

Undercurrent®

The Private, Exclusive Guide for Serious Divers

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Sai Mai II, Thailand

—nurses, leopards and whales

Dear Reader,

It was in waters off Thailand 25 years ago that I first donned a face mask and slipped over the side of a boat to gaze in wonder at the underwater seascape. On R&R from Vietnam, I found the swirling kaleidoscope of fish, the gentle waving of soft corals, and the peaceful blues of the water a vivid contrast from the red dust, the green jungle and the olive drab world of Vietnam. Then and there I began a love affair with the sea that has led to many hours of diving happiness in some of the more wonderful spots on this water planet.

Now, a quarter century later, I returned to Thailand for a trip to the Andaman Sea on the liveaboard Sai Mai II. Not generally dived by Americans, the Andaman Sea, off Thailand's western peninsular coast, has all an avid diver could desire. From a day with whale sharks at Richelieu Rock to a night dive in the Similan Islands with unusual underwater creatures, this was a trip to remember.

Before you say this distant trip is beyond your bankbook, let me note that the cost of this nine night/eight day trip (some marketers call these "ten day" trips) is \$2600, airfare from LA included - not much more than the airfare (with only six days of boat diving) to Belize. And Toto, this ain't Belize.

The 65 foot Sai Mai II is captained by Matthew Hedrick, an American expat who has been diving Thai waters for years. Matthew, along with partner John Williams, owns both the craft and the Siam Diving Center, headquartered in Phuket. (Thankfully, "Ph" is not pronounced as an "f"; try poó-ket.) Constructed in Thailand of Asian hardwoods, the Sai Mai II looks like a classic fishing trawler. The natural wood and clean paint were a welcome relief from the plastic, fiberglass and aluminum generally found on dive boats. It is specially rigged for diving in offshore waters and generally runs in the Andaman Sea during the October - May prime diving season.

Although the loose translation of Sai Mai is "Uncharted Voyage," our trip

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was one of four special trips covering several prime dive sites. From Chalong Bay on Phuket Island, we cruised 50 nautical miles out to the Similan Islands, spent the night and awoke the next morning to see what the sea had to offer. Matthew knows the waters well, and the Global Positioning System (GPS) enabled him to place us directly on sites previously located.

What a way to start! The first dive at Breakfast Bend Reef off Similan Island Number Nine (Ko Bagnu) produced a large ray shark (an eclectic beast, with the head of a ray and the body of a shark - family *rhinobatidae*), lionfish galore, several large morays, an octopus prowling across the reef, and tropicals by the thousands including a glorious dragon wrasse. The colors and shapes of the soft corals fascinated me. We made two similar dives, before a 120 mile overnight cruise to the Burma Banks, undersea reefs whose surrounding waters are 1,000 feet deep - though diving depths were in the 70 to 100 foot range. We spent two calm days drift diving, with close up views of silvertip, white tip and nurse sharks, which in the Pacific, contrary to the Caribbean, are seven foot beautiful swimmers, active and curious.

The Sai Mai II sleeps eight in four clean, air-conditioned, double cabins below decks. Cabins are tiny - in my case an upper and lower bunk, a couple of shelves, and enough floor space to stand up. But I never use my cabin for dance parties, so it was adequate. There's another identical cabin and two with double beds and a couple of shelves. Storage space is under the bunks.

The enclosed bridge on the main deck is home during the dive season to Matthew (and on most trips to his Thai wife, Warunee, who was on a pre-natal shore leave). The salon was mainly taken up with two benches and two tables, used for eating, camera maintenance, reading, card games, computer battery changing, and the usual dive talk. Two small freezers contain cold soda and beer for sale. Matthew gave this concession to the crew, a generous gesture. (No tight-ass restrictions on having a beer with lunch or dinner on this common sense boat; BYOB if you want harder stuff.) In one corner of the salon are a TV, VCR, stereo, and a barely adequate battery charging station.

The main deck also houses two tiny heads with hand-held showers. One serious inconvenience: the need to climb a ladder from the cabins to the main deck to use the toilet. I believe in DAN's gospel about keeping well-hydrated on dive trips, which meant several sleepy climbs each night.

We spent several days off the Surin Island Group with the first stop at Richelieu Rock, an underwater pinnacle rising from about 120 feet. It's covered in soft corals, anemones with several varieties of clownfish, lionfish and scorpionfish. Diving here made the trip. I spent one entire day with three whale sharks, the largest an honest 25 footer. His two leviathan companions were only slightly smaller. The whale sharks cruised continuously around the undersea mountain, ingesting their plankton in peace, undisturbed by our close-up scrutiny. The big guy was surrounded by dozens of cobia that provided a vivid contrast in size. Hundreds of Pacific barracuda swam in a large lazy school. On one dive to 100 feet, I saw a leopard shark with a line wrapped around his tail. Matthew tried to cut it free, but alas, this nervous fish was not willing to play

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What is a Healthy Reef?

