learn to place it in her bowl and bring it to her mouth. She couldn't remember the days of the week or five fruits when asked, and she would forget who would come to see her. It was like being in Groundhog Day. Strangely, she was able to speak French and Spanish. Her doctors diagnosed the anoxia in her frontal lobe, the most advanced area of the brain that controls thinking, planning and higher-level reasoning skills.

Six weeks after the accident, Hilary was discharged from the hospital. By July, her long-term memory started to come back. In January, doctors told her she was "90 percent recovered." But the challenges that lie ahead are her abilities to problem-solve on her own and sequence information, problems that are magnified when she's in a social situation and trying to figure out what to say.

While no one may ever know what went on in Hilary's body after not breathing or having a measurable pulse for over 40 minutes, research suggests several factors may have worked in her favor -- starting with the CPR. Zachary D. Goldberger, a professor of medicine at the University of Washington School of Medicine in Seattle, published a study in *The Lancet* last September that found extending CPR for a longer time could potentially save more lives. "Her recovery is remarkable, and it's a success story," he said. Being young, and the fact that she got a long duration of effective CPR probably played a role in her recovery."

Bill adds that because Hilary was in the water colder than her body temperature, hypothermia may have bought her extra time. Doctors sometimes induce hypothermia therapeutically for patient in cardiac arrest. Mark Herceg, director of neuropsychology at the Burke Rehabilitation Center in White Plains, NY, where Hilary did rehab, said the CPR could have helped Hilary's case immensely, in that the sooner a person can get oxygen after an anoxic brain injury, the better. "He made sure nothing stood in the way," Herceg said of Bill.

Hilary herself has a goal to get back to work -- she originally trained in internal medicine and has been studying for re-certification. She's also on another mission: To make sure everyone she meets knows CPR.

Divers Alert Network makes it easy for divers to find an instructor nearby that teaches CPR and first-aid courses (www.diversalertnetwork.org/training/courses/blsfa) -- take one before your next overseas dive trip, and be better prepared for situations where those skills mean the difference between life and death.

Where Exactly Is the South Pacific?

Dear Ben,

Could you please tell me where the South Pacific is? I'm referring to the April issue's travel article about Chuuk, which mentions that these islands are in the "South Pacific." I've been there twice, and each time the islands were above the equator. I'd suggest that this places them in the Central Pacific, or even the "North" Pacific, if the South ends at the equator.

However, while I hear plenty of South Pacific, I almost never hear North Pacific. Seems like most writers instinctively add "South" when they are writing about almost anywhere in the Pacific Ocean. So, as you're an editor, please tell me where the South Pacific starts and ends? Or better, edit out "South" for islands above the equator. Maybe get James Michener to write

another book titled *Tales of the North Pacific* to even out the misuse.

-- Harry Haley, Yorktown, VA

Dear Harry,

You're right. Mea culpa. I suppose we Americans perceive any islands south of Hawaii with palm trees as the South Pacific, and of course we are wrong. But in our defense, and in Chuuk's defense, James Michener's *Tales of the South Pacific* is a collection of stories based on his experiences in the Pacific theater during World War II, in which Chuuk played a big role. So because Michener created the palm-treed "South Pacific" identity that seems to encompass Micronesia, we'll blame him for now, and think twice before using that phrase for north-of-the-equator locations in the future.

-- Ben

Flotsam & Jetsam

First Shark Fins, Now Fish Bladders. Bladders from totoaba fish, which live exclusively in Mexico's Sea of Cortez, are a favorite Asian soup ingredient, so a growing international practice of smuggling them is on the rise. U.S. border inspectors in Calexico have seized 529 bladders since February that they believe were destined for China and Hong Kong. Also known as Mexican giant bass or giant croaker, the totoaba can measure up to seven feet long and weigh more than 200 pounds. The leathery bladders alone measure up to three feet, and are sold for up to \$20,000 each, while the fish carcasses left to rot on shore. The totoaba is considered an endangered species, but Asians believe their bladders improve skin, blood circulation and fertility, and thus they want them in their soup.

Stan Waterman Hangs Up His Fins. The pioneer of underwater film and photography donned his dive gear for the final time last month. Not bad for a man who just turned 90. Waterman has filmed everything from underwater scenes in *The Deep* to National Geographic documentaries, winning numerous awards, including five Emmys. He chose to spend his final dive trip aboard the *Cayman Aggressor*, with his long-time friend Wayne Hasson, president of the Aggressor Fleet. Having reached the age of 90, I have entered an age of hedonism," he told the *Cay Compass*. "Delights like being comfortable, air-conditioning, lots of hot water." His trip was filmed by other underwater videographers who will make a documentary about his life and work, but Waterman also shot some footage of his own, this time with a tiny, digital Go Pro camera - a far cry from the heavy 16mm cameras he started out with.

Three Dead Free Divers in Less than 24 Hours. It's abalone season in Northern California, which unfortunately seems to come with deaths every year.

On the last weekend of April, two divers died in northern Sonoma County and one in Mendocino County. The first was Cedric Collett, 66, a retired Pacifica firefighter who was found off of Shell Beach, several feet below the surface and still wearing his weight belt. The second victim was a 36-year-old San Francisco diver who had gotten caught in a rip tide near Salt Point State Park early Sunday morning. He was pulled to the beach by other divers but couldn't be revived. Later that morning, a diver was found dead near MacKerricher State Park, north of Fort Bragg. He was about 15 feet below the water and might have been snagged in rocks, requiring a rescue team to work in breaking surf to release him. "It is the busiest we've been in that short amount of time with that many horrible outcomes," sheriff's helicopter pilot Paul Bradley told the *Press Democrat*.

Diver Shuts Down the Cebu Yellow Submarine. Kudos to diver Satoshi Toyoda, who shot a video of the Cebu Yellow Submarine, a new Philippines tourist attraction, hitting a coral reef, thus causing the operation to be shut down. Toyoda travels from Japan frequently to dive Kontiki Drop on the island of Cebu, and on April 18, he saw the 48-passenger submarine approach a wall of corals. "I was just taking the video as usual," Toyoda told reporters. "That time I saw the submarine hitting the wall ... and I said 'This is not good'. You can hear my voice (in the video) saying 'ooooh'when it hit the wall." His video, titled "Coral Crusher," went viral after he posted it on YouTube April 26. When the submarine's Korean tour operators denied any crash took place underwater, a team of divers from the Lapu-Lapu city government inspected the site, guided by Toyoda's description, and found fresh, broken pieces of coral and other debris, which could only have been caused by contact with a "rigid force." The mayor immediately revoked the Cebu Yellow Submarine's business permit. Tyoda said that if needed, he will testify about what he saw underwater. "The video is everything," he said. "They just have to say sorry and let them do their training again. Never destroy nature."

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