

undercurrent

The Private, Exclusive Guide for Serious Divers

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Wind Dancer, Tobago

the Caribbean's best advanced diving?

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Dear Reader:

Drifting with the surge through coral-covered canyons, I passed nurse sharks snuggled into overhangs, seeking refuge from the current. Two squid pulsated frantically to get away. I glided over magnificent barrel, strawberry vase and tube sponges. Dozens of feeding tarpon circled a bait ball just below the surface of pounding waves. This was the "Alps," indeed an exotic Tobago destination.

Diving didn't begin on a good note. Our first site was a disappointing basic checkout at 20 ft. in low visibility over a sandy bottom, so several novices could check their buoyancy. I entertained myself practicing deploying a mandatory Hughes-supplied reel tied to a safety sausage. However, the next swim was at the seldom-visited Diver's Reef. Exposed to the tumultuous Atlantic, it was calm enough for us to take a two-knot current ride across a plateau at 70 feet. Several black tip sharks stayed their distance, but a hawksbill turtle hung with me briefly. A school of spadefish followed two king mackerels. Uniquely shaped sponges hid an oversized lobster. I considered it an advanced dive, a very good dive, and already the novices were loving the drift. The 81-degree water seemed warmer than the January air.

When I planned my trip, Hughes staffer Jeff recommended that I (and another couple) arrive in Trinidad a day early to avoid catching the last connecting flight to Tobago and risk missing the Wind



The Wind Dancer

Dancer's departure. Made sense, especially because late-arriving live-aboard guests often cause those onboard to miss dives. I overnighted at the basic Pax Guest House, with a great view of the mountains. The next morning, I arrived in Tobago with four hours to kill. My expected Hughes greeter wasn't there, so I lugged my baggage to the tourist office and called him. According to reports in the Chapbook, most Dancer clients hang out at the Hilton before departure. My reluctant driver wanted \$10 to take me there -- he didn't work for Hughes and was paid only to get me to the boat from the airport, so I ended up poolside at the airport Crown Point hotel.

Wind Dancer / Tobago

Diving (<i>expert</i>)	★★★★½
Diving (<i>beginners</i>)	★★
Accommodations	★★★★
Food	★★★
Service and Attitude	★★★★★
Money's Worth	★★★★★

★ = poor ★★★★★ = excellent

Caribbean scale

Onboard the Wind Dancer, Captain Mike Kozlow told us that the weather forecast was for sun and calm seas. We'd head northeast toward Speyside for the good diving. On board since September, he's a former eel fisherman and urchin diver who has worked on a Nekton. Like the Energizer Bunny, he continually puttered around the boat, helping divers. A fun, hospitable man. Guest services manager Lynne Marshall-Dunn, who had been a dive instructor in the Red Sea, Palau, and the Philippines, explained the Dancer's safety features. Then, plans changed. Three Canadians and two Texans had been scheduled on the last flight to Tobago and, sure enough, they missed it, as did two suitcases and a dive bag (which didn't show up for three days). So, we headed to Store Bay, near the airport, to wait for the morning and the tardy passengers. We couldn't get into the water until they signed the obligatory liability forms, so we missed at least one dive before we rounded Pigeon Point and headed northeast into the Caribbean.

Diving was from two custom-built 25-foot fiberglass Bimini-top tenders -- Trini and Bago -- with center console tank holders where our gear remained all week. They filled the 3000-psi tanks (usually to 2800 psi) with hoses stretched from the Dancer. I'd gear up on the 10-20 minute ride to dive sites. The strictly enforced 45-minute dive (plus safety stop) began with a back roll off the tender, then straight down, with no dawdling, which often meant I'd wait on the bottom for novice ear-clearing, eating up precious dive minutes. While the tenders allegedly rotate sites, I soon realized that the other boat headed to more advanced sites. When I asked to be moved to the other boat, Lynne "honeyed" me, saying, "you know, we try to keep friends together." (Not such a good idea with some divers clearly advanced and some divers clearly novice.) The second day they moved me to the other boat, where I was happier just thinking I was visiting the more advanced sites, though the experience mix on both boats appeared equivalent.

Northeast to Mt. Irvine Bay for critter diving. A shortnose batfish ate bristle worms in the sand. A colorful juvenile queen angel and juvenile spotted drums were skittish. Channel crabs and spiny lobster peered from crevices, while urchins and hermit crabs clung to the rocks. A sand tilefish darted into his hole. Afterwards, guides Roland "CNN" Williams, Leslie "Motley" James, and Tyson Kent, all locals, checked us in as we boarded on the lower dive deck, then handed us warm towels after a warm water rinse or a trip to the dive deck head. The three guys were excellent, skillful divemasters, and fun loving.

After two days of great weather, rain came, dropping the visibility. To reach Sisters, a cluster of five rock pinnacles, it was a rough ride in choppy seas, well worth it for the divers on Trini -- not me -- who saw a dozen 10-foot hammerheads. A squall dumped buckets and the chop became three-foot swells. The weather didn't discourage two mating green turtles, however, which only disengaged



Thumbs Down *Nekton Pilot Plays Reservation Roulette*

In our travel reviews and chapbooks, we print comments about specific live-aboard cabins, because all cabins are not equal. Some are too close to the engine room, while others are too close to the galley. And some are just plain undesirable, as we have noted for several years about the *Nekton Pilot*, which serves the Bahamas and Belize.

After reading Chapbook complaints about dampness and mold in the *Nekton*'s lower cabins, subscriber Grant Rowe (Schenectady, NY) asked for a room on the upper level. "The person who took our reservations assigned us an upper-level room number," he recalls, adding that she acknowledged the condensation problems. "To our surprise," says Rowe "when we arrived we found that we had been moved to a lower cabin with a 2-foot diameter wet spot already on one bed." He protested, so they moved him to a second lower level room, which also had condensation problems. Rowe says he was offered a \$50 onboard credit as compensation, "but there wasn't anything to purchase other than chemical glow sticks or a video of the trip."

A *Nekton* reservationist told us "It might have been our screw-up." She noted that their web site (www.nektoncruises.com) says: "We make an effort to accommodate requests but cannot guarantee any cabin requests. No refunds or adjustments will be given if you do not for any reason receive the cabin you requested." However, no one told Grant Rowe about the disclaimer.

The reservationist said one upper cabin is set aside

for handicapped guests, so someone might be moved if a handicapped person signs up later. Single divers signing up later get cabins with single beds.

Rowe didn't think it was an error, saying that all the upper cabins were taken by a group of friends or couples who arrived at the boat before him and, he surmises, probably complained. Rowe says, "I didn't push it because it would just mean a week of hard feelings if they did evict someone."

Do other live-aboards take cabin requests? The Aggressor's Wayne Hasson told *Undercurrent* that "Customers can view our cabins on the Internet and request a specific one. No one can change the assignment after that." Aggressor reservationists ask booking parties if they want to request a certain room and as many as 30 percent say they do.

Dorothy Johnson of Mike Ball Dive Expeditions says passengers can lock in cabins when they confirm booking. The vessel layout is on the website (www.mikeball.com). Explorer Ventures, which operates several live-aboards, also guarantees cabin requests, according to President Clay McCardell.

Larry Speaker of Peter Hughes Diving says, "We guarantee the category of cabin but not the specific cabin number." Mechanical problems or the need to match up single divers can cause a reservation to be relocated. If someone is downgraded the difference will be refunded, says Speaker.

If three out of four of their biggest competitors can guarantee room requests, surely the *Nekton* might consider it, since *Undercurrent* readers don't want to sleep on damp beds.

when the tender approached.

Tyson then led us in the lee of Sisters number 2, where I saw several cherubfish before the current changed directions. And so did we. A downward surge took me on an exhilarating roller coaster ride. When I surfaced with the group, the water was thick with dome jellies. Boarding the tender was never easy in rough water. Most divers climbed aboard a sturdy ladder after removing their fins; a firm handhold timed with the rise and swinging of the tender is essential. One could doff gear in the water with one hand, holding onto the rope draped over the bow with the other, to avoid drifting away. It was impossible to swim against the surface current to reach the boat.

Trinidad and its smaller sister Tobago are located at the turbulent convergence of the Atlantic and Caribbean, northeast of Venezuela. Strong and unpredictable currents, surge, and volatile ocean conditions make dive planning difficult, yet the briefings were usually on the mark, with the caveat about changing currents. While I don't like being timed or herded, it's the drill here and I appreciated guides who could read the currents and keep us out of washing

machines. Visibility is unpredictable -- in January it ranged from 50-100 ft. It can change during a dive (in April and May, and to a lesser extent during the summer, it drops considerably). We had to stay close to see one another and surface together. The guide would either tether a float from a reel or inflate his safety sausage during our ascent to keep the driver informed.

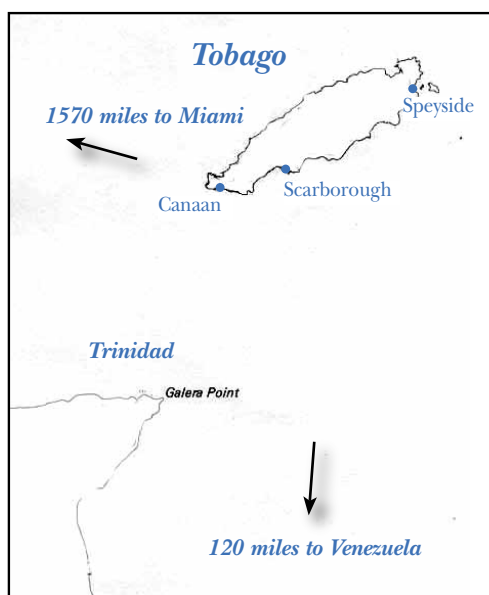
The Wind Dancer is one of the fleet's older craft, having previously sailed the waters of Turks and Caicos Islands. Eight spacious lower deck cabins each have a queen bed with an upper bunk, side-by-side closets over drawers, a sink with vanity, and a bath and shower. The main deck master suite has a queen bed, larger bath, DVD player, and real windows. And then there is morning room service coffee or chocolate, thick terry robes, daily housekeeping and nightly turn down service with a chocolate on the pillow.

The spacious salon has four tables with a full-size bar, an entertainment center, and a well-stocked library. The back corner has two pillowed leather couches across from the fully inventoried "boatique". The sun deck is expansive with lounge chairs, a bar, and a barbecue that was fired up Thursday night.

Cook Anton Gray boasted that we would have the best live-aboard food ever. Unfortunately, he hasn't been on many other boats. The fare was good and plentiful, but, other than local specialties like the spinach-like calaloo, breadfruit in coconut milk, and fiery hot sauce, his meals were unexceptional. "The first drink is your last dive," but there was seldom time to drink the complimentary hard liquor, Chilean wine and Carib beer until divers decided to skip night diving. And many did later in the week. Though night dives started an hour after dinner, around 8 p.m., one night the dive didn't finish until 11:30 p.m., due to a broken running light on the tender. Full breakfasts were offered and lunch was an almost dinner-sized buffet featuring tacos, salads, vegetables, and homemade soup. A sweet roll, coffee cake or brownie was served late morning, afternoon snacks were such fare as fried calamari or stuffed jalapenos, heavy enough to spoil one's appetite for dinner.

Stewardess Anne Trinidad shared two years of boat seniority with CNN. She delivered room service, served dinner, and changed linens and towels on Tuesday. The lady can also "wine" or gyrate her hips while dancing to Calypso, which she did after much coaxing from the crew at our final party, a surf and turf dinner.

The Wind Dancer typically circles Tobago, anchoring each day in sight of rolling hills, palm-lined beaches, and lush tropical rain forests. On the northern part of the island, Cliff Hanger was a drift over a plateau covered with odd-shaped sponges. A 10-foot nurse shark was tucked under a ridge, but I couldn't stop for a better look. A handheld GPS from the boat registered a mere 1.3 knot current. And rain continued and the boat rocked. Our plan to dive the Caribbean-side St. Giles islands, allegedly the premier site of the underwater London Bridge arch, were dropped. Instead we motored through the turbulent Atlantic/Caribbean convergence (about a half-hour ride) to the calmer waters of Speyside harbor.



Here are multiple dive sites -- some brain and plate corals were bleached -- and several land-based operators. Colorful houses perch on the verdant hillside. Cactus drapes over rocks below the lush rainforest. Long-tail white tropic birds flew high above. Local fishermen plied the water in blue-colored pirogues with bamboo outriggers, catching kingfish and lobster to sell to the Wind Dancer.

Black Hole Jack was an underwater coral hillside of gorgonians, corky sea fingers, sea rods, swollen-knob candelabrum, and white eye sea spray. There were fields of magnificent yellow pencil coral, humongous brain coral, and sheet and scroll coral. Out of the blue, a school of spadefish greeted us. A black remora bugged the hell out of a queen angelfish. Lobster and king crab peeked out of holes, while a green turtle slept under a rock. A red sea horse clung to the base of a sea plume. Yes, another excellent dive. And then there is Coral Gardens, home of Tobago's signature brain coral. At a depth of 55 feet, the massive specimen is 16 feet wide and 12 feet tall, and home to green, beige and blue lettuce sea slugs.

At Bookends, named for twin pinacles with a vertical cut separating them, a school of tarpon swam in surf crashing against the rocks. On the third dive that day I was enveloped by a school of blue tangs, had a close encounter with a nurse shark, and admired a large, ancient, coral-encrusted anchor. Several lined seahorses clung shyly to gorgonians. After that, a two-hour steam to Scarborough, the home port, an overnight, and an 8 a.m. enforced departure from the boat. Indeed, a good, fairly priced trip.

I've been most everywhere in the Caribbean, and the Dancer took me to some of the most advanced and most interesting dives I've had. It's off the beaten path and the two days of travel reduce the crowds. Those who come should be physically fit to handle the strong currents and surge. Safe, calm anchorages are few and far between. For those who don't have a couple dozen dives under their belts and aren't up to par for these waters, Belize would be a more suitable live-aboard destination.

-G.S.



Divers Compass: American Airlines flies to Trinidad from Miami, Continental from Houston and Newark . . . Tobago Express (868.627.5160 or callcenter@tobagoexpress.com) flies hourly between Trinidad and Tobago. Tickets are not issued in advance; get an e-mail confirmation that you will pick up and pay for ticket at counter . . . Pax Guest House (868.662.4084 or www.paxguesthouse.com) is \$55 with breakfast. Request a/c room with private bath. Book the Wind Dancer at 800.932.6237 or www.peterhughes.com. Nitrox is \$150; fills were 29-31.5% O₂ . . . Seven-night trip is \$1,595 . . .

What started in Belize with Hugh Parkey on Turneffe Island two decades ago has come to the Dancer; they set clocks back an hour to get more daylight for dives . . . Various certifications are offered and equipment can be rented; reserve ahead . . . Tobago has a recompression chamber, but the doctor lives in Trinidad . . .



Aging Aluminum Tank Explodes

In March, an aluminum scuba tank stored in a garden shed on Australia's south coast exploded, splitting the tank in half and damaging the shed. No one was injured. Nevertheless, it shows that faulty aluminum tanks manufactured more than a decade ago are still around and potentially lethal.

The dangerous tanks were manufactured in the United States between 1972 and 1988, in England between 1967 and 1995, and in Australia between 1975 and 1991. They were made of an aluminum alloy called 6351, which is susceptible to sustained load cracking when it becomes aged and is stored with compressed air. Luxfer was the major manufacturer.

If you have such a tank, get it professionally inspected or destroy it. For more information visit www.luxfercylinders.com.

There were only a couple of photographers, understandable in waters that aren't photography friendly . . . The day starts at 6:30 a.m., when hot chocolate or coffee is delivered to the rooms . . . Peter Hughes is a native son of Trinidad.

Kribati, Yeah; Kri, Nay

important updates for dive travelers

Who says there's no exploration diving left in the Caribbean? In January, scientists dived a 40- by 25-mile bank near Saba and found more than 200 species of fish, some previously unknown, including a goby with underside pelvic fins fused to form suckers. The Atoll's eastern edge lies only 5 km. southwest of Saba. According to the London Independent, the bank has not been subjected to pollution, but it has been affected "by intense fishing pressure." Unpredictable currents and winds have protected the reef, though oil supertankers use the bank as a cheap anchorage. Conservation International says the bank has "unprecedented richness of marine life," and its vulnerable coral beds need to be protected.

Clay McCardell, who operates the Caribbean Explorer in Saba waters, told Undercurrent that he discussed the sites with several people on the expedition and said that while the scientists were fascinated with the findings, the sites they dived may be marginal for sport divers. McCardell said, "That's not to say that there isn't some excellent diving out there, but it's a huge unexplored area and identifying those sites would be time-consuming and expensive. Even if sites are found, they would require a long transit and the sea conditions would have to be optimal to make it a positive experience." He said the only wall they discovered was below Nitrox depth and the new species identified were largely similar to those known.

"... A visit there is a real gamble at this time"

This brings to mind the Chinchorro Banks, off Mexico's Yucatan Peninsula, which divers had clamored to get to for years. When day boats started in the run in the late '90s, traveling divers learned there are nice coral gardens and a pleasant seascape, but fishermen have harvested the sizeable fish.

Spirit of Solomons: For several years, Americans stayed away from the Solomon Islands because of unrest, but life is back to normal and the diving remains superb. If considering a trip, keep in mind the Bilikiki's sister ship, the Spirit of Solomons, which did not make it into the 2006 Chapbook. Peter J. Maerz (Hollywood, FL), who has more than a thousand dives under his belt, reports that in November he was "blown away by the amazing abundance, diversity and health of the corals, both hard and soft. It was common to come across veritable rivers of clown fish. Many encounters with dreamily hovering lionfish, bumphead ballets with dozens of the lumbering giants expelling huge clouds of fish poop, an amazing encounter with a small whale shark, white tip, grey, and black tip sharks made many appearances. Exotica abounded: a robust pipefish, scores of nudibranchs, pygmy seahorses . . . The ship has a roomy, covered dive-staging area; a large, covered dining area is delightful for eating or hanging out. Excellent, varied and abundant food . . . Most nights were spent anchored in flat, calm lagoons with spectacular island scenery. Only four lengthy steams, and only one somewhat rough. If you're in the bow as I was, you may find it difficult to sleep in rough seas." 7-14 night trips run about \$320/person/night. www.bilikiki.com.

Cayman Coral Crisis

It's rare when a dive-industry leader speaks candidly about reef degradation in her own back yard, but Cayman's Cathy Church told the *Cayman Compass* that "If we don't take action now corals will be in serious trouble. Anything that hurts coral needs to be contained — increased sewage, seeping groundwater from the unsealed landfill site, fertilizer runoff, detergent and the destruction of mangroves."

She asserted that the proposed dolphin facility will also be problematic because bacteria from dolphin feces has been linked to coral loss in other destinations.

Church said, "This porous little island cannot support high-level development because everything we do ends up on the reef." The more development, the more people come, contributing to more cars, more sewage and more pollution. "Every little bit we do kills off a little more reef."

Church says there are fewer varieties of fish. "There is fishing line on any dive site on this island, and it is fresh," she said, though no fishing is permitted on the coral walls. There needs to be stricter limitations on where to fish. However, dive operator Peter Milburn believes fish life is abundant, because marine parks are working, though he says all of Little Cayman must be given Marine Park Status to keep certain marine species from becoming over fished.

Church fears that if more coral dies, Cayman itself will start to disappear. She says if the coral does not build up faster than we destroy it, "then the sea will erode away our island. We're built on a coral reef. We're not on a wide continental shelf. Our coral is not just a tourist attraction; it's the basis of our existence."

PS: Cathy's beautiful coffee table book, *My Underwater Photo Journey*, is available at www.undercurrent.org. Click on Diving Book and Guides and all profits from our book sales go to save coral reefs.

Grand Turk Alternative: When I was there in October, I visited the handsome Bohio Hotel, a ten-minute walk north of town. It's smack on a beautiful beach, with kayaks and Sunfish, and it has its own dive operation. I stayed there years ago when it was the run-down Guanahani, but now it's a good alternative to staying on Front Street, especially now with the arrival of cruise ships. Chuck Jayson (Hartland, MI) reported on his March visit. "We had a room with a kitchenette. Not all rooms are ocean-front so you have to request one. The buildings are in very good condition. My wife and I had dinner all over the island. I guarantee you will not find better food anywhere! Executive chef Zev Beck will thrill you with his creations. One neat thing is that you just might find a staff member going on a dive with you. The executive chef loves diving as much as he loves to cook. Divemasters Sage, Craig, Kel and Sunny went to great lengths to make our experience a pleasant one." www.bohioresort.com

Kri Island, West Papua, Indonesia: While the diving can be sensational, divers have always had mixed experiences at this primitive resort on the Indonesian side of Papua New Guinea. Given the high cost and travel time, do serious homework before going, says subscriber Donald Gard (Bangkok). The owner, Max Amer, is developing a new resort down the beach and Gard says "he doesn't have time to manage the resort himself and he is unable to hold on to any manager. A visit there is a real gamble at this time." In November, Gard said the boat had engine difficulties so they mainly dived near the resort. When they did travel to better sites the manager insisted on exploratory dives and many weren't up to par because of damaged reefs. "All these dives were by small settlements where we stopped between dives, which seemed to be the reason for these trips. The owner may have had his crew conduct business at these places." www.iriandiving.com. See the full Undercurrent review in the September 2003 issue.

Kiribati: In the 2006 Chapbook, you'll find a report about coral bleaching in Kiribati. However, this is a big country and Scott Johnson (Palm Springs, CA) reports great dives, as we have in the past. Air Pacific makes weekly three-hour flights from Hawaii, so it's easier to reach than Palau. "Kim Anderson, the owner of Dive Kiribati, and his staff were great! In October, I was the only diver! The diving was very good and I compare everything with Palau. On many reefs I saw two to three times the number of tropical fish than I have

seen in Palau. Surgeonfish, peacock flounders, nudibranchs, giant barracudas, spotted eagle rays, snappers, Moorish idols, trevallys, mantas, octopus, dolphins, occasional sharks and I did not get to see all the big stuff in the Poland area or Bay of Wrecks. We had a few windy days and got to the sites twice, but each time I got seasick and we turned back. Unfortunately the pelagic population has been decimated due to shark finning and spear fishing for sport, which is legal. The government should do something to stop this by imposing stiff fines and jail time. Being it is a socialist government, they do not care. At Captain Cook's Hotel the food was great but the rooms leave a bit to be desired. Make sure your travel insurance Med Vac service includes the Coast Guard, because they are the only ones who will respond within a few hours." www.fun2do.com/divekiribati

I guess the government listened to Scott, at least in part, because in April an area twice the size of Portugal was declared the world's third largest marine reserve. Commercial fishing will be banned in the 74,000-square mile area, which is home to 120 species of coral and 520 species of fish. The new reserve will include the Phoenix Islands, the Gilbert Islands and Line Islands. Conservation International and the New England Aquarium are helping set up the reserve. The 100,000 islanders may continue subsistence fishing in the park.

Grand Cayman: Many of the once-great dive operations today treat experienced divers like kids, because it's about making money. A good example comes from Charlotte Ware (Germantown, TN) who went out with Don Foster's in November. "The restrictions and hand-holding ruined the dives. My husband, who has over 1700 dives, and I, an advanced diver, brought our log books to show our recent dive activity. We were treated as if we were on our very first dive, and held to an 80-foot depth limit and 40 minute dive time. The divemaster said that we had to follow him, and banged his tank at me at 29 minutes to start up. I was the last one on the boat, at exactly 40-minutes dive time. The second dive was with a different divemaster, and I got about 45-minutes dive time (50 feet max depth). We are experienced certified divers with computers. We are trained to dive beyond 80 feet, and to use our computers to monitor our dive safely. I was very disappointed." This isn't the only dive operation on the West End of Cayman that treats divers this way. Check the [Chapbook](#) before you go.

– Ben

Those Reverse Diving Profiles

new research contradicts previous beliefs

In a 1999 a workshop organized by The Smithsonian Institution and sponsored by DAN, DEMA (Dive Training Magazine) and several other organizations, the participants challenged the traditional view that both multilevel and repetitive dives should be undertaken from deep to shallow. The standard "forward dive profile" entails making the deepest dive or the deepest part of the dive first of repetitive dives, so the dive or dives become shallower. However, the participants promoted the concept of a "reverse dive profile," diving from shallow to deep, either in multi-level diving or repetitive dives. While sport divers rarely, if ever, have a reason to conduct a reverse profile — which is not to say they don't do them — scientific divers often find them useful.

While there was no consensus at the workshop, a compromise led to the reverse profiles being approved, though with specific limitations: a depth limit of 40 meters sea water (msw), a differential between dive depths of no more than 12 msw, and no decompression dives.

The belief that forward and reverse profiles are analogous and require comparable decompression is based mainly on the assumption that, given the same depths and durations, both produce the same load of inert gas dissolved in the tissues — despite the order of the exposures. This concept is inherent in many decompression computer algorithms, especially those that deal with

dissolved inert gas loads, as opposed to induced-bubble models. However, there appears to be no experimental confirmation that reverse and forward profiles can safely have the same decompression requirements.

Research Called For

Three Australian researchers, S. McInnes, C. Edmonds, and M. Bennett, designed a study to test the hypothesis that there is no difference for decompression sickness risk between the forward and reverse profiles, as they apply to multi-level and/or repetitive dives. They selected two groups of actual guinea pigs and subjected them to dives within the recommended workshop limits, confirming the profiles with an Aladin Pro dive computer in the chamber.

For multi-level dives, the initial forward profiles were 36m for 30min, 24m for 30min and 12m for 30min. Ascents and descents were at nine meters/min. The reverse profile began at 12m, then dropped to 24m and 36m.

For repetitive dives, the initial forward profile was 30 msw (meters of seawater) for 30 minutes, 20m for 30 minutes and 10msw for 30 min, with surface intervals of 15 minutes. The series was reversed for reverse profile dives. In a second set of forward dive profiles, depth and time were increased, with the subsequent series just depth profile was reversed.

Results

During the standard forward dive profile, no animal showed signs of DCS. However, in the reverse multilevel profile, six animals showed DCS symptoms, a statistically significant difference. All six were immediately placed on oxygen and recompressed. Two were dead before treatment could be instituted. At 42 minutes into the treatment table all six were dead.

The experimenters ran two forward dive profile experiments, and no animal showed signs of DCS. However, in the first reverse repetitive dive profile, one animal died. In the second, this time at greater depths and longer, six animals suffered severe DCS and three died. The difference between the two groups was statistically significant.

Discussion

The researchers chose the dive profiles to comply with the workshop recommendations, but they shortened the time for guinea pigs so that their exposure would approach the no-decompression limits. As there is a direct relationship between DCS susceptibility of a species and its body mass, guinea pigs have a much lower DCS susceptibility than humans. So, "human" depth limitations should carry much lower risks of DCS for guinea pigs.

Despite the modifications in the profiles, six guinea pigs in the reverse multilevel profile died rapidly with severe DCS, unresponsive to either surface oxygen or to oxygen recompression. The catastrophic results show a substantial difference in the physiological processes involved in inert gas handling between forward and reverse profiles in multi-level dives.

That none of the pigs in the forward profile were affected

Computers That Properly Penalize Reverse Profiles

As the research study points out, some dive computers treat forward and reverse profiles identically, a very risky prospect for a diver who intentionally — or unintentionally — conducts a reverse profile dive. We contacted Dr. Bruce Wienke, who developed the RGBM algorithm used by many computers. He told us:

There are a bunch of computers out there with my RGBM algorithm that do NOT treat forward and reverse profiles the same. They penalize recreational air diving slightly if reverse profiles are less than 30 fsw and depths are less than 120 fsw. Beyond that, bubble mechanics kicks in, that is, effects of excitation and growth of bubbles assumed in the model impact the diver staging regimen more notably.

Computers that do NOT treat forward and reverse profiles the same are:

- Suunto RGBM sets (Viper, Vytec, Stinger, D9, etc)
- Mares RGBM sets (M1, Darwin, Nemo, etc)
- HydroSpace RGBM Explorer,
- Zeagle RGBM Cobalt
- Steam Machines RGBM Rebreather Computer Controller
- Underwater Technologies Center RGBM UDC message-deco communication computer system

These computers will penalize reverse profile dives in no decompression limits and deco time/stop depths. Penalties increase with depth, and increment of the reverse profile over the earlier dive, but are time-modulated over roughly a four hour period. The penalties are incurred on air, nitrox, heliox, trimix, or constant ppO₂ rebreathers.

RGBM software on the market (GAP, ABYSS, Explorer Simulator) all do the same thing.

during the repetitive dive, indicated that the dives approximated a no-decompression sequence. Nevertheless, the mirror image reverse profile produced one death, and extended profiles resulted in another catastrophic increase in reverse profile casualties.

The researchers were clearly disappointed in the deaths of the animals, noting that the planned oxygen was inadequate treatment. "We had not anticipated the enormous difference that was demonstrated by the no-decompression exposure of the FDP and the same exposure in reverse."

Conclusion

Because there are so many potential combinations of repetitive dives, no experimental model can predict the overall risk of DCS from reverse profiles. But, the inci-

dence and severity of DCS in the experiments showed a substantial difference in the physiological processes involved in inert gas handling between forward and reverse profiles in both multi-level and repetitive dives.

Reverse profiles applied to multi-level and repetitive diving are not the mirror image of forward profiles and do not carry equal decompression obligations.

"We advise against advocating reverse profiles, until the limitations of this format are determined more factually and the decompression requirements are redefined."

McInnes, C. Edmonds, M. Bennett, Department of Diving and Hyperbaric Medicine, Prince of Wales Hospital, Sydney, Consultant Diving Physician, University of NSW, Sydney, Australia. Reverse Dive Profiles, The making of a myth; dive profiles. The making of a myth: South Pacific Underwater Medical Society Journal, 2005; 35(3):139-143.

Drugs Divers Take

research shows how they affect your skills

Despite drug package warnings about drowsiness and engaging in hazardous activities, divers commonly self-medicate for motion sickness and congestion. If you take such drugs, you may not be as sharp as you think.

Several scientific studies report on how these drugs may affect you — and which are better for divers.

Scop seems best:

In 2001, researchers examined the performance effects of dimenhydrinate (100 mg), cinnarizine (50 mg) and transdermal scopolamine. Subjects took computerized and written performance tests, and answered questions about side effects and their feelings of well-being. Dimenhydrinate impaired decision reaction time and the ability to recall number sequences and decreased performance and feelings of well-being. Cinnarizine and transdermal scopolamine did not cause these problems.¹

An earlier study also gave good marks to oral scopolamine in doses of 0.25 mg and 0.50 mg, but poor marks to promethazine (25 mg oral and 25 mg I.M.). The ability to track moving patterns across a computer screen was not significantly altered by scopolamine, but promethazine lessened subjects' capacity by the same degree as would a shot or two of alcohol.²

These were surface studies, but a 1988 study of transdermal scopolamine in sport divers, a placebo versus a scop patch, were compared at chamber depth equivalents of 16 and 118 fsw. All subjects had impaired manual dexterity and lower sentence comprehension at the second depth, but transdermal scopolamine didn't independently affect performance under either condition.³

Dramamine, Sudafed, and Others

Last year researchers tested reaction time, logical reasoning, serial subtraction, multitasking and sleepiness in aircrews. They fed them promethazine (25 mg), meclizine (50 mg), dimenhydrinate (50 mg), or promethazine (25 mg) plus pseudoephedrine (60 mg). The study affirmed what most divers know — all can cause sleepiness, sometime lasting more than seven hours. Furthermore, meclizine, promethazine and promethazine plus pseudoephedrine impaired performance across all tasks, while dimenhydrinate only impaired speed in identifying a target object.⁴

A 2000 study took 30 active recreational divers on a chamber ride to 66 ft, each with either a placebo, dimenhydrinate or pseudoephedrine on board. Without drugs, depth alone significantly lowered the subject's recall for words. It also lowered mean heart rate and increased anxiety. Dimenhydrinate caused decreases in the ability to sequence numbers and letters alternately, but it didn't significantly affect the other tests. Pseudoephedrine didn't meaningfully affect any psychometric tests, though it did increase mean heart rate and tended to increase anxiety.

The authors concluded that pseudoephedrine does not cause significant alterations in psychometric performance at 66 ft. and likely does not add significant risk to the diver. However, dimenhydrinate does adversely affect mental flexibility. Added to the effect of depth on memory, it may heighten diver risk.⁵

In a study published last year, cyclizine (50 mg) and pseudoephedrine (60 mg) were evaluated during a chamber dive to 98 ft. Each of 24 subjects did six dives.

Brand Names

Dimenhydrinate *sold as* Dramamine Original Formula, Triptone, Gravol

Cinnarizine *sold as* Stugeron, Purazine

Transdermal scopolamine *sold as* Transderm Scop

Oral scopolamines *sold as* Scopace, Hyoscine

Promethazine *sold as* Phenergan, Promethegan

Meclizine *sold as* Dramamine II/Less Drowsy Formula, Bonine, Antivert

Cyclizine *sold as* Marezine

Pseudoephedrine *sold as* Sudafed, Drixoral

Decreases in performance at depth occurred in logical reasoning and manual dexterity, no matter the drug taken. The reduction in reasoning at depth for cyclizine was greater than for pseudoephedrine or placebo, but neither drug had significant independent effects on manual dexterity.

To ingest or not to ingest?

The hyperbaric medical community generally recommends that divers avoid these drugs. Keep in mind: the effects on cognitive and psychomotor behavior may increase with nitrogen narcosis as shallow as 50 feet.

If you need to take motion sickness medication, scopolamine seems a better choice than dimenhydrinate. Natural remedies such as ginger may offer effective alternatives, as was discussed in a July 2005 *Undercurrent* piece, "Managing Mal de Mer."

Finally, give any drug an adequate topside trial to assess for adverse reactions before submerging. Take it slow until you know. And weigh all benefits against risks.

– Doc Vikingo

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(2) *Aviat Space Environ Med.* 1984 Feb;55(2):113-6. Side effects of antimotion sickness drugs. Wood CD, Manno JE, Manno BR, Redetzki HM, Wood M, Vekovius WA.

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(5) *Pharmacotherapy* 2000;20(9):1045-1054. The psychometric and cardiac effects of pseudoephedrine and dimenhydrinate in the hyperbaric environment, Taylor et al.

(6) *South Pacific Underwater Medicine Society (SPUMS).* 2005 Dec; 35 (4): December 2005. The effects on performance of cyclizine and pseudoephedrine during dry chamber dives breathing air to 30 metres' depth. Graham McGeoch, F Michael Davis and Lynn Fletcher.

When Divers Get Benched: Part III

when your body should keep you topside

Judging a diver's ability to handle the conditions at hand is a tough call for a captain or crew member. Several *Undercurrent* readers have reported operators benching divers due to medical conditions or physical limitations. It's unlikely that one would book a dive trip he doesn't think he can handle, but if a boat captain or divemaster doesn't think so, there can be a nasty disagreement, with a few thousand diver dollars at stake.

One of our long time subscribers, whom we'll call Mark, told us Captain Mike Lever barred him from diving on the *Nautilus Explorer's* trip to Mexico's Socorro Island in the Pacific. Mark had previously made a successful trip on the *Nautilus Explorer* in Alaska's challenging waters, and was booked for back-to-back trips to Socorro. Lever said, "Diving at Socorro is not for folks who aren't in good physical condition."

We exchanged letters and emails with both parties and their accounts differ significantly; however there are important points to be made. Lever says when people

signed up he asked if they have any medical conditions worth noting. When the trip was under way, he also asked if participants had any medical conditions they wished to discuss in private. In neither case did Mark come forward. On the second day, when Mark demanded help lifting a 2-kg camera and housing, Lever said "it set off alarm bells." He asked to see Mark's medical clearance. In Mark's file, besides a letter from a physician's assistant clearing him to dive, Lever discovered that Mark was taking medications for a variety of maladies. Lever maintains that Mark had not disclosed these problems when asked whether he had any special medical requirements, conditions or history of diving injuries.

However, says Mark, "my request for help with lifting my equipment due to a back injury I had sustained nearly two years ago caused him to conclude that I was unfit to dive . . . I had been on six live-aboard trips in the interim, had done over 200 dives since the accident."

Mike and Mark then called Mark's physician, who

hadn't signed off on Marks's letter of clearance and didn't know much about diving medicine. Lever asked the doc to discuss Mark's conditions with Diver's Alert Network (DAN). After talking to DAN, says Lever, the physician declined to clear Mark for diving, so Lever insisted that Mark sit out the rest of the Socorro dives. But he arranged an appointment for Mark with the hyperbaric chamber doctors in port. Lever claims that, when confronted about his medical nondisclosure, Mark said, "If I tell you or any other operator about my medical problems, you won't let me dive."

Lever allowed Mark to undertake rebreather training on the second trip in the company of a divemaster, but no deeper than 60 fsw. Mark was frustrated because he'd also planned to make open circuit dives with his camera, which he couldn't use while training on the rebreather.

Lever refused to give Mark a refund, though he had logged only four dives on the first Socorro trip. He did refund deposits for the three June trips he had booked.

"If I tell you or any other operator about my medical problems, you won't let me dive"

Lever told *Undercurrent* he believes he acted both in Mark's best interest and that of his other passengers. A refund "didn't enter my mind," says Lever, because Mark "had lied to us and had ample opportunity to tell us about his medical challenges." Mark filled a berth on the boat that could have gone to another paying customer.

And Mark, an extremely experienced diver, does concede that, "Lever is right. He is the Captain. He can stop everyone on the boat from diving for any reason at all."

Glen Fritzler, owner of Truth Aquatics in Santa Barbara, CA, which operates three live-aboards, has a different point of view. "Although no one in my organization prefers to deal with diver emergencies," says Fritzler, "I cannot condone keeping someone out of the water who could 'potentially' be a problem. It's a fine line and it turns your hair gray, but it's something we have come to live with. Diving is a unique activity where someone can really escape and I feel that your limits have to be decided by you and no one else. As an operator I simply pray that the individuals make the right choices."

Judgments are often subjective, and therefore difficult to defend. Take the situation witnessed by Liam Gowers (Rockwall, TX) while diving out of Bud 'n Mary's Marina in Islamorada, FL. After a 100-ft. wreck dive, the instructor of a group of advanced students informed a pupil that he had showed symptoms of nitrogen narcosis and rec-

ommended that he sit out the next dive. Gowers says, "If the instructor suspected narcosis during the dive, it was negligent of him to continue with a narc'd student. He can't keep his eye on a diver suffering from narcosis and five other divers simultaneously." And, why does narcosis bench a diver the next time out, especially if he is in an advanced class? Should he not be learning to manage it?

Certifying agencies, and some dive operators, especially in heavily regulated countries like Australia, insist that divers fill out medical questionnaires when booking classes or a dive trip. Such a form is downloadable at www.padi.com/english/common/courses/forms. Under the heading "Have you ever had or do you currently have..." it includes such seemingly innocuous conditions as frequent or severe attacks of hay fever or allergy, recurrent back problems, ulcers, and high blood pressure (with or without medication). Answer "Yes" to any of these, and you may be required to have a doctor fill out a multi-page form or provide a letter certifying that you're okay to dive. If there are items you must check, then learn in advance what documentation a dive operator will require, otherwise you may find yourself benched for ailments that you don't believe affect your diving.

That's what Ken Paff's diabetic partner Martha does, after a Blue Bubbles instructor in Cozumel refused to allow her to dive after he saw her check her blood sugar level. "Although he was nasty about it," says Paff, "his actions were actually in line with the guidelines of the agencies at that time." Fortunately, they were able to get a letter of clearance from a doctor at a Cozumel chamber and Blue Bubbles allowed Martha to dive. She now carries a letter from her doctor, though few operators have requested to see it. "In the past decade," Paff reports, "various agencies and operators have eliminated or lessened their prejudices against diabetics and perhaps other folks with medical disabilities. While the concerns with diving by people with type 1 diabetes are real, an absolute prohibition is certainly not."

Tell the Truth

As Bret Gilliam pointed out in the March *Undercurrent*, some divers choose to falsify health information on dive operator applications. Occasionally, dive professionals even encourage the practice. During a Nitrox course at Buddy Dive in Bonaire, Jan Culbertson (Seattle, WA) saw how flawed the screening process can be. While filling out the PADI medical statement, one student answered "Yes" to the question "Have you ever had or do you currently have [a] history of diving accidents or decompression sickness?" Without discussing the diver's history, the instructor told her she couldn't take the course unless she changed her response to "No." "So right there in front of the rest of the class," reports Culbertson, "she changed her answer and she was allowed to enroll in the class. Didn't seem like a very safe practice to me."

Gilliam, the founder of Technical Diving International and a dive travel leader for many years, concluded: “You can bluff but that doesn’t help once you’re underwater.” If something goes wrong and you’re found out, the best that can happen is that you’ll get benched for the rest of the trip. The worst is that you’ll never come back.

Dive medicine specialist Ernest Campbell, MD, focusing on dive training, states, “Failure to report risky pre-existing medical problems would certainly be adverse to diving safety, not only to the student but to the instructor and others on a dive excursion.”

The Prescription Drug Threat

Joel Dovenbarger, vice president of Medical Services for Divers Alert Network (DAN), points out that few conditions are, by themselves, severe enough to bar someone from diving (seizure disorders being the main one). The problem lies in combinations of conditions, particularly when they are treated with combinations of medications. Dovenbarger notes that many central nervous system meds contain nitrogen, so “risk is relative to depth” for divers. He also points out that the most common side effects of drugs at depth are anxiety and panic.

One of our writers has his own story. To sleep when he travels, at his doctor’s advice, he often takes a small dose of lorazepam. It’s actually an anti anxiety medicine that, he reports, doesn’t cause him to sleepwalk to the refrigerator. One morning he intentionally took a tab before a dive to see what effect it might have underwater. Below 100 feet, he says, he felt as if he were on an acid trip, most likely a combination of the drug’s effect at four atmospheres and narcosis. “I had told my experienced companion what I was doing so we managed it, but an unsus-

pecting diver on the same drug might indeed panic.”

Have Your Doc Call DAN

In determining what degrees or combinations of conditions are safe for diving, Dovenbarger insists that a physician should decide, not an untrained individual (neither the diver nor a local dive operator). If you and your physician have questions, DAN will be happy to field a call from your physician to discuss the specifics of any situation or even to walk through the filling out of a medical questionnaire such as PADI’s.

Like Gilliam, Dovenbarger urges divers to tell the truth on medical forms. Otherwise, if a health crisis occurs on a dive trip, in or out of the water, the victim may not get proper treatment. Remember the scene in “Something’s Gotta Give” when Jack Nicholson, suffering a heart attack, lies about using Viagra until his doctor warns him that the nitro in his drip could be fatal in combination with the drug? “Unless you start with the truth,” says Dovenbarger, “you won’t be happy with the outcome.”

Some dive operators, especially live-aboards, offer medical questionnaires that must be completed to the satisfaction of the operator before the trip is confirmed. But others wait until the diver arrives, paid up. It would be useful if an industry-wide standard could be developed, but then not only would it require agencies to agree, it would require countries to agree. So, without a standard, a diver with any medical condition whatsoever needs to do his homework before committing to a dive operator, assess the situation and respond accordingly. Otherwise, as our friend Mark discovered, it could be a long trip, with little diving, and a lot of money down the drain.

Divers, the Internet and the Industry: Part I

what’s to become of it all?

It’s no secret that divers who buy gear from Internet retailers save money. Some dive shops have come up with creative strategies to maintain their competitive position, but for the most part local dive stores are at a serious price disadvantage and a lot more than that.

For decades, we’ve heard the rallying cry “support your local dive shop.” In the 1950s, companies like U.S. Divers sold gear by mail, but in the 60s dive stores began to spring up. *Skin Diver Magazine* carried ads for discount dive stores like Central Skin Divers in New York City; ads for discount camera houses followed and soon discounted Nikonos cameras were part of photo store ads. Dive stores didn’t like the competition, so when Rodale’s *Scuba*

Diving Magazine was introduced in the early ‘90s it refused ads from mail order houses; in return most dive stores stopped selling *Skin Diver*, replacing it with *Scuba Diving Magazine*. *Skin Diver’s* circulation fell, along with advertising revenue, and after efforts by several publishers to resuscitate it, the magazine stopped publishing in 2003.

Today, the “support your local dive shop” mantra is vital to equipment manufacturers, who fear the Internet will put many dive stores out of business. In fact, in the past seven years, 687 new shops have opened, but 735 have closed. Fewer dive stores may mean that fewer divers will be certified, and beginners are the major market for manufacturers. While some companies sell gear through

both the Internet and stores, others, such as Scubapro only sell their gear directly to dive stores, hoping to maintain price and prestige. And keep the dive stores alive and certifying new buyers. (Note: how Scubapro gear gets online is another story we'll discuss later.)

PADI (in fact, all agencies) exists to certify divers, so shrinking dive shops doesn't help. PADI does not accept advertising for Internet retailers in its magazine, *Sport Diving*. Nor does *Dive Training Magazine*. It depends on dive stores, where the magazine is distributed free and the higher the circulation the greater the advertising revenue.

But is "support your local dive shop" a dying business model, when equipment is so much cheaper from Internet suppliers (some of whom have dive stores)? After all, a basic Economics 101 theory is that consumers will naturally move to purchase products where the price is lower. Dive equipment is pricey. So, when a diver knows that \$800 BCD in his dive shop's window can be purchased for \$500 with just a few mouse clicks, he can be hard pressed to support his local dive shop — though he depends on the shop to be there when he needs it.

But what does a diver need from his local dive store that he can't get online? Well, the Internet can't certify divers or pump air or help a novice assemble his equipment for the first time. Those are needs. But, other services dive stores provide — face-to-face advice, technical information, hands on opportunities with gear, trips with local divers, the smell of neoprene, schmoozing — aren't essential to many certified divers. How, then, will the dive store landscape look ten years from now. And what will be the effect on sport divers?.

Undercurrent is neither advocating Internet shopping nor supporting local dive shops. We are interested in looking at how the Internet will affect us — not just where we buy our gear, but where people get interested in diving, get certified, buy air, meet fellow divers, and whether the dive store of today will morph into another form tomorrow. We emailed many of our 13,000 subscribers and an additional 15,000 nonsubscribers to garner their attitudes about Internet buying. We are also contacting dive stores and talking with many people in the industry. The Internet is a boon for some, a bust for others. But what will the effect be on you and me, sport divers?

In our first installment, we will look at the motivations of divers who buy gear on the Internet. Most Internet consumers don't worry about supporting their local camera store, book store or pharmacy. But, do we divers have a different relationship with dive stores than with other

merchants? Let's begin this three-part series by seeing why divers shop the Internet.

The Cost of Equipment:

Yes, dive equipment is awfully expensive. One of our respondents, Keith Smith, said that he looked into diving five years ago, but "was scared away by the prices that the dive shops were charging, but last year I was looking online and found prices so low that three friends and I have purchased \$10,000 worth of stuff, including scooters." Divers on tight budgets have to make spending choices. Lee Chamberlain told us that "the difference of \$20 to \$100 can make the difference between a day or for that matter a week's worth of diving." And then there are families: Rick Goble told us that "I purchased fins, masks, and snorkels for my two sons who were taking their certification at a local shop and was charged 250 percent more" than he would have paid online.

Thanks to discounts, divers like Douglas Murphy buy better gear. After getting certified, he found the cost of gear "prohibitive at my dive shop and others in the Chicago area." Online "the pricing was at least 50% less, which allowed me to purchase mid-level products." He

could afford to buy an integrated dive computer, "where at my local shop I would have had to settle for a basic pressure meter and would not have been able to afford a computer."

Even many high-end purchasers are price conscious. Denton Byers

says, "I often giant-stride into the water with \$10,000 of gear on me, and that figure excludes any camera/hunting/video/rebreather gear. Through a dive shop, it would have been \$15-\$20,000, and some items I couldn't afford."

No Sales Tax

All but five states collect sales tax, with rates as high as 7%, plus add-ons from counties, cities, and local districts that lead to 8 or 9% rates. States can't collect tax on out-of-state on line purchases, so for nearly all divers there is a cost incentive to shop online.

Convenience:

To most Web buyers, convenience is as important as price. One can sit at home (or in the office on a boring day), place an order, and have it delivered the next day if he wants. Websites are open 24/7. There is no driving to the store, Janice Heasty says, "When I need a major item I have to drive 2 ½ hours." And there is no wasting time in the shop looking for merchandise they may not have. And, it can mean saving your bacon. Northwest

The Internet can't certify divers or pump air or help a novice assemble his equipment for the first time.

diver Doug Banik recalled, "I was about to leave for L.A. and wanted to try my new drysuit in Catalina, but needed undergarments ASAP." A Seattle online shop, Edmonds Technical Diving, shipped them overnight to his L.A. hotel. "It arrived before I did!" Michael Weber (Leesburg, VA) got a charger for his Sea Doo Scooter shipped to Mallorca in three days.

Most online buyers pay shipping costs, though policies and promotions vary. Greg Barlow, a customer of Dive Rite Express, mentioned that their site (a factory-authorized reseller of Dive Rite brand gear) regularly offers free shipping. Still, Richard Osborne finds "even when I do pay shipping charges I am still ahead of the local dealers' prices."

For some people, returning an unwanted item in person is a hassle, not only in the time it takes, but perhaps in having to explain the reasons for the return — or persuade the retailer to accept it. Most Internet retailers have satisfactory return policies. Undercurrent subscriber David Steinberg (Portland, OR) has returned several items purchased from scuba.com, and says he's been issued "either an online certificate for credit or money back, no questions or hassle, all handled electronically, where possible." The biggest hassle is having to pack things up and ship them, though UPS and FEDEX will, for an additional fee, pickup parcels at most homes. Generally, the consumer pays the freight for all returned goods.

Unlimited Online Information and Selection

Internet purchasers love surfing the web, comparing the products and features side by side. "It's easier to look at a wider selection on Internet sites," says Denton Byer, "and you can get some unbiased comparisons that are manufacturer-neutral. I ended up selling half the gear I bought through my shop, because it wasn't the right gear for me. Not knowing what else was available was a big reason for this. When I'm ready to buy a product, I already know exactly what I want. The only decision left

is where to buy it, and that gets determined by who has the best pricing."

Many local dive stores carry only two or three major brands of BCD's, regulators, etc., and clearly can't stock all sizes or gear. Some divers order a couple sizes over the web to try on. *Undercurrent* subscriber Chet Hedden (Tucson, AZ) told us he ordered six BCDs from an Internet retailer, determined which one suited him best, and returned the other five for refunds.

Speciality Items

Tech divers are becoming big Internet shoppers. They comprise a small market so their equipment is often not available locally. Raleigh, NC, tech diver Paul Winter noted that 120 cu ft HP steel tanks couldn't be obtained through any local shop "without putting cash up front and waiting for items that would in all likelihood not show up for six months." Dive Rite Express customer George Rousseau pointed out, "In Long Beach, CA, where I live only a few stores carry tech diving brands like Halcyon and DiveRite, so I have to purchase online." Mark Scheele purchased a Shark Shield online because local shops in New Mexico didn't carry them.

Undercurrent subscriber David Steinberg, like several respondents, won't purchase life support equipment online. He says, "I believe this is best left to the local dive shops and am willing to pay extra for the face-to-face business on such critical things." But he does go to the web for "common, noncritical, cheaper items, such as roller bags, gloves, fins, etc."

Conclusion

Clearly, the Internet is serious competition for reasons beyond price. In the next installments we will look at whether Internet shoppers get faulty or discontinued gear, how warranties hold up, how some dive stores are successfully competing while others aren't, how the industry's policies help or hinder the typical diver, and what this may mean for the future of sport diving.

Flotsam & Jetsam

Drink Beer and Save the Reefs: Australian beer drinkers will soon be able to help save coral reefs while they're at the bar, by diving into a new brew called Beeramundi. The artwork for the beer shows a Barramundi Cod peering out of the label with the slogan, "Saving the Reef One Beer at a Time" It's an educational campaign for beer drinkers that includes a series of quizzes on coasters, with the answers on the other side. A percentage of the profits from every beer will go to Reef Check Australia.

Mission Accomplished! Three years ago, it was a tough business climate, especially in the scuba industry. 9/11, stock market plunges, etc. We recently came across a May 2003 piece in a scuba industry magazine that proclaimed: "Now that the war in Iraq is over, many in the dive industry are cautiously hopeful that better times lie ahead.... The hope is that the end of the war will mark the beginning of good news and renewed consumer confidence."

Cheeky Bugger: A English diver who rented an underwater camera from a dive store was shocked when he discovered footage of a woman undressing. He was more surprised when the footage showed the face of Bear Diver's owner David Hepworth, as he set up the camera. Leed's police then visited the shop and arrested Hepworth after they discovered a camera on a shelf in a classroom that doubled as a changing room. Film inside showed a girl, 13, and two women, aged 26 and 39, undressing. On film Hepworth told the girl that she should take off her top before slipping on a dive suit to ensure it fit properly. The girl ignored him. Hepworth told one woman to take off her clothes and put on her swimming suit — which she did — to save time when they arrived at a swimming pool. The third woman was filmed in her underwear. Hepworth claimed he had set up the camera to catch shoplifters. In April, a jury found him guilty of voyeurism. After the case, a woman he filmed said: "He was in a position of trust as a diving instructor and what he did was disgusting." His other victim said: "I was shocked, dismayed and appalled . . . I hope he won't teach diving again." Hepworth is awaiting sentencing. His PADI membership has been suspended.

First Cozumel, now Belize, then Grand Turk: For years, tour organizer Lascelle

Tillett had been leading tours to see rare crocodiles, stately storks and other wonders of Belize. Not long ago he visited one of his favorite sites and says, "There must have been 600 people in the water, and the boats were lined up like cars. We didn't see a single ray or shark." Last year, more than 800,000 cruise ship visitors disembarked in Belize City, nearly triple the nation's population. Although cruise travelers each pay a \$7 visitor's tax, \$1.40 of which is earmarked for conservation, the reefs are showing wear from the increased visitation, said Anna Dominguez-Hoare, executive director of the Belize Audubon Society. "It's not compensating for the damage," she said of the tax. "And a lot of damage could be irreversible quickly." (Marla Dickerson, LA Times)

Alabama Wants its Civil War History: Diver Dennis King objected to an Alabama law that gives ownership to the state of all historical artifacts in state waters. Though he hadn't recovered any items, he sued, claiming he had the right to recover old bottles, Civil War artifacts, arrowheads, and fossils from the river. The State Supreme court said that his complaint did not identify the source of any such right, and the court was aware of none. In September, the court ruled that the cultural resources the diver might recover would be the property of the State of Alabama and threw out the case.

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