Faced with increasing human pressures on reefs and the looming crisis of global climate change, reef "health" is a hot topic. But how can we tell if a reef is healthy?

The most widely used indicator of reef health has been cover of live hard corals. This probably originated with observations of decline in cover when reefs were subjected to stress — for example from sewage output into Kaneohe Bay in Hawaii.

Many objections have been raised to this approach. Coral cover varies enormously from reef to reef, independently of any human action. Differences are largely due to variations in sedimentation rates, wave energy, reef topography, etc. Absolute levels of cover cannot be used as a linear index of health. Oceanic reefs, for example, typically have a coral cover of only 45-50 percent between 5 and 30m deep on the outer slope. In the Red Sea, cover on pristine reefs is generally only 30-45 percent in the same zone.

Ecological health could be defined as maintenance of the community's steady state in a changeable environment. Changes in the state of a system, however, may be part of the natural cycle and such natural changes need to be identified. Terry Done remarked that "today's coral reef may be tomorrow's rubble pile, but today's rubble pile may be the next century's coral reefs."

Reefs are constantly undergoing change; however, we cannot tell what the balance of change will be. If nine tenths of today's reefs become tomorrow's rubble,

and only one tenth of today's rubble becomes tomorrow's reefs, then we are right to be concerned about reef health.

Which still leaves the problem of how to know if a reef is healthy. We suggest the following trends as signs of declining reef health:

- increasing cover of fleshy and filamentous algae (non-seasonally);
- increasing cover of 'bare' rock and rubble;
- a decrease in coral diversity combined with decreasing cover;
- low coral recruitment combined with high post-recruitment mortality;
- net erosion of the reef;
- decreasing coral cover;
- increasing incidence of coral bleaching or disease;
- outbreaks in populations of reef-associated organisms (e.g. crown-of-thorns starfish or *Diadema* sea urchins).

For most of these, measurement is straightforward. The case for deteriorating health will be strengthened by the simultaneous presence of several of these trends. However, determining the health of a reef remains imprecise. The reef biologist's equivalent of the anal thermometer is still a long way off.

This is an excerpt from an article in *Reef Encounter*, by biologists Jeremy Thomason and Callum Roberts. *Undercurrent* takes all responsibility for editorial changes.

lion for our would-be Androcles. In retrospect, I wish we had spent the remainder of the trip here. Although weather dependent, this is a world class dive site.

Leaving Richelieu, we headed southeast towards the Similans by way of two small islets, Ko Tachai and Ko Bon (called "Perforated Isle" on old British sea charts because of a large hole through the hill on the island). Here we found good visibility with fewer pelagics but with lots of lionfish, nudibranchs and a profusion of tropicals. The different species of puffer at Ko Bon were enough to satiate the "fugu" appetites of the Japanese for years. During a spectacular night dive, I saw several ghost pipefish (a cousin of seahorses), two large blue bumpy nudibranchs doing their sexual thing, huge decorator crabs wearing sponges bigger than those found in bathrooms, a brilliant viper eel, and a profusion of scorpion fish.

As is usually my experience, the random selection of divers aboard provided an excellent group. Our mix included a beautiful Englishwoman, coupled with a charming macho Catalonian. Both work in Rome for the European Space Agency. There was a retired American businessman and an Australian ex-pat mercenary working for the Saudi Arabian Air Force. An Alaskan professor who cited the classics added a literary bent to our conversations. A quiet Swiss electronics expert who spends his time traveling the world repairing textile machines gave us his views on world economics. With the exception of the Australian "merc" (a great dive buddy) who spoke only a profane version of Strine, all of us spoke a reasonable version of English and got along famously. Discussions ranged from Cervantes' writings about Don Quixote to the influence of the Mafia on Italian

politics, from the strengths and weaknesses of French rocket science to the advantages of European mistresses, from the skills (or lack thereof) of certain nations' fighter pilots to the merits of the better known beers of the world. A constant part of our conversation had to do with Murphy's Law, a Canon known the world over, which became apparent after the first dive, when someone lost a new prescription face mask, a Nikonos flooded, and an Edge died. That dive kept us alert for Murphy during the remainder of the trip. Later, we codified corollary Number Nine to Murphy's Law: "The number of calories burned off diving from the Sai Mai II is always less than the calories added from meals eaten aboard."

Meals, in the opinion of one who has spent more time in the tropics than Rudyard Kipling advised, were top notch. Although there was the occasional bow to foreign tastes with spaghetti and meat balls or pork Cordon Bleu, most meals were Thai style: tempura shrimp, spring rolls, chicken with cashew nuts, sweet and sour baked fresh fish, squid and noodles stir fried, prawn with glass noodles, meat dumpling soup with lemon grass, and fresh mackerel grilled with Thai sauce. Typically Asian meals, there were always plenty of choices served family style. Matthew usually explained the components of each dish. Desserts included tempura bananas with honey, a pineapple pie, and a fine imitation of American chocolate cake. There were bananas, watermelon, papaya, mangoes, oranges and a special Thai pineapple. Salads were served at dinner and there were lots of greens for the vitamin conscious. All this from a new cook without the benefit of Matthew's wife who usually acts as head chef.

As you can imagine, fish photography was incredible. Unfortunately, the vessel is without ample room for a boatload of photographers. Resident "photo pro" Ashley Boyd, an Australian expat, works on his gear in one corner of the salon. Witty, friendly, caustic, and a long-time observer of the Asian scene, he was a delight. As his career as an oil prospector dwindled, he developed an intense interest in underwater photography. His work can be seen in the book Thailand, The Kingdom Beneath the Sea. He provided some guidance on request, but spent most of his time adding to his considerable portfolio. He offers equipment for rent and PADI photo courses. One photographer commented that Ashley

took up more than his fair share of fresh water buckets and recharging station capacity; there's no doubt that eight serious photographers with equipment would overload the camera capacity of this boat. When Matthew adds the planned camera table and rinse setup, this potential problem should be solved.

The dive area was obviously planned by an experienced diver. Benches along the side and rear are backed by tanks (with BCD's) held in place by sturdy tank holders. Store dive gear on the deck under the benches; fins and weight belts in slots behind the bench. (I kept my other gear in a mesh bag.) The compressor sits in one corner of the deck, rinse buckets in the other. Aft is a swim platform used for water entries from the Sai Mai II (called "live boat entries") or for entering the inflatable dinghy. Two large, easy-to-use ladders are lowered for water exits into the boat. Two fresh water, hand-held showers are handy for a quick rinse after diving. (Although the boat does not have a water maker, it does hold plenty of water. We used it judiciously but enjoyed the rinse after

Sai Mai II, Thailand

Diving for Advanced	★★★★★
Diving for Beginners	Not Past the Similans
Food	★★★★★
Cabins	★★
Accommodations Overall	★★★
Crew	★★★★★
Moneysworth	★★★★★

★ poor, ★★ fair, ★★★ average, ★★★★ good, ★★★★★ excellent

dives and the warm shower at night.) Topside is a large sun area with small lounge chairs, where I often watched the fantastic tropical sunsets with my new found friends.

Captain Matthew and his trained staff provide safe diving, planning each dive according to the current, sea conditions and the characteristics of each site. Based on his knowledge of the site, Matthew determines if the diving will be done from the inflatable dinghy or "live boat". For those without computers, he offers a suggested dive plan based on the day's diving and the PADI Wheel. His dive briefings are clear and complete. He will lead those who want a guide, while others can dive on their own. On most of the dives, we were picked up by Rot and Rune, the observant dinghy operators. They also filled the tanks to 3100 psi, unloaded the gear from the dinghy, put the tanks into the tank holders, and assisted with photo gear. A class act, indeed.

We spent the remainder of the trip diving several of the Similans. At "Golden Arches," among the massive underwater boulders, we saw several leopard sharks, colorful clown triggerfish and a number of spottail gudgeon, a rare fish with a large dark dorsal. Sharkfin Ledge featured huge schools of baitfish, moving curtains that often blocked the view of the reef. Watching predators attack these baitfish was a fascinating way to hang for five at ten. On shallow dives, I found banded coral shrimp cleaning large morays, lobsters, ubiquitous anemones with their clownfish, gobies with attendant shoveling shrimp in the sand, and plenty of butterfly fish in a Baskin Robbins variety of colors. My most unbelievable sight was at 60 feet in a stiff current where I saw eight large lionfish lined up in a row on a table top rock. Lined-up lionfish?

Diving the offshore Andaman Sea can provide some of the best the Indo-Pacific has to offer. I saw sea fans as big as Roseanne Barr's bloomers, magnificent soft corals everywhere, pelagics, unusual sharks, and enough tropical reef dwellers to satisfy the most jaded underwater photographers. Take note, however; I'm describing diving offshore. I spent four days diving out of Phi Phi island close to the mainland and was heartbroken at the absolute devastation I saw. Dead and dying coral covered by silt seemed to me a gloomy forecast of what the future holds if we don't act to protect our oceans. Reports from fellow divers tell of similar destruction at other Thai reefs such as the highly touted resort of Pattaya. Much of the blame is placed on tin mining, logging and other development. The prudent diver will check carefully before investing big bucks in a dive trip to an inshore Thai dive destination. (I am still burned that Sea Safaris recommended and booked me into Phi Phi despite my stated requirements for first-class diving. And this from an agent who had visited the site and was aware that Siam Diving Center does not recommend it as a place for serious, hard core divers.)

The small Sai Mai is no Wave Dancer (see Undercurrent, October 1992). She has the inconveniences that come with smallness and operating in a third world

Tipping, revisited

Dear Travel Editor:

Thank you for your informative article in March regarding tipping practices.

From now on, I will include an item on tipping in my written questionnaire that I send to a potential dive resort that I am considering. I will ask them to fully state their tipping policy in writing. I will also tell them that the cost of any built-in tip or service charge will be added to the cost of the trip when I compare their cost to that of another resort being considered.

As for my own practice of tipping, I do tip \$5-\$10/day if the complete service is that memorable. Some of those that I did not tip: *Pro Diver*, Ft. Lauderdale, FL; *MV Seduction*, Morehead City, N.C.; *MV Gunsmoke*, Virginia Beach, VA; *Mr. Ike*, Ocean City, MD; and *Sea Fever*, Miami Beach, FL.

Vernon A. Jackson
Dumfries, VA

country. But, for underwater viewing, good food, a smiling and capable crew, and a Captain eager and willing to provide his guests with the best diving his adopted waters have to offer, this is a five star operation for the money charged.

J.G.

Diver's Compass: 5 day/6 night trips to the Similans are \$800; 8 day/9 night trips like mine--\$1480; may be a special trip to the Indian Andaman Islands, Borneo or Indonesia. . . .oxygen and first-aid supplies on board; chamber is far away in Bangkok; this is no place to push your computer. . . . Water temperature in March was 80-82 degrees F; shorty 1/8th inch suit was comfortable;no E-6 developing. . . .There is a limited amount of spare gear aboard but rentals or purchases in Phuket are no problem. . . .Tipping not pushed, but a reasonable amount for a job well done was appreciated. . . . book through Siam Diving Center, P.O. Box 244, Phuket 83000, Thailand, FAX and Phone: 66-76-381608 or Sea Safaris, 800/ 821-6670 (California 800/262-6670). . . .Airfare from LA to Phuket is \$1100.

Grenada, British West Indies

Dear Reader,

For the serious diver, Grenada is basically a one trick pony - the 1961 wreck of the Bianca C. Ten minutes offshore from the island's two major dive operations, the 592 foot cruise liner sits tilted and intact, its deck rail 90 feet from the surface. But that can be a damn tough 90 feet. More often than not, the current will splay you as you descend down the anchor line. Still, I can't think of a better pure wreck dive in the Caribbean.

Not having dived Grenada for five years, I stopped in after my visit to Tobago (see the last issue) to see if any new tricks had been learned. You see, last trip I found ordinary reefs, not a lot of fish, and average diving. If they now visited better reefs, in combination with the Bianca, then this could be an interesting destination. After all, it's a friendly and festive island with a few nice hotels and good local food.

My first take was that at least the quality of the dive operations had improved. Mark Hoverd, a Brit, operates Grand Anse Aquatics at the Coyaba Beach Hotel, an ordinary and reasonably priced beach hostel. His outboard-powered, uncovered 24-foot boat with a tank rack down the center, is loaded from the beach. His new associate, Canadian Randy Bolt, told me that they don't dive the Bianca C., except on rare occasions when the divers clearly can handle it.

Dive Grenada, up the beach at the Ramada Hotel, will take you more readily - after you prove your mettle. (Same kind of boat, no tank racks.)

But, Mark and Randy seemed like better chaps for reef diving, so I went along with them to see what was new. As one might expect of beachfront hotels with sparkling cruise ships off shore, Grand Anse Aquatics (and Dive Grenada) bases its business on anyone who drops in, including snorkelers and resort course divers. I hoped this would be an exciting dive since Island residents-- offshore medical students who cut up cadavers just a short stroll down the beach at

Grenada, BWI

Diving for Advanced	★
Diving for Beginners	★★★★
Bianca C. Wreck Dive	★★★★★

★ poor, ★★ fair, ★★★ average, ★★★★ good, ★★★★★ excellent

St. George's Medical School-- were to join us.

Things move slowly in the tropics; a single tank dive took two and a half hours to execute. Of the seven certified divers on this dive, only I had my gear adjusted beforehand. I jumped in and, following instructions, bobbed on the surface for ten minutes until Randy checked out the other six who then joined in. This, of course, is flat calm water, 60 feet from the shore. Underwater, we encountered a sizeable southern stingray, whose tail had been lopped off by some evil force. We came upon a wall with so much wire coral it would have driven a technician crazy trying to restring it. Visibility ran 50-60 feet (which made Randy happy, suggesting that it doesn't get a hell of a lot better). I found a huge purple tipped anemone, but aside from the nice soft corals, it was an ordinary dive, with a yellow and purple hogfish and a couple of 2 foot grouper as highlights. (One med student carried a sack, expecting to bring home lobster. He was unsuccessful). Though we finned along no deeper than 60 feet, 18 minutes into the dive, one of the divers had sucked his aluminum 80 down to 1000 psi, forcing us to turn back to the boat. We ended up submerged for just 40 minutes.

I also dived the Buccaneer, a little wreck I cruised five years ago. Soft white coral covers one side. Beneath were a few grunts and a French angel. With not much to see, I scoured the reef for macro critters, finding Pederson cleaner shrimp in anemones, a couple of arrow crabs, and a spotted eel.

So, for me, Grenada is still a one trick pony. I had made both these dives last time I was here. They're fine for beginners, but if you've been around... pretty ordinary stuff. There is one new trick, offered about once a week. Mark runs a boat to islands off the northern tip of Grenada. The diving is better up that way, but it's \$125 for two tanks, lunch, and a long round trip ride in an open boat.

Grenada is an interesting island, with nice beaches, good local restaurants, and some decent hotels. At a couple hundred bucks a day, Lance Aux Pine on the windward side, is romantic and spectacular. On the beach, the Ramada is, well, a Ramada, but a little more upscale than usual. The Coyaba, average. Rent a car. Take a hike in the rainforest. Eat at Mama's, where your Grenadian dim sum includes conch, possum, armadillo, and a host of local vegetables. Enjoy the stay. And maybe take a dive or two.

Grand Anse Aquatics (809/444-4129; fax 809/444-4808); Dive Grenada (809/444-4371; Fax 809/444-4800)

Why We Declared Independence

The following is from the Beachcomber's Diary, a column appearing regularly in *Diver* magazine, a British publication:

Worrying women

"Now that Hillary Clinton is President of the United States, I forecast that American women divers are no longer going to be content to carry their masters' gear down to the shore as well as their own.

Of course feminism has been concentrating on diving for some time past in the US of A. Why, I have read, though I find it hard to believe, that a 'dynamic and diverse group of female American divers' meet on Sundays in the summer 'to exchange ideas and share a common love of diving'. Worse, they call themselves Aqua-Women and specialise in wrecks.

I know you will find this very worrying, as I do. A spokesman for Aqua-Woman, whom of course they want to call a spokesperson, says that she believes that in 1978 the ratio of men to women in American diving was almost 90 percent male to 10 percent female, and claims that today the ratio must easily 'be 50-50'.

At the last count, women accounted for 23 percent of British divers. Is Aqua-Woman already here?"

Ben Davison

Why Divers Die: Part I

—The DAN 1991 Accident Report

The National Underwater Accident Data Center (NUADC) at the University of Rhode Island has been recording diving fatalities involving U.S. citizens for 20 years. To further your awareness of the causes of death so that you may dive more safely, *Undercurrent* has been reporting their analysis for 15 years. The 1991 report on scuba fatalities is the second joint effort between DAN and NUADC.

In 1991, 67 recreational scuba fatalities were reported. While 67 is the second lowest number of scuba deaths recorded since 1970, at least 90 scuba related deaths have been reported for 1992.

In determining the overall fatality rate, it is difficult to obtain the exact number of active divers. The number of newly certified divers is not available and not all divers remain active after their first year of diving, while some drop out and then reenter. Nonetheless, NUADC

estimates the active diver population at 2.5 to 3.2 million divers at the end of 1991, leading to a fatality rate of 2.09 to 2.68 per 100,000 participants.

[Eds note: The National Sporting Goods Association surveys 20,000 households annually to determine participation in recreational sports; they estimate 2,000,000 divers]

Location of Diving Fatalities

Florida recorded 14 scuba fatalities in 1991, down from 22 in 1990. There were 10 scuba fatalities in California in 1991, while 14 were noted in 1990. Pennsylvania had four deaths in 1991, two occurring in the same quarry, several months apart. New Jersey had four wreck-diving deaths, Hawaii three fatalities, while two were recorded in Texas. One of these victims died of hypothermia after 20 hours in the water without a wet suit

Feeding Sharks: the damn things bite!

Recently, Tobago's Secretary of Marine Affairs ordered dive operators to stop feeding sharks for the diving tourists. The order came in response to a tourist who had complained that the "feeding was crazy and most dangerous."

So far as we know, tourists observing shark feeds aren't in much danger. But guides who feed the critters are often fair game. In the past few months, guides from three dive operations in the Bahamas offering shark dives have been bitten. While none of the attacks has been fatal, one victim flew to Miami for additional medical evaluation.

Guides at Dive Dive Dive, Stuart Cove's in Nassau and UNEXSO of Grand Bahamas were bitten, but only Dive, Dive, Dive has stopped offering the shark dives. Ray Post told us, "we are looking closely at our procedures and when we feel comfortable we will offer it again."

Shark dives began in the Bahamas at Stella Maris Inn on Long Island more than 15 years ago. Joel Friese of Stella Maris told us, "we have never had anyone bitten by a shark in all the time we have offered it. At least one shark dive is offered as part of our standard dive package and everyone seems to enjoy it."

But, not everyone is so lucky. Stuart Cove, who himself got bit, told us that in each case it was the guides own fault. "We were showing off and didn't follow our usual practices. When I got bit, I was with a group from *National Geographic*. I wanted them to get some heavy feeding activity pictures; so, I did some

things that I should not have done. It is as simple as that."

Stuart needed 20 stitches. "David Eads got the other bite," Stuart told us. "He was waving the bait around on a stick making the sharks do tricks. He had to have forty stitches in his hand. Since then we either just open the bait box on the bottom and let the sharks help themselves or, if we use the bait on a stick, we wear chain mail gloves that reach to the shoulder."

Cove said he has never had a visitor hurt and there is a great demand for their \$75 shark dive.

John Englander says that UNEXSO has had three incidents. One guide hit a shark's tooth with his hand; another had one small puncture wound; and the third was more seriously injured, with considerable damage to the muscles in the arm.

UNEXSO has been hand feeding sharks for about five years. They enclose the food in a large PVC tube that is sealed off to prevent the scent of the food from creating a feeding frenzy. They have three to five safety divers present to cover the feeders' flanks. In all three cases, John said, "I think that the sharks just missed the food and hit the feeder. We are looking into the chain mail gloves, but right now, we do not have them."

Englander said that UNEXSO has a special waiver their customers must sign that, in effect, says that "they realize that we cannot and do not guarantee their lives if they go on the shark dive."

The funny part is the more we mention the danger, the more people want to do the dive. It's very strange."

Ben Davison

(while his wet-suited partner survived). They had been diving offshore, but drifted away from their boat in the current. They reached a buoy after several hours in the water and clung to it overnight. The decedent died shortly before rescue.

Five Americans died in Cozumel, Mexico. The Bahamas accounted for three fatalities, and one death each was reported in Okinawa, Palau, Dominica, Bonaire and St. Maarten.

Dive Activity and Certification Status

Of the 67 scuba fatalities, 59 divers were certified to dive (five of whom were taking advanced level classes), while four were undertaking their initial training. Four divers were without proper certification or supervision.

The percentage of charter boat fatalities was 30.2 percent in 1991; the number of shore-based fatalities was 46 percent.

Nine persons conducting technical level dives were killed. As stated in *Technical Diver*, "technical diving is a discipline that utilizes special equipment and methods to improve underwater safety and performance, enabling divers to extend their range beyond the established recreational envelope." These include cave dives, wreck penetrations, ice dives, and deep, extensive decompression dives.

Technical divers have invested significant amounts of time and money to safely accomplish dives. Seven of these nine fatalities did not have the proper training or experience for technical level diving. Three double fatalities in caves accounted for six of the seven cave deaths.

For example, a 30-year-old female and a 32-year-old male entered a cave system despite park regulations and warnings from their instructor. The male had several specialty certifications while the female was making her first dive since certification. After conditions became

silty, only the third member of the team could find the way out. They did not use guide lines. When recovered, both victims were out of air.

"One of these victims died of hypothermia after 20 hours in the water without a wet suit (while his wet-suited partner survived)."

A husband and wife buddy team died while attempting a cave dive in Missouri. The husband was reported to be an experienced diver, having "logged over 600 dives," while his wife was new to diving. Neither diver was trained in cave diving. They entered the system with no guide lines to the surface. The husband carried the main light and the wife carried the backup light. Reportedly, visibility is generally about 30 to 40 feet, but recent rains and flash floods had dropped the visibility to less than five feet. Although this cave system is not complicated, it took the recovery team over one day to find the bodies which were located more than 300 feet into the system and about 10 feet off the permanent line. The husband's inflator hose was disconnected. When tested, it caused the buoyancy compensator to continually inflate.

[Note: We published a story in the February issue of *Undercurrent* entitled *The Extra Weights We Carry—The psychology of dependency*. These two cases are strikingly similar to the situation described in our story, where an experienced male led an inexperienced and dependent female. Our subject was lucky to survive. These four people didn't.]

Finally, the experienced cave diver who died was trapped in a cave following a geologic disturbance that blocked the cave exit.

Next issue: More cases

Human Guinea Pigs:

—What our readers tell us about their computers

In 1988 and again in 1992, we offered a questionnaire to our readers, asking about their experience with computers. Based on the results of our latest survey, computers have indeed come of age.

In 1988, a number of computer users behaved as if the computers were Godlike in their ability to forecast safe dive profiles. They believed that if their computer said they were diving safely, they were. Unfortunately, many who went to the limits paid with a bends hit. Several of those divers shared their experiences in these pages.

Getting Bent:

A San Diego diver got bent using a Suunto that "was

in its error mode, so it wasn't functioning as a computer." He reported that he "usually took it to its limits" and had another incident, using a Beauchat and a SkinnyDipper, which "shut off during the first of two dives." He followed a 20-minute dive to 253 feet (+ 40 minutes decompression) with a non-decompression dive (160 feet for 8 minutes, 80 feet, 20 minutes) three hours later. "One hour after surfacing, I had decompression sickness — blockage of artery supplying nerves to inner ear."

A Delaware diver reported skin bends "after doing a second decompression bounce dive following the first decompression dive, back to back, with no surface interval." And a Colorado diver who got bent admitted: "My fault. I wanted to take the computer to its limit."

A Honolulu woman said that "it appears that my physiology is such that by running my diving close to the extreme margin of Edge safe diving, I subject myself to more of a chance of becoming bent than by using the Navy tables. Bent once in Palau using the Edge, I discovered when I stopped using it my almost permanent back pain while repetitive diving went away."

One reader said that "in the Maldives in 1985, my Edge suddenly went black after two dives to the 40-60 foot level. The divemaster prescribed a 120 foot afternoon dive which I didn't want to miss so I went without the Edge. No problem. But, I then went on a 'shallow' evening dive and one hour later I developed a constricted visual field in my left eye. It lasted one hour. I think I had transient decompression sickness, which was mostly my fault as I overdid it that day."

A woman from Pennsylvania reported that her Edge said she had "hours" when she surfaced. "I got two hits in the spine and experienced temporary paralysis."

While we can indeed fault divers who push their computer, these are also examples of what happens in an unregulated industry. Even today, decompression theory is still theory, without sufficient empirical data from human subjects to make it axiomatic.

So computers were introduced without human tests — and with little understanding about the decompression sickness possibilities of multilevel diving, multi-day diving, or missed safety stops. Independent scientific studies had not been conducted and independent bodies had not contemplated the effect of computer diving. So, divers got bent.

"Among our readers (whom we presume are wiser and better educated than ordinary divers), only one got bent."

While the best of free market competition can today be found in the number of good computers that are on the market, in the 1980's, the free market offered no regulation of these devices so critical to the health and safety of divers. Everyone who dived on a computer — in fact everyone who still dives on a computer — was a human guinea pig.

Thankfully, today we know more about diving computer profiles and the human body. The result is that we dive safer. Today, it seems that fewer divers test the limits of their computers. While we can only surmise that more and more divers are using computers, the number of bends cases reported to DAN between 1990 and 1991 decreased slightly. Among our readers (who we presume are wiser and better educated than ordinary divers), only one got bent.

Joseph Trujillo of Alta Loma, CA was diving at Catalina Island on the wreck of M/V Valiant. "On the first dive, I went to 98 feet for about 15 minutes videotaping the wreck. I then worked up to 70 feet where I stayed for about 21 minutes. I made a one minute stop at 30 feet, a three minute stop at 20 feet, a five minute stop at 10 feet and then came to the surface. I had a one hour and fifty-five minute surface interval. Then, I made a square dive to 94 feet for 37 minutes.

"I've had it sound off and go into the red because a big wave went over."

"At no time did the computer indicate any decompression problem or ceiling.

"When I got to the surface I knew something was wrong and I was put on oxygen. All the symptoms went away. I elected not to go to the chamber which was near the harbor. The next morning, I knew I was in trouble and went to the hospital. I didn't send the computer to the company to be checked out because I didn't think it was in business any longer."

Orca's Paul Heinmiller told us that "the first dive fits into Orca's profile. He was not into decompression. However, the computer should not have allowed the second dive without indicating that decompression was needed and providing a ceiling. We have not seen the computer so we can't say what went wrong."

While the industry is now marketing more conservative computers, there is really only one significant change from the early models-- the addition of electronic air pressure gauges to some computers, permitting them to be attached to the high pressure hose. The use of these computers aren't widespread. Many divers don't like storing all critical information in one device. Should it fail, then one has no information — no depth indicator, no dive duration, no air indicator. Deciding what path to take to the surface is a little more complicated. Thankfully, the current models — the Phoenix, Computek and Oceanic — seem to behave properly (although the Delphi had its problems).

Delphi/Phoenix

The Orca Delphi, an integrated dive computer/pressure gauge that attached to the high pressure hose, was introduced in 1989. But a bug in the software soon led to a recall. The Delphi lost its market, Orca got into financial difficulty, and production was stopped after 15,000 units were made.

In January, 1991, Orca Industries became a subsidiary of EIT, Inc. EIT assumed no legal or financial responsibility for the old Delphi, but offered owners the

opportunity to obtain their new and similar Phoenix for \$250. Introduced in June, 1992, the Phoenix is based upon the software program developed for the Delphi, but with major changes to accommodate newer technology. The Nitrox Phoenix will be introduced shortly.

Owners responding to our survey reported that the Phoenix provides more dive time compared to other computers, has an easy to read display with depth recording deeper than 130 feet, and offers the ability to decompress with it.

Elizabeth Collins of Winchester, MA wrote, "I like the tissue group scrolling. Often I extend my hang time to bring a tissue group away from 100 percent saturation. I also like knowing how much time I have at a given depth based on my air consumption. I also like the 300 foot depth limit."

Greg Battaglia of Reno, NV told of a curious problem: "The Phoenix seemed to be working OK, and the battery usage was much improved over the Delphi, until I made a trip to Cayman Brac. Midway through a week of diving, I could not get the Phoenix to initialize. I checked battery voltage and connections, and all was well. Since returning home, I have made several dives with it, and it seems to be working OK."

Comutek

Introduced in 1990 by Tekna (now Ocean Edge), Comutek is an air integrated computer using the Swiss model with a Hann-Tekna algorithm, one of the more conservative.

Users like the decompression computer features, the visual depiction of remaining air, the backlighting for night diving and its overall ease of reading.

Generally, the users seemed satisfied with their Comutek.

As Dave Meents of North Ogden, UT told us, "It is so easy to read. Battery is user replaceable and an easy battery to find. Everyone who has seen my computer loves the display."

Jim Marshall (Chicago) wrote, "It shuts down if you miss one second of a decompression on a dive. It is very conservative." He also found that the high pressure hose leaked at the first stage connection and the face plate developed bubbles in it. He returned it to the factory and the service was "excellent -- repaired perfectly -- and was free. It only took a few weeks."

Oceanic

Oceanic's Data Master II (discontinued), the Oceanic DataMax Pro, and the Data Master Sport are air integrated computers. The U.S. Divers Data Scan 3 is basically the DataMaster Sport.

Of her Data Max Pro, Carol Kender of Dublin, OH said, "I like the display design, programming, recall feature, audio alarms and air pressure integration." Chuck Tribolet of Morgan Hill, CA told us, "It and its little brother DataMax Sport are the only ones I could figure

out without the manual."

There were complaints about losing the memory when the battery is changed, and another diver complained about the sensitivity of the ascent rate alarm: "I've had it sound off and go into the red because a big wave went over."

Of the DataMaster II, Jerry Ram of Atlanta, GA likes the integrated air pressure gauge - all one unit, but wasn't keen on having to have the batteries replaced only by the factory, and could use a time to fly indicator.

There have been some problems. Sharon Swope of Waynesville, PA said, "My psi reading malfunctioned, increasing during a dive stabilizing at 4000 psi then only decreasing very slowly over a period of hours after removal from air tank." Harold Carson of Berkeley, CA told us, "It just quit operating on the fourth dive of the day." And Gary Wise of Brookings, OR, wrote, "The decompression indicator on two separate occasions in fresh water at approximately 45 feet indicated that I was within five minutes of decompression limit. I had only been in the water a total of 35 minutes."

Conclusion:

Those divers who like the integrated air pressure gauges with their computer are generally satisfied with all the devices on the market. Pick the one you prefer.

Next Issue: More readers' comments

As if we can't figure it out

Dear Ben,

We take major exception to your mention of DEMA in your article entitled "The Big Easy". We find it highly irresponsible for you to suggest that a consumer should circumvent our rules and regulations to gain entry (to the DEMA Show).

This is a trade event. Therefore, admission is restricted to those having official business with one of our exhibitors. For the public to have access to wholesale pricing would undermine the very nature of the dive retail community.

Due to these type of recommendations we are implementing strict requirements for all future shows. Details of this will be presented to all dive shops early this Summer.

I hope that you will find it in the best interests of the international dive community to refrain from these type of suggestions. We would like to see an addendum to your "Big Easy" article stating that the DEMA Show is a trade event open only to those having official business at DEMA XVIII.

Feel free to contact me should you wish to discuss how we can work together on growing the scuba experience.

Sincerely,
Brian Dyches
Dive Equipment Manufacturers
Association, Marketing Relations

An Undercurrent Dive Trip? Part II

—The Land Based Winners

Last month, we reported on the results of our survey where 83% of respondents said they would be interested in diving with fellow subscribers on an Undercurrent dive trip.

Before we discuss the top two land based resorts (as selected by survey respondents), here's a brief recap of the winning liveboards.

The Winning Liveboards

The two top liveboard vote getters were: **Peter Hughes' Wave Dancer** (Belize) and the **Okeanos Aggressor** (Coco Island).

Since last month's article, the 1-week trip on the **Wave Dancer** is almost completely booked (there are only 2 spots left). In response to this overwhelming demand, we've booked another week on the **Wave Dancer** (see chart below). Due to their enormous popularity, July 2nd through July 9th is the first week Peter Hughes has available in 1994.

The Land Based Winners-- Bonaire and Palau

93 different land based resorts (in 52 countries) received at least 1 vote. Ranging from resorts in

Cayman Brac, Fiji, Sipadan, Galapagos, French Polynesia, Solomon Islands, Saba, Rangeoira-- you get the picture.

When all was said and done, the top two vote getters were the **Sand Dollar Condominiums** in Bonaire (16%) and the **Palau Pacific Resort** in Palau (14%). Two very different resorts, but both with fantastic diving.

The second chart below lists the dates we have reserved for you at these two resorts. All prices include **unlimited** diving, