

# undercurrent

*The Private, Exclusive Guide for Serious Divers*

August 2012

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## Mayan Princess, Roatan, Honduras

*Disney-like digs and aquarium-like diving*

Dear Fellow Diver:

The last time I went to Roatan's beloved CoCoView Resort, I became intrigued by the proverbial "other side of the mountain," where I discovered the town of West End, a sleepy, hot, mysterious admixture of folk art, vegetables sold off pickup trucks, dive shops, dirt roads and a beautiful beach. When my local dive shop advertised a trip to the Mayan Princess on Roatan's West Bay Beach, a couple miles and a world away from the town of West End, I jumped. While preferring more rustic, diver-only retreats like Pirate's Point on Little Cayman, I was intrigued by the Disney World façade, a splendor unknown to these parts -- and a very good price -- though little did I know that the kitchen would fail to escape certain Third World qualities.

Just past the entry portico of the all-inclusive Mayan Princess, a 240-foot-long pool undulated around tiny landscaped islands draped in waterfalls and inhabited by iguanas. Comfy chairs and umbrella tables flanked its terrace. Here and there were four-poster, gauze-draped pool-side beds that I've typically seen at five-star hotels. Manicured red- and yellow-flowering shrubs lined the courtyard's walkway. However, I came to dive, and frankly, the place offered as good a sampling of marine life as one can expect in the Caribbean these days. Being a photographer, I was relieved when my assigned buddy said with a wink, "As long as I can see your bubbles, we'll be OK."

Surfacing after 66 minutes for a



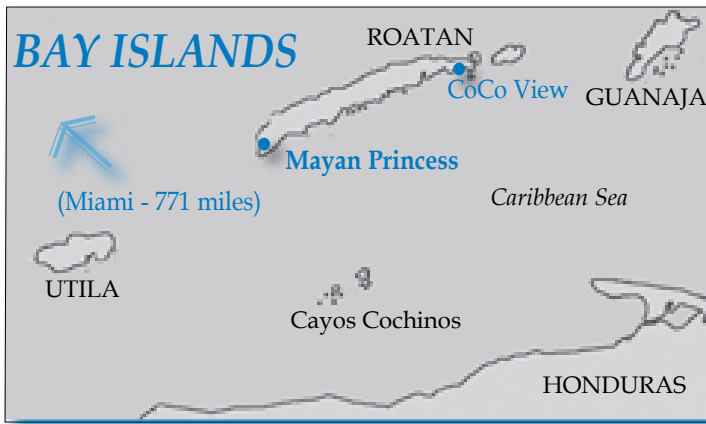
The Pool at the Mayan Princess

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first dive in the 79-degree water, I had swum with the usual Caribbean suspects, though not in great numbers: grunts, hamlet, parrotfish, butterfly fish, schoolmasters, a gang of Caribbean lobsters, snapper, a juvenile spotted drum and iridescent azure vase sponges. With water that ranged from 75- to 100-foot visibility, I came upon a cluster of juvenile sunshinefish with gold upper bodies and purple lower halves. Spotting a rare solitary gorgonian hydroid -- resembling a tiny, white, carnivorous sundew plant -- satisfied my "when in Roatan, look for

macro" quest within the first 30 minutes. Here, in the protected Roatan Marine Park, I saw a toothy tiger grouper and a yellowfin grouper on the first dive. On my second dive that morning, I spotted my first lionfish of the trip.

I left my gear on board to head to a lunch amounting to the equivalent of a full dinner. My buffet plate was soon covered with a medley of carrots, onions and green beans, potatoes provencal, beef tips and pepper slices, and pork with rich pancetta gravy. For dessert, a small slice of cinnamon swirl cake, topped with a creamy coffee-laced icing, filled the bill. In this setting, the phrase "portion control" was a hedonistic double entendre.

I waddled back to the boat around 2:15p.m. for the afternoon dive at Butcher's Bank. In addition to familiar species, I spotted a less common saucereye porgy, and sadly, more lionfish. A streamlined cero zoomed toward me, giving me a slow once-over. Ascending, I watched a thumbnail-sized jelly hydromedusa pulsing along. At day's end, I left my weights on board and humped my gear through the shallows back to Mayan Divers' shop, located in a corner of the courtyard. At the shop, a lack of labeling and some awkward rinse tank locations could make for a lot of "excuse me." But I enjoyed going to the shop otherwise, though not to browse its meager retail offerings. The remarkably lean abs of two of the female divemasters supported the contemporary observation that "strong is the new sexy." Sara, an Italian, and German-born Anje were the "abs-women," as a female in my group referred to them. Anje was co-owner of Mayan Divers and married to the other co-owner, Lieber Barrido Barnet, a tall, lanky and friendly Cuban transplant.

After a day of diving, it was pleasant to decompress in my second-story, air-conditioned junior suite overlooking the lush, tree-lined courtyard and pool. My 500-square-foot condo included a roomy bedroom with queen bed, flat-screen TV and ceiling fan. The bathroom offered a walk-in shower screened by glass blocks. The large living room led to a balcony, washed by breezes from its own ceiling fan, that held a gas barbecue grill, table and chairs. With no balcony pegs outside for hanging dive gear, wetsuits soon festooned railings; probably a trashy sight to some tourists, but not to us serious divers.

That night, my spouse and I enjoyed complementary sundowners while people-watching on the beach as the sun set. The resort hosted a different bar band every night in its beachside bar. Later, a talented troupe of young dancers in traditional garb performed to the hypnotic accompaniment of bongo and conga drums. After sampling some rum drink not worth finishing, I settled on the fruity, whiskey-based "Mayan Princess." Local lagers like Salva Vida were on the all-inclusive bar menu, but not wine. That was a source of minor irritation for my spouse, who reconnoitered the area and came up with a reasonably-priced red wine from the shopping district a block off the beach.

The next day offered variations on the Caribbean reef tableau I had seen the day before: trumpetfish, hawkfish, chromis, a spotted moray, goldentail moray

and tiger tail sea cucumber. Most meaningful was sprouting staghorn coral, one displaying opened polyps. Inside tiny white cups, fine brown wispy filaments protruded. The marine park offers a great environment for staghorn rejuvenation. Judging by the number of sea turtles on most dives, they liked the park, too.

Ariel, our 40-foot dive boat for the week, was not up to the standards of such a ritzy hotel. If all of my group's 17 divers showed up, we sat nearly shoulder to shoulder. The boarding ladder had convenient handholds. Our marine head was the marine park. Teddy, our smiling young Honduran skipper, spoke little English. The divemasters were Henry Anderson, a twenty-something from Roatan, and the older Jeannot Mercier, a former chef from France now living in the States. Their briefings emphasized safety and "no-touch" rules, rather than the sights they would be guiding us to see.

For repeat Caribbean divers, one must create mental and physical exercises to keep the interest level high, so I contemplated how sea life morphs from one color, pattern and shape to another through its lifespan. For example, I photographed a stubby, intermediate spotted drum, looking nothing like its dainty, delicate juvenile form. I mounted my Tokina 10- to 17-mm lens with a Kenko 1.4 teleconverter inside an Aquatica mini-dome to catch wide angle. Its close focus lets me almost "touch" the right macro subjects. I got images of my fellow divers, bubbles rising, followed by close-ups of a yellowline arrow crab shoveling food with its tiny bright blue claws. I'm awaiting identification on a pale green veil sprinkled with glitter (eggs?) that caught my eye. I was struck by the tranquil appearance of a pair of Atlantic spadefish against the deep blue at the reef's edge, but the only drama on this dive was provided by Henry, who swam down to scold a diver whose sin was brushing his hand on a sea turtle's shell.

On our one night dive, giant basket stars unfurled their fragile-looking arms. A yellowline arrow crab strolled along the open bottom. A clinging channel crab revealed the (usually unseen) wide exclamation point on its carapace. At the end of the dive, we knelt on the sandy bottom, turned off our lights and vigorously waved our hands to stir up spectacular bioluminescence.

I keep myself in good shape so that I can take in a lot of calories, which I believe helps me maintain my body heat underwater. So each morning, I asked the friendly breakfast chef for my usual three-egg omelet, plus a Belgian waffle, a glass of fresh OJ and fried plantains. Cold cereals, pineapple slices, watermelon chunks, toast and buns were also available. Lunches featured multiple hot meats, fish and vegetable choices. The baked chicken with coconut milk sauce was my favorite. Soups such as minestrone or chicken noodle plus fixings for salads and sandwiches were options. Desserts -- chocolate pudding, tiramisu and tres leches cake -- often found their way onto my plate. Dinners featured regional themes like Thai, Mexican, BBQ, Spanish tapas and Italian. A smiling dinner chef added finishing touches, grilling the meat we'd like on our fajitas or carving up a roast. But the buffets hid a dark side, unfortunately. Although my travel habit to eat only what is cooked or peeled kept my GI tract functioning okay, diarrhea and vomiting hit a third of my group, usually all night long. They missed about a day of diving, then soldiered on. We concluded that the source was the fresh vegetables on the buffet. (Note from Ben: I am reminded of a similar problem that plagued CoCo View years ago, many weeks before they found the source -- a cheese. In the 89s, I reported on a resort, now defunct, where the cook dipped water out of the pool, and all the divers -- physicians, by the way-- became ill.)

On my fourth dive day, a mild drift off Blue Cave with the group, I lingered to shoot a flamingo tongue, followed by a wonderful staghorn, then a batwing coral crab.



*Ariel, Mayan Divers' Dive Boat*

## Mayan Princess, Roatan

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

★ = poor    ★★★★★ = excellent  
*Caribbean Scale*

Toward the end of the dive, I hadn't drifted much while I was tailing a couple of ascending divers, but I wondered, "Why is a little runabout picking our people up?" The prop cavitated; their speedboat took off. I attached my reel and sent my safety sausage to the surface, waiting out my safety stop. Surfacing, I saw no boats. Hmmm . . . Sticking the buoy straight up, I turned 360 degrees. About half a mile away, a tiny shape resembled Ariel. I inflated my BC, and sounded a couple blasts on my Dive Alert Plus. She eventually chugged my way. Henry and Jeannot didn't lecture. Instead, they assured me that they knew I could take care of myself, but still wouldn't have left me behind. So I soon jumped in for the second dive at Blue Cave Wall and joined clouds of marauding blue tang.

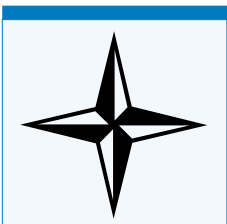
Boat traffic -- water taxis, pleasure craft and jet skis -- was non-stop off the beach at Mayan Princess, meaning there is no shore diving. What we lacked in a 24-7 dive frenzy, we made up in the ease of the boat dives. Henry and Jeannot were relaxed about bottom times and experienced divers' explorations. My spouse enjoyed snorkeling in a safer area off the beach to the south, with clear water, rocks, reef and plenty of fish.

The seas were too rough for a planned drift on one day, so we explored a 230-foot-long cargo vessel that was sunk to 110 feet on a sandy bottom. I swam into the wheelhouse, explored its battered deck, and approached a fat green moray residing in a capstan. In the shallows off the bow, a number of large grouper lazily circled, including a less common yellowfin and a distinctive black grouper. At Blue Channel, the second dive that morning, I enjoyed a long swim-through as a big midnight parrotfish and tiger grouper checked me out. On my final dive of the trip, I stuck next to Henry, finning fast for 100 yards to reach a sight he was gesturing at excitedly. Arriving, I gazed at the sight of a (drum roll) bicolor damselfish making its home in a sunken buoy. Underneath lay an abandoned sewing machine, covered in swatches of sponge and coral. I shrugged a mental "Huh?" and took a more leisurely pace back, watching a sea turtle, a beautiful scrawled file fish and a pretty butter hamlet.

I made the most of my non-dive Friday by exploring nearby Gumbalimba Park. My guided tour included lifting a rock to see a nested tarantula with eggs, a walk across a swaying cable footbridge, and posing with a parrot and monkeys perching on my shoulder. I ziplined from the top of the mountain ridge through the lush forest to Gumbalimba's beach. I taxied to West End (it hadn't changed), then caught a water taxi for \$3 back to West Bay Beach, where Bacchanalian rites of spring were in full sway.

Yes, the Mayan Princess offers Disney-like accommodations, along with better-than-average common diving compared to what you'll find on Caribbean boat dives. With a little luck and sharp eyes, you may make some unusual but subtle discoveries. Just watch what you eat.

-- S.P.



**Divers Compass:** My seven-night, all-inclusive stay for a diver/non-diver package that included airfare and standard bar booze was around \$2,400 per person; non-group rates start at about \$2,800 per person, and everyone pays a "departure tax" of \$38.71 per person . . . I gave my cash tips directly to Mayan Divers to show my appreciation for the crew and divemasters' patience for my longer-

than-standard down times; Nitrox was \$7 per tank . . . Admission to Gumbalimba Park was \$30 a person; my zipline experience was an extra \$25 . . . US credit cards were generally accepted, and the AC current is the same as in the States . . . Website: [www.mayanprincess.com](http://www.mayanprincess.com)

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## Cancun, Cabo San Lucas, Fiji, Truk. . .

### *plus unexpected cold water, and a liveaboard to avoid*

**Don't Be Afraid of Truk.** If you're concerned about diving deep, don't avoid this exciting destination for WWII Japanese wrecks. Longtime subscriber Ed Liebowitz (Jersey City, NJ) was apprehensive at first, but after a week with Odyssey Adventures in April, he was ready for more. "I was fearful that the divers and the *Odyssey's* dive guides would be excellent divers who would want nothing to do with a once-a-year recreational diver, but they were all very helpful. The April 2012 issue of *Undercurrent* mentioned a discount of \$1,000 through Reef & Rainforest, and because I'm retired, I was able to take advantage of the discount. J.J., who ran operations on the boat, told me that they get a fair share of bends cases due to the depths; I was ready to ask him to be transported to the mainland, but my first dive was to 70 feet. When I told the staff that I was a bit fearful, they gave me a private guide. Being that I was the oldest diver, I had a private guide for the entire week. Sam, Madison and Kimberly proved to be excellent guides. At first, I only wanted to view the wrecks. However, later in the week, I was penetrating the wrecks with my guides. At 165 feet, Madison and I spent five minutes going from bow to stern of the San Francisco. I did 19 dives and did not have to decompress on any dive. Nitrox allowed more bottom time to view the wrecks. Incidentally, nobody got bent. Odyssey Adventures also offers a technical wreck week a couple of times a year for certified wreck divers." ([www.trukodyssey.com](http://www.trukodyssey.com))

**The Red Sea Is Cool.** One surprise I've never liked is arriving at a tropical dive site only to find myself in surprisingly cold water. I learned my lesson years ago, when I found out too late that the Bahamas' winter water temperature can drop to 70 degrees, very chilly if you're unprepared. Mel McCombie (New Haven, CT) went with Emperor Divers in the southern Red Sea, where the water averaged 71 to 74 degrees in April. "Despite wearing 7-mm wetsuits and hooded vests, neoprene socks and gloves, I was freezing on every dive. As a result of the cold waters, we did only 13 of 21 possible dives, which was bitterly disappointing. After diving the Red Sea for a year, my advice is to remember that it is surprisingly cold; the warmest dive months are August and September. This southern itinerary involved a lot of boat travel, and the best diving was in the Saint John's reef area near the Sudanese border. Because it takes many hours to steam there, the boat can only stay for two days, which is a shame because the reefs are pristine and the water clear; it's truly scenic. I saw mantas and sharks, as well as a number of pelagic piscivores like tuna. The more northerly sites nearer Marsa Alam are more dived, and the water can be less clear." While the boat is ship-shape and comfortable, and the divemasters good, Mel says the food didn't match. "Bland and as overcooked as possible, and this in a country where the local food is tasty and full of flavor! About half the divers were from Eastern Europe and Russia, and the language difference meant that nearly all of the eastern Europeans kept to themselves at the table and during diving. It diminished the sense of camaraderie that 'makes' a liveaboard. It was only the second time I finished a dive trip wishing I had not bothered to go (after thousands of dives), disproving the bumper sticker that says 'A bad day diving is better than a good day at work.' I'd rather have been at work, and that's just a shame."

**Cancun's "Independent" Dive Operators.** Rick Tavan (Saratoga, CA) was in Cancun in May, and offers this cautionary note. "We spent an afternoon driving around looking for dive shops we had found online. It appears that a 'dive operator' in Cancun may be an individual with a cell phone and English

skills who fronts a collection of independent drivers, boats, instructors and divemasters. We settled on Scorpio Divers after interviewing someone in an un-labeled office in Sunset Marina and then, unsure which operator we had been talking to, again on the phone. They had their own van but, when busy, hired others (one broke down and we ended up taking a cab that Scorpio apologetically paid for). Boat dives were from simple pangas, no photo facilities. Scorpio's claim to fame is maximum flexibility at

## An Insider's Tips on Bonaire

*Bonaire is a favorite Caribbean destination of our readers, especially those who like to rent houses or apartments and cook on their own. Mel McCombie, one of our longtime correspondents, has returned to Bonaire for an extended vacation, and sends this update. If you want to contact her directly, e-mail her at [mary.mccombie@gmail.com](mailto:mary.mccombie@gmail.com)*

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Bonaire's water visibility has deteriorated over the years, so at last the government is installing an environmentally-friendly sewage system that, if all goes as planned, will keep runoff away from the reefs. It's a noble goal, but the roads are torn up everywhere, which, for an island with routinely bumpy roads, has turned the wise driver into a super-cautious one. If you're renting a car, be sure to arrive with a tire gauge, because virtually all rental vehicles have comically-inflated tires (this trip, I had 15 psi in the front and 45 psi in the rear).

Prices are higher than a year ago, due to Bonaire's political transition in 2010 to become part of Holland itself (even though it's in the southern Caribbean), which changed the tax structure. There's an 8 percent sales tax on everything, and another 8 percent added to items trans-shipped from Curacao. Some things are just plain costly, like sunblock -- a whopping \$16.90 on a tube at the drugstore. The airport departure tax for international flights is \$35 per person, and they take credit cards.

A new supermarket has opened on Kaya Industria, called Van Den Tweel, part of a big Dutch chain. It's large, air-conditioned, sparkling clean and has pretty much everything, from a cheese bar to flowers, and a bakery to office supplies. Produce also includes fresh washed bags of greens from Holland for salads, and fresh herbs. It also offers a huge selection of wines and beers, including several brands of extra-strong beers (sterk) with an alcohol content between 8 and 12 percent. Not cheap, either; around \$3.50 per can. Most islanders buy their staples at the rival Warehouse across the street from Van Den Tweel, particularly meats. I can attest that its Angus ground chuck results in tasty burgers. Warehouse charges less than Van den Tweel, but the shopping experience is very different -- bustling and warm rather than spotless and air-conditioned. The Zhung Kong market on Kaya Debrot, just north of Habitat and adjacent resorts, is an excellent source for spirits, with a selection of rare cognacs. Two container ships arrive weekly, one on Wednesdays (with goods largely going to Van Den Tweel) and another on Thursdays. The next mornings usually offer the best selection of perishables.

The popular restaurant, Capriccio, has moved just south of downtown on the waterfront road, with a gourmet shop inside, offering espresso, olive oils, balsamic vinegars, biscotti and savories. You can also buy bottles of wine, often surprisingly cheap. A new joint run by two Belgians is on Kaya Corona, just south of the intersection with Kaya Amsterdam and the Curiol station, specializing in Belgian-style fries and fresh burgers. The potatoes are imported from Holland, and the frites are worth the calories. You'll recognize the place by the vivid yellow, red, and black paint job of the Belgian flag.

Sundays are great for island tours, particularly in the south. The local kiteboarders show off their fearless skills just south of Salt Pier. Their aerial tricks make great photographs; just don't shore dive there unless you relish the possibility of a kiteboard running you over.

The turtles are thriving, thanks to aggressive conservation. Bon Photo, the freediving and photo company, offers informative turtle presentations on certain Wednesdays. Their tees and other turtle conservation items make great gifts that leave you with a good conscience. ([www.bonphotobonaire.com](http://www.bonphotobonaire.com)). Dengue remains present on the island, so the wise visitor will bring DEET -- and use it. Just remember you can't bring aerosol cans on the plane, so opt for pump bottles instead.

Short and long-term rentals, ranging from opulent to modest, are available from many companies. American Bob Bartikowski runs Re-Max ([www.bonairehomes.com](http://www.bonairehomes.com)), and Dutch-owned Sunbelt Realty has staff who speak English ([www.sunbeltbonaire.com](http://www.sunbeltbonaire.com)). Though I have not worked with Sun Rentals, I've heard nothing negative ([sunrentalsbonaire.com](http://sunrentalsbonaire.com)).

an unpublished price that seemed a bit higher than others. Jorge seems to be available any time by cell phone and email. I would use Scorpio Divers on a future trip to Cancun." ([www.scorpiodivers.com](http://www.scorpiodivers.com))

Don't forget that in the summertime, Cancun is close to the annual whale shark migration. Lisa Jabusch and Steve Nieters (Mount Juliet, TN) were staying on Isla de Mujeres, but chose to go out with Rafael de la Parra), based on a report they read in *Undercurrent*. "We were extremely glad we did. He is affiliated with a research group working on identifying the separate sharks, and is a tireless promoter of maintaining the ecological zone to keep them protected. He has been interviewed by CNN, and appears to be one of the most knowledgeable captains out there. He charges \$150 per person, and he only takes six people on his boat at one time. He goes out early and stays late, thus maximizing your time in the water. We were very impressed that he didn't cancel on us after the only other couple who had signed up to go cancelled. He went ahead and took just the two of us out. He is based in Cancun but picked us up at the dock on Isla Mujeres at 7:30 a.m. He provides drinks, fruit and sandwiches, and there is shade over half the boat. The whale shark season is June to September, but the peak months are definitely July and August. We went in mid-July, and Rafael estimated there were at least 150 animals in the water. Just two weeks before, he only saw six. At one point, there were five of these gorgeous animals swimming within touching distance of us!" (E-mail Rafael at [grampusr@hotmail.com](mailto:grampusr@hotmail.com))

**Sunshine Dive and Charter, Cabo San Lucas.** In the preamble to our July story, "CO Poisoning Risk Higher than You Think," we wrote about the March death of a diver, and erroneously reported that she had been diving with Sunshine and may have been overcome by carbon monoxide in her tank that her husband claimed Sunshine had filled. As it turned out, our sources got it wrong. Traun Lynch, who represents Sunshine Dive and Charter, tells us the divemaster who took Cross diving was not working for Sunshine Dive and Charter, nor did Sunshine fill his tanks. We apologize for the error; we cannot definitively tie down the source of the air, and the police are mum. Sunshine has generally received good marks from *Undercurrent*, and two of our California subscribers, Tom Webb and Mike Eberle, each wrote us to call attention to our error, and report that each had just been diving with Sunshine and had nothing but good experiences. So if you're headed to Cabo, put Sunshine on your list. ([www.divecabo.com](http://www.divecabo.com))

**A Better Mode of Travel in Fiji.** After reading our July travel feature on Lalati and Matangi resorts, Craig Condron (Spokane, WA) says he gave up long ago on those three-hour van rides plus a boat ride to get to a Fijian resort. "You feel like roadkill. The past five trips to Fiji, I take off within minutes after customs with Pacific Island Air & Seaplanes. It is more money (for a small group, the price can be comparable), but within 45 minutes, they're pulling up to the resort's sandy beach. Also, when leaving Lalati, Pacific Island could pick you up, and an hour later, you could be in your bure at Matangi, maybe in time to catch a dive. Otherwise, it is a boat ride to the main island, van ride to Suva, plane ride to Taveuni, van to dock, boat ride to Matangi. One full day of vacation gone. And yes, Pacific Island flies back from Matangi to Nadi direct, without all the transfers. It's owned by a Canadian, and is very reliable." ([www.pacificislandair.com](http://www.pacificislandair.com))

**Abandon This Ship.** Jamie Pollack (New York City) boarded the *M/V Celebes Explorer* in July with his cousin for a one-week trip. Three days later, he abandoned ship to stay at Mabul

## Give Your Buddies a Free *Undercurrent* Subscription

For a limited time, active *Undercurrent* subscribers -- and that includes you -- can give up to five of their dive buddies a free four-month trial subscription to *Undercurrent*. It's very simple to do -- just log in as a member on our website, then go to [www.undercurrent.org/members/BuddyGift](http://www.undercurrent.org/members/BuddyGift) -- or click on the big "Buddy Gift" link on the members' homepage -- to send them an invite. There's absolutely no obligation for them, or you, for that matter -- we don't even ask for their credit card number. We'll send them the invitation and copy you on it.

Make a dive buddy happy and informed -- give 'em *Undercurrent*. It's a limited-time offer, so do it soon.

Water Bungalow. “The *M/V Celebes* is an old, creaky, depressing, smelly boat that should be retired. The food was very greasy, and most of it was fried. The dive schedule is four dives at Sipadan and one dive at Mabul Island. Then at 5:30 a.m., the boat would motor back to Sipadan. The ride was noisy and sometimes rough. The cabins are small (ours had bunk beds, typical of liveboards), and the smell in there was awful. We were never introduced to the crew, so it was hard to know who to ask for things. They do not have a separate camera rinse tank, so the water got disgusting. Only 45 minutes per dive was allowed. I asked to do one-hour dives but was told that is not the policy, and rules can’t be changed. I was supposed to be diving on Nitrox, but when I got to my gear, it was air. Then when I checked the air, it was barely full. It took them two more times to get my Nitrox tank correct. Just plain carelessness. Diving was OK, but it didn’t knock our socks off. We saw white-tips sharks (I was expecting to see many more), a couple of reef sharks, turtles, large schools of jacks, barracuda and bumphead parrotfish. Coming from the East Coast, it is a long way, and I’m not sure I would recommend it, especially for that boat.”

*Thailand Aggressor.* A new Aggressor destination is now taking bookings. ([www.aggressor.com](http://www.aggressor.com))

- - Ben Davison

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## Improving Rebreather Safety: Part I

### *up to 10 times more dangerous than open-circuit diving*

How can rebreather diving be made safer? That was the core question at numerous presentations and discussions at Rebreather Forum 3 (RF3), held in Orlando last May. Sponsored by PADI, Divers Alert Network and the American Academy of Underwater Scientists, the conclave brought together more than 400 industry insiders from the diving, scientific, media and government communities, along with photographers and consumers, to talk rebreathers and hopefully help steer the topic forward.

In his opening remarks, PADI CEO Drew Richardson proposed that the number-one goal of RF3 be contributing to rebreather diving safety and reducing incidents. The issue is of critical importance when manufacturers like Poseidon Diving Systems and Hollis, in conjunction with PADI and other training agencies, are now promoting rebreathers for recreational divers, which is a source of controversy. The concern is that rebreathers may be too complex and time consuming for a typical openwater diver who is still mastering basic diving skills. However, PADI has developed a simplified diving protocol using rebreathers designed specifically for recreational use that it believes will prove effective.

Though no one knows the actual risks, there have been more than 200 reported rebreather fatalities worldwide since 1998, about 10 per year before 2005 and about 20 per year since then. On average, there are about 110 scuba diving fatalities annually in the U.S., Canada, U.K. and Europe combined. Given that there are millions of open-circuit divers compared to, at most, 15,000 closed-circuit divers, the fatality rate for rebreather diving is significantly higher than its open-circuit counterpart, as industry insiders are all too aware.

During one open session, Andrew Fock, head of hyperbaric medicine at the Albert Hospital in Melbourne, Australia, asked the audience, “How many people in this room believe that the current rebreather safety record is acceptable?” No one raised a hand.

#### **Pushing the Envelope (Again)**

Rebreathers were primarily used by military divers until the late 1980s, when pioneers like Bill Stone, Olivier Isler, Stuart Clough and Rob Palmer began experimenting with them for cave exploration, just as technical diving was emerging. Though the early tech community seized upon their potential for extending



bottom times and optimizing decompression, it wasn't until the late 1990s for the first production units like the Cis-Lunar Mk-IV, Ambient Pressure Diving's Inspiration and the KISS Classic to become available.

Today, rebreather diving represents one of the fastest growing areas of sport diving. Poseidon reported that it sold more of its recreational MKVI rebreathers in the last four months than in the previous two years, and PADI is certifying new recreational rebreather instructors to meet the demand. In countries such as the U.K., which is regarded as the rebreather's "ground zero," it's becoming rare to see a set of double tanks, once the norm for wreck diving, on a dive boat.

*"Industry leaders need to become role models. We need to make it cool to do checklists."*

ANDI, IANTD and TDI, the three oldest technical training agencies and the ones responsible for the majority rebreather training, estimated that they collectively issued 30,000 basic, intermediate and advanced rebreather certifications from 1990 to 2011, and will issue as many as 3,000 this year. These numbers will grow significantly as PADI recreational rebreather courses proliferate. Rebreather technology has greatly expanded the tech diver's underwater envelope, and has also been a boon to photographers and videographers.

Dives that would be logistically difficult or even impossible on open-circuit are routinely done with rebreathers. However, as David Conlin from the National Park Service explained at RF3, "The real value of rebreathers is not deep diving, but staying longer at 70 to 100 feet. You can work at those depths nearly all day long when the conditions are good." Conlin reported that rebreathers have increased Park Service divers' productivity by nearly 40 percent. "We gain nearly one day for every three days we're in the field."

### **Killing Them Softly**

Fock, an accomplished rebreather diver, offered an important and sobering presentation on the risks of rebreather diving, titled "Killing Them Softly." One problem he cites is the lack of an accident reporting system that records and details the cause of diver fatalities and near-misses, which inform and improve diver safety. In many cases, information about specific fatalities is sequestered, for fear of litigation. As a result, existing accident data is incomplete and, in many cases, inaccurate.

Fock analyzed available data from 1998-2010 and, with the caveat that they are "best guess numbers," he concluded that rebreather diving is likely five to 10 times as risky as open-circuit diving, accounting for about 4.5 deaths per 100,000 dives, compared to about 0.4 to 0.5 deaths per 100,000 dives for open-circuit scuba. This makes rebreather diving more risky than skydiving (at .99 deaths per 100,000 jumps), but far less risky than base jumping (at 43 deaths per 100,000 jumps). He found no difference in fatality rates among manual or electronic units, or specific brands of rebreathers; accidents were roughly proportional to market share. Fock also pointed out that while the data suggests that deeper dives carry greater risks, a large number of rebreather fatalities occur in shallow depths within the recreational envelope.

As far as the causes or "triggers" that precipitated accidents, Fock concluded that the source of most problems was the human-machine interface, or so-called "pilot error," involving assembly, pre-dive preparation, maintenance, training, and high-risk behaviors like ignoring checklists, carrying insufficient bailout and diving beyond one's limits. "The question is whether the risk can best be mitigated by training [reinforced by dive culture] or engineering out potential problems, or both," Fock said.



**Poseidon's Popular MKVI Rebreather**

## So Much for Vetting

*Men's Journal* online has an article on the top 10 destinations to scuba dive, leading with "Whether you're a scuba pro or looking for the perfect spot to take your first dive, check out this PADI-vetted travel guide for where to go."

Fair enough. But let's hope PADI didn't vet this. "There are few things more exciting than strapping on your oxygen tank, plunging off the side of a dive boat, and sinking into the ocean's deep blue depths."

## Creating a Safety Culture

Though veteran explorers and educators Jill Heinerth and Terrence Tysell chaired a discussion on training, the majority of the talk centered around diving culture -- what happens after training. One of the biggest safety issues is that divers become complacent and don't adhere to a pre-dive checklist when assembling and preparing their unit for diving as they (presumably) learned in class. Furthermore, they neglect required post-dive maintenance. (Some experienced rebreather

divers don't follow checklists either.) Even worse, some divers choose to dive knowing there are problems with their unit, such as a faulty sensor or small leaks.

Methodically working through your rebreather's checklist, which typically includes a five-minute pre-breathe (and only diving if everything checks out) is the best way to insure that the unit is functioning properly and avoid problems that could jeopardize safety during the dive. The use of checklists is standard in aviation, and is increasingly becoming so in medicine, because they save lives. They must be used in rebreather diving as well.

Presenters saw this problem as an issue of creating a safety culture to support rebreather diving. Richie Kohler, a technical wreck diver and shipwreck historian (he was one of the divers profiled in the best-selling book *Shadow Divers*), made an impassioned case for the use and efficacy of checklists in his presentation "Failure Is NOT an Option: The Importance of Checklists." During the presentation, Kohler put up a picture of eight close friends and mentors -- including his rebreather instructor -- who lost their lives as a result of pilot error. "They were not fools, but each of them made foolish mistakes and died as a result," Kohler explained. Checklists are designed to prevent such mistakes from occurring.

In another session, Heinerth presented her "Five Golden Rules" for rebreather diving. They are: be properly trained for the dive you are about to conduct; follow your checklist; pre-breathe your unit; make the decision to dive (responsibly); and be prepared to abort the dive safely (with sufficient bailout gas). Heinerth told a story of being on a dive boat with five rebreather veterans. During her pre-breathe, she detected a small problem with her rebreather. She told her fellow divers she would be sitting out the dive, only to be pressured by the others to dive anyway. "It's only a minor problem," some opined to her. "You can still fly the unit manually." To her credit, Heinerth didn't back down.

How do we as a community encourage divers to do checklists and support their adoption? "Industry leaders need to become role models," said Heinerth. "We need to make it cool to do checklists." She is working with industry pioneers like Richard Pyle, database coordinator for natural sciences at the Bishop Museum in Honolulu, and Kevin Gurr, CEO of VR Technology, to create a set of best practices for rebreather diving, dubbed "Blueprint For Survival 3.0." The title refers to the original set of 10 safety principles for cave diving developed by legendary cave explorer Sheck Exley in his monograph, "Basic Cave Diving: A Blueprint for Survival." The early dive technology community created a similar set of consensus standards for open-circuit diving, titled "Blueprint for Survival 2.0," which was published in the now defunct *aqua-CORPS Journal*.

Experts agree that a number of safety issues might be resolved through better engineering. Indeed, this is the basis behind PADI's so-called "Type R" rebreathers that are suitable for recreational divers. For example, a Type R rebreather will turn itself on if the user forgets and jumps in the water, and won't operate without the scrubber canister correctly in place or if the cylinders are turned off. What is becoming clearer, however, is that better engineering solutions are needed for knowing precisely the composition of the

breathing gas in the loop at any point in the dive. Unlike open-circuit diving, of course, where the fraction of gas is constant and known with certainty, the gas mix in a closed-circuit diver's breathing loop dynamically changes with every breath and gas addition.

Years from now, we will likely look back at our current technology and regard it as primitive, or what explorer and engineer Bill Stone, CEO of Stone Aerospace, refers to "test-pilot era" technology. "You

## Widow Blames Dive Gear for Death of Filmmaker

Well-known National Geographic filmmaker Wesley Skiles drowned while shooting underwater because his Dive Rite rebreather malfunctioned, his widow claims in Palm Beach County Court. Terri Skiles claims that Dive Rite knew its oxygen monitoring system had a propensity to malfunction because it had been recalled multiple times, but Dive Rite ignored "serious quality control issues" and tampered with the scuba equipment evidence after the fatality.

She claims that in July 2010 her husband borrowed a used Dive Rite O2ptima FX Rebreather from a third party. The third party brought the rebreather to Dive Rite for a maintenance check, and after Dive Rite replaced a few parts, it said the rebreather was good to go, Terri Skiles says in the complaint. She says her husband used the rebreather while working in Boyton Beach, FL to try to get footage of Goliath groupers for the National Geographic film *Speed Kills*. However, the widow states: "Due to an unexpected catastrophic failure of the subject O2ptima FX rebreather during the dive, Wesley Skiles passed out underwater and died. This tragedy would not have occurred but for the tortious conduct of defendants Dive Rite, Dive Rite Express, Mark Express, Jurgensen Marine Inc. and Analytical Industries Inc. The subject rebreather was being used as intended at the time of the incident and in a manner reasonably foreseeable by the defendants.

"Thereafter, Mark Derrick and Dive Rite Express, acting in a joint venture with and/or as an agent of defendant Dive Rite, interfered with the investigation into the death of Wesley Skiles when, at the request of Hires [the owner of Dive Rite], Mark Derrick conducted the inspection of the subject O2ptima FX rebreather, which resulted in the spoliation of evidence in this case."

Skiles states that her husband's death could have been prevented. "In the years preceding the incident, Dive Rite was aware of serious quality control issues with the O2ptima FX rebreather. In fact, Hires was warned several times that because of the hasty manner in which the O2ptima FX rebreather was being assembled, the electronics and oxygen sensors on the O2ptima FX rebreather were being damaged by unknown sources of moisture leading to catastrophic failures, and that such failures would occur in such a way as to give the diver absolutely no warning of the failure.

"Additionally, all defendants knew of problems associated with the oxygen sensors being used in the O2ptima FX rebreather. Batches of oxygen sensors purchased from defendant Analytical Industries Inc. had been recalled in 2007, and subsequent batches continued to contain defective sensors. Moreover, the U. S. Consumer Product Safety Commission issued a recall on December 22, 2009 for Dive Rite Wings because of defective over-pressure valve springs which could rust and fail, allowing the buoyancy compensator devices to leak, posing a drowning hazard to divers. Dive Rite and the other defendants disregarded these serious life-threatening defects in the O2ptima FX rebreather.

"Over his career, Wesley Skiles became one of the most well-known and well respected underwater cinematographers in the world. He founded his own cinematography company, Karst Productions, and shot underwater films for National Geographic, PBS, A&E and Discovery Channel, directed the IMAX film *Journey Into Amazing Caves*, and produced the acclaimed television series *Water's Journey*. He won dozens of international awards for his effects, including *Beneath the Sea's* Diver of the Year and HDFEST's award for Best Cinematography. After his death, National Geographic named Wesley Skiles Explorer of the Year, and Florida's Peacock Springs State Park was renamed in honor of Wesley Skiles, and is now called Wesley Skiles Peacock Springs State Park."

Terri Skiles seeks damages for wrongful death, deceptive trade, conspiracy to spoliolate evidence, negligent spoliation of evidence, breach of warranty, costs and funeral expenses.

--Marimer Matos, Court House News Service, July 24

actually dived those units without knowing exactly what you were breathing? OMG!" It'll be like us looking back at early cave divers using J-values as reserve and empty Clorox bottles for buoyancy, and going, Really?

### One More Thing

Though it's not the trigger, the primary cause of death in most rebreather fatalities is drowning. Some of these fatalities might have been prevented by the use of a retainer strap to hold in the diver's mouthpiece. Full-face masks and retainer straps have long been the standard in military diving, and they were also a key recommendation from Rebreather Forum 2, held in 1996. While full masks introduce other problems for our diving applications and are not very suitable to sport diving, retaining straps arguably have the potential of saving lives. Rebreather instructor Paul Haynes who is a former military diver and business development director and trainer for DIVEX, made a strong case for retainer straps at the RF3, recommending that the efficacy of using straps be taken up as a research question. "We might all consider experimenting on ourselves."

In next month's issue: Part II of this article, about the problem with oxygen sensors.

*Michael Menduno, based in Berkeley, CA, published and edited the monthly magazine aquaCorps: The Journal for Technical Diving (1990-1996), which helped usher technical diving into the mainstream of sport diving. He also organized the first Tek, EuroTek and AsiaTek conferences, as well as Rebreather Forums 1.0 and 2.0.*

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## Art as Artificial Reefs

### *a good idea or a distraction from the real problem?*

Last September, the Grenada Board of Tourism issued a press release, announcing an "exciting new addition" to its list of tourist attractions. It was a bench. Yes, you read right -- a bench.

It's the latest addition to Grenada's Underwater Sculpture Park, the first of its kind, in Molinere Bay. The bench is 15 feet underwater, near the "Vicissitudes" sculpture, a ring of stone children. The press release calls the bench, "its latest installation, more than a little 'tongue in cheek' in spirit ... The piece presents an opportunity to take a seat and some time out, breathe a few bubbles and reflect on the art installation."

Is this what diving has come to? Touting benches as the latest exciting additions to the underwater environment? Well, yes. Artificial reefs are common worldwide, purposefully sunken structures made out of everything from subway cars to warships, and they're touted as exciting new sites for divers to explore and fish to thrive in. Now trending upward is "underwater art," which started with the statue *Christ of the Abyss* being sunk near Key Largo, FL, in 1965, and continues today with hundreds of statues in "underwater museums" in the Caribbean. There's even a group of Los Angeles moviemakers working with beach resorts to build underwater "Fantasyland" structures.

The newest man-made reef is the *U.S.S. Mohawk*, a WWII-era Coast Guard cutter sunk on July 2 near Fort Myers Beach, FL. Apparently, it's the first artificial reef to memorialize veterans. But let's be frank. The *Mohawk* was sunk to be a moneymaker first, a memorial second. Sunken wrecks that draw divers create millions of dollars for the tourism industry. Seeing the effect on its bottom line, the dive industry is taking matters into its own hands and promoting the sunk ships and underwater sculptures as the hottest, newest trips on the itinerary. Phil Saye, who runs Dive Grenada and Grenada's Ultimate Dive Resort, came up with the idea for the underwater bench, saying, "I wanted to create something that would be unusual and capture the imagination of underwater photographers, but also fit with the concept of the Underwater Sculpture Park. The images taken on the bench will be fantastic marketing for Grenada as a whole."

Maybe that's because most of Grenada's natural reefs are no longer worth marketing to serious divers. We have seen the effects of climate change, overfishing and resort development on reefs worldwide, and that has changed where we dive, and how many times we dive. Dive operators see that, and understandably they're doing what they can to get new and repeat business. But are these man-made reefs taking attention away from the natural ones? Should we be less focused on visiting the hottest, newest reefs being built, and be more concerned about how to protect and restore the reefs that have been around forever?

### Sculptures as Reef Saviors

The most well-known name in the underwater art world is Jason De Caires Taylor. He started Grenada's underwater park in 2006, then the Cancun Underwater Museum, known by its Spanish acronym MUSA, in 2010. He began with 200 human-like sculptures, making them out of marine-grade cement, and using trucks and barges to place them at the bottom of a national marine park between Cancun and Isla Mujeres. Most sculptures sit at 28 feet, with a shallower portion set aside for snorkeling. Taylor, now director of MUSA, recently told the *San Francisco Chronicle* that the museum draws about 750,000 visitors a year and is one of the Yucatan's most popular attractions ([www.underwatersculpture.com](http://www.underwatersculpture.com)).

The first sculpture collection, "The Silent Evolution," includes life-sized human figures like *Rosario*, Taylor's Spanish teacher when he came to Mexico. A full-size VW Beetle was designed to be a lobster haven. The sculptures are meant to change over time as marine life populates them -- a girl acquires a fur coat made of algae, a starfish implants itself on a nun's face. Taylor's goal is to provide new habitat for sea life, and draw divers and snorkelers away from coral reefs suffering from tourism. He also wants to shed light on the ocean's problems for a wider audience beyond divers. In an interview with the blog Environmental Graffiti, Taylor said, "I believe we have to address some of the crucial problems occurring in our oceans at this moment in time, and by using human forms, I can connect with a wider audience."

He added 63 new sculptures to MUSA last month. They include the kinetic sculpture *Phoenix*, a woman with movable wings of living purple gorgonian fan coral that appear to beat with the wave cycles. *The Listener* is a human form made out of casts of human ears molded during a workshop of local Cancun youth, and equipped with an underwater listening device that projects sounds of the reef. *The Last Supper* is a dining table carved from a rock outcropping, with half-eaten fish on plates, and a centerpiece of apples and hand grenades, illustrating the peril oceans face from overfishing.

If you want to check out MUSA, Aquaworld is the dive shop offering two-tank afternoon dives and snorkel trips of the museum ([www.aquaworld.com.mx](http://www.aquaworld.com.mx)).

### Can Hollywood Save the Ocean?

A group of Los Angeles-based film set designers who've worked on *Avatar* and the *Lord of the Rings* and *Pirates of the Caribbean* multiples now intend to work their magic in the marine world. They started Reef Worlds, a business to "create entire worlds underwater for tourism" ([www.reefworlds.com](http://www.reefworlds.com)). Starting with underwater playgrounds for high net-worth clients who own their own islands, Reef Worlds is now pitching beach resorts with artificial reefs that can keep guests enthralled within hotel boundaries -- and give tourism-damaged reefs a breather.

*"If we can take pressure off existing reef systems from tourism, and focus that pressure on one area, then we're helping to preserve natural reefs."*



Jason De Caires Taylor's *Vicissitudes* in Grenada's Sculpture Park

## Parents of Drowned Boy Sues PADI and Boy Scouts

In March, we wrote that the Discover Diving programs that involve kids have the leading death rate in diving activities, one reason being that participants are frequently left alone underwater. The *Salt Lake Tribune* reports that a Las Vegas couple is suing the Boy Scouts of America, PADI and its instructors for negligence after their 12-year-old son, David Tuvell, died in July 2011 while in a summer camp scuba diving program at Bear Lake, UT.

The boy was diving with another Boy Scout, a Scoutmaster and a diving instructor in 14 feet of water, in a roped-off area on the east side of Bear Lake. In the diving area, there was a line laid along the bottom of the lake to guide divers back to shore. The instructor and the Scoutmaster surfaced, leaving the two boys holding onto the line. When the instructor dove again, the two boys were no longer holding onto the line and were nowhere in sight. One boy was found farther out from shore and brought back in alive. It took about 30 minutes for searchers to find Tuvell, who was rushed to a hospital, where he was pronounced dead.

The lawsuit alleges that the defendants failed to ensure the boy was properly equipped, dressed and weighted. It states that they provided defective equipment, and did not manage, monitor or supervise the boy's air supply. When the emergency situation arose, the parties failed to aid and properly rescue Tuvell, the lawsuit alleges, and that "defendants failed to prepare and implement an adequate dive plan." Tuvell's parents claim that all the defendants were negligent, strictly liable, and failed to warn of the dangers posed by being part of the diving program.

Dave Taylor, a former tourism marketing consultant now serving as Reef Worlds' design and ecology lead, told *Undercurrent*, "Up until a couple of years ago, resorts didn't think about anything beyond their high-tide lines. If we can take pressure off the existing reef systems from mass tourism and focus that tourism pressure on one area, then we're helping to preserve natural reef systems, and creating a monetized area that the resort wants to develop and protect. The resort wins, the guests win and the environment wins."

Reef Worlds' designers worked with coral biologists and dive site developers to build out-of-this-world figures and structures that look like they came out of Angkor Wat, the Aztec empire, and even *Star Wars'* Mos Eisley cantina. They're made out of crushed rock from old coral beds and low pH concrete that repels algae and attracts coral. The goal, says Taylor: "We want visitors to have the feeling Howard Carter did, when he first shone his light on King Tut's tomb and said, 'I see fantastic things.'"

Reef Worlds won't divulge client names, but Taylor says it is discussing projects with resorts in Cancun, the Bahamas and the South Pacific, with its first 10-acre resort site done by early 2013. It has turned down projects due to unsuitable sites, like when a potential client in Phuket asked Reef Worlds to build on a staghorn coral forest. "They were like, 'Let's just move it,'" said Taylor. "They were missing the whole point."

The sites Reef Worlds wants to build on are sandy bottoms, broken coral beds and other places devoid of marine life. "We promote 'do no harm tourism,'" Taylor says.

The entire process, from design to placement, takes about a year. The fee starts at around \$100,000 for a standard three-acre site to \$1 million for a project with all the bells and whistles. Taylor says it's worth the cost in the long run. "It protects a country's natural resources, and encourages more tourism." Reef Worlds guarantees its structures are heavy enough to withstand category-five hurricanes, but will replace them for free if they do move. Because the reefs are a marketing tool, each site will be completely branded to the resort it's built at, with its own name and back story.

Taylor admits Reef World's clientele are not frequent divers. "But the fact is the vast majority of divers are part-time holiday divers, a huge market segment that is completely underserved. We envision



A Sample Sculpture by Reef Worlds

a world in which resorts and governments install these sites close to shore in poor habitat locations to serve that market, and at the same time create thriving habitat for fish and wildlife. It's an exciting time to be in the artificial reef business, because we have come a long way from the days of dropping tires wrapped in wire over the side of barges to create a reef."

### **From Bad to Benign**

But most ocean-conservation groups believe we all have a long way to go in reef protection, and they're skeptical that man-made reefs and marine preserves will do the trick. Sarah Freiermuth, development director at the Coral Reef Alliance, says that while artificial reefs and underwater art projects certainly have their place, "If we develop them without addressing the root causes of reef decline, we are distracting from the real threats and simply prolonging the inevitable."

Jacqueline Savitz, senior scientist and vice president of North America for Oceana, says the different type of man-made projects range from bad ideas to relatively benign ones. The bad ones include dumping sub-way cars and sinking huge naval ships. "Cleaning those up are a project in itself, like getting all the oil out of tankers, or removing chemicals like PCB out of their electrical systems. Sometimes, these projects can just be an excuse for ocean dumping."

Savitz has dived the Neptune Memorial Reef, an underwater mausoleum near Miami made out of concrete reef balls (see our August 2008 story on the dive site and its designer, Eternal Reefs), and says it seems benign, "but it's not of a magnitude that it will save the oceans." She's also against the oil and gas industry suggesting their oil rigs be left in place as havens for marine life. "They're notorious for not arguing the case for sea life until the very end. They spill oil, then say the rigs are actually good for sea life, but they should admit it's just cheaper to leave them there. The cost of removing oil rigs should be part of the cost to do business."

She does like Reef Worlds' pitch, however. "It sounds like a better thing to build on top of a reef, and it could have a neutral effect if it's done right. The Fantasyland idea could be a good way to get people snorkeling, diving and enjoying the ocean, but we have to make sure we do it in a way that protects what we're enjoying. That's the criteria criterion to use in any artificial reef project."

-- Vanessa Richardson

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## **Behind the Masks**

*what to buy for your face shape, vision, even color preference*

When I pioneered equipment-comparison tests in the 1980s, there were a lot fewer choices for divers in the shops. Since then, we've had the consumer excesses of the noughties, and there are more brands in all categories to choose from, and more diving products bearing those brands. If you want to replace your mask, it can be rather confusing. Like shoes, a mask is a personal item, and there is no single example that will outshine the rest. No wonder experienced divers simply want to replace their favorite mask, when the time comes, with another that's exactly the same.

Masks that are undamaged rarely leak, but faces often do! When you're in a shop, inhaling through the nose so that the mask will stick in place by air pressure alone, keep in mind that a perfect fit in the shop may not be so perfect once you bite down on your regulator mouthpiece and it alters the shape of your face.

This is especially true for rebreather divers. Rebreather mouthpieces can need more of a firm grip, due to the weight of the hoses and peripheral displays that may be attached. Often, a new rebreather diver finds that a favorite mask mysteriously leaks water when it did not with open-circuit gear, and of course, clearing a leaking mask can be a problem for a closed-circuit diver.

## Color Makes a Difference

Clear silicone skirts had a tendency to go yellow with time, but that is less true due to the latest silicone technology. Underwater photographers and technical divers prefer an opaque skirt, believing there are fewer internal reflections to disturb their view. I can guess that a lot of techies will go for the retro-look of the AquaLung Teknika (\$85 list price; [www.aqualung.com](http://www.aqualung.com))

Some masks employ expensive varieties of glass that has less color, and this can improve the clarity of the view. An extreme example is the singularly expensive Atomic Subframe ARC (\$158), with its anti-reflective coating, or the equally costly sibling Atomic Venom (\$199), which has a massive front of very clear Schott glass (information for both masks is at [www.atomicaquatics.com](http://www.atomicaquatics.com)). I wonder if it is necessary to pay the money asked for masks such as these.

*Divers may think that bigger faceplates mean a wider view. It doesn't always work like that.*

On the other hand, underwater photographers tend to like their models to wear masks with clear silicone skirts so that their faces are better lit and there are fewer tendencies to look like the Lone Ranger, Zorro or some other masked Avenger. Mares offers its X-Vu (\$82; [www.mares.com](http://www.mares.com)) with a curious, opaque brown silicone option, the IST Blue Tech (\$65; [www.istsports.com](http://www.istsports.com))

can be supplied in camouflage colours, while some other manufacturers offer an attractive, translucent, frosted look.

When it comes to the fabric of the skirts, the challenge is to make a silicone that is extremely soft and flexible, yet as hard-wearing as possible. Cressi uses a mix of silicones for its clear Crystal masks, while its fierce competitor, Mares, uses a material it calls Liquid Skin.

Straps and buckles can be important. The buckles of the really expensive Atomic masks are a dream to use, but then, at the price asked, they should be. Many Oceanic masks eschew the more traditional silicone strap, and come with adjustable webbing and a neoprene pad for the back of the head.

## Twin-Lens Masks

This seems to be the most popular group because they have a lower internal volume and, of course, it is possible to fit, where supplied, corrective lenses, or add corrective lenses to individual sides for those with less than perfect eyesight. However, while many manufacturers offer corrective options for short-sighted people in minus-strength diopres, fewer appear to offer the plus-strength range needed by those who are suffering the ravages of time. Long-sighted divers usually need to send their masks to specialist suppliers for adaptation.

The Japanese manufacturer TUSA has historically met this demand with its Liberator range, which offers both plus- and minus-strength lenses. Maybe it's because Japan has a famously aging population! Otherwise, during my research, I discovered that only the Beuchat X-Contact from France, where diving is known as the sport for grandparents, is available (at extra cost) with a wide range of off-the shelf lenses in both plus and minus strengths (\$68; [www.beuchat-usa.com](http://www.beuchat-usa.com)).



Cressi Big Eyes Evolution

[Many masks have adopted a teardrop shape to the lenses, with the aim of giving divers a better downward view of their chest area. Cressi pioneered this design with the lenses tilted forwards. Its Big Eyes Evolution is the most recent model, although Cressi also offers the smaller Eyes Evolution with the same feature (\$90; [www.cressisubusa.com](http://www.cressisubusa.com)). Masks like the AquaLung Favola \$80; [www.aqualung.com](http://www.aqualung.com)) and Mares X-Vision (\$70; [www.mares.com](http://www.mares.com)) are similar, but without the tilt.



## Compact Twin-Lens Masks

By making the lens area smaller and moving it closer to the eyes so that the view is not impinged, manufacturers can offer masks with a much smaller internal volume, which means easier clearing. These compact masks prove very popular with breath-hold divers, but many scuba divers opt for this formula, too. They are most commonly purchased with opaque skirts, but in my experience, this option offers no particular advantage because the glass is so close to the eyes. Good examples of this sort of mask include the Sherwood Eclipse (\$65; [www.sherwoodscuba.com](http://www.sherwoodscuba.com)), the TUSA Freedom One Pro (\$115; [www.tusa.com](http://www.tusa.com)) and the Aqua Lung MicroMask (\$115; [www.aqualung.com](http://www.aqualung.com))



Atomic Venom

## Single Faceplate Masks

Traditionally, divers thought that bigger faceplates meant a wider view. It doesn't always work like that. Thanks to the refraction of light as it passes through from water to the air inside the mask, there will always be a degree of tunnel vision underwater. That said, while some divers like very compact masks, others go for the wider view thought to be provided by a single faceplate. One of the biggest afforded is that of the Atomic Venom, which has expensive Schott glass that has no color (\$199, [www.atomicaquatics.com](http://www.atomicaquatics.com)). Those who like the advanced Crystal silicone of Cressi will appreciate the much less expensive Piuma (\$89; [www.cressisubusa.com](http://www.cressisubusa.com)).

The Seac Boss is of a traditionally heavyweight design (\$58; [www.seacsub.com](http://www.seacsub.com)), while the likes of the Oceanic Accent (\$80; [www.oceanicworldwide.com](http://www.oceanicworldwide.com)) and the Atomic Frameless (\$105; [www.atomicaquatics.com](http://www.atomicaquatics.com)) have managed to do without too much intrusive structure.

## Masks in a Smaller Size

Many mask manufacturers offer their products in a smaller size to accommodate smaller faces. These include the Beuchat X-Contact (\$68; [www.beuchat-usa.com](http://www.beuchat-usa.com)), the Atomic Frameless (\$105; [www.atomicaquatics.com](http://www.atomicaquatics.com)) and the Oceanic Shadow (\$84; [www.oceanicworldwide.com](http://www.oceanicworldwide.com))

## Multi-Lens Masks

In an attempt to give divers a view of what might be beside them, whether it be their buddy, an intrusive bit of wreckage or a big animal, some masks have side windows. Some find such a mask a bit like sitting inside an conservatory, while others love them. Personally, I don't think these designs give a wider view, and their extra weight and volume can make them difficult to get a good seal on to the face. But it's your choice. A good example is the TUSA Visio Tri-Ex (\$74; [www.tusadive.com](http://www.tusadive.com)).

## Masks for Ear Protection, Easy Cleaning and Full Face Coverage

Divers who suffer from ear troubles while diving will see the IST ProEar mask as a godsend (\$100; [www.istsports.com](http://www.istsports.com)). It encloses the ears and the nose within the same airspace (they're linked by tubes with one-way valves), so that the ears are kept dry in the same way and can also be cleared of water. The air space around the ears can reveal the underwater world to be a rather noisy place, but otherwise it really works.

Clearing the mask is always a problem for new divers, and there are a number of masks on the market that include an automatic purge valve in an attempt to make things easier, but there's no substitute for being shown how to do it properly. The IST Dynasty is a typical example that might help the hopeless trainee (\$55; [www.istsports.com](http://www.istsports.com)).

There will always be masks that really are unique. Ocean Reef's full-face Neptune Space G is one of a range of full-face masks that includes a specially adapted regulator, which accounts for its cost (\$1,093; [oceanreefgroup.com](http://oceanreefgroup.com)).



TUSA Visio Tri-Ex

However, apart from the use of underwater communications now popular with underwater television presenters, the only real use for a full-face mask is for when diving in polluted waters. As leisure divers, should we be doing that?

Another expensive mask is the Oceanic Datamask, which includes a computer with a head-up display within it (\$1,110; [oceanicworldwide.com](http://oceanicworldwide.com)). It's linked by radio-transmitter to the gas pressure remaining in the diver's tank. It appears at first glance to be the mask for the diver who has everything, but the computer uses an older algorithm, and the space it takes up places the front glass of the mask further from the eyes. The consequence of this is a narrowed field of view, like looking down a couple of tubes, and the added weight tends to pull down on the top seal of the mask, allowing an inflow of water. Sorry, Oceanic, it's a nice idea, but it doesn't do its primary function well.

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## Flotsam & Jetsam

**Diving Isn't That Therapeutic.** A British court threw a divorced couple in jail after they fraudulently received more than US\$200,000 in disability claims, then used the money to take multiple dive vacations abroad. Rose Jones from Ramsgate, England told the Department for Work and Pensions last year that her back was so bad, she couldn't even open a bottle of wine. But then Jones and her former husband, Reginald, were photographed on holiday, wearing their dive gear, in the Maldives, Indonesia and the Red Sea. Jones later left Reginald, 54, for her German dive instructor. Both tried to blame the other in court for the scam, but Reginald got the bigger share of the blame, receiving a jail sentence of 18 months, while Rose got 15 months.

**Exploding Conch Shells, Contaminated Wetsuits.** Trying to assassinate Fidel Castro is an old story, but always a good one, as the *Atlantic Monthly* recently reported. The CIA seemed to perceive that Castro was vulnerable near or in the ocean. In 1963, it seriously

examined "whether an exotic seashell, rigged to explode, could be deposited in an area where Castro commonly went skin diving." Basically, an exploding conch shell. And it explored giving him a wetsuit that been "dusted ... with a fungus that would produce a chronic skin disease (Madura foot), and contaminated the breathing apparatus with a tubercule bacillus." Apparently, the CIA's tech folks bought the suit and did the contamination, but it never left the lab.

**Boycott the Solomon Islands?** This favorite venue for divers is being threatened with a severe sanction by delegates to the CITES convention, a treaty overseen by the U.N. Environment Program. One reason: Between 2000 and 2010, more than 54,000 birds, mainly parrots and cockatoos, were imported from the Solomons and declared as captive bred. Yet the Solomon Islands is not known to have substantial bird-breeding facilities; registered bird breeders there primarily use their facilities as holding sites for wild-caught birds bound for export (see [www.traffic.org](http://www.traffic.org)). The Solomons are also a major exporter of live dolphins to dolphinariums around the world. A major New Zealand conservationist has asked New Zealanders to boycott travel to the Solomons.

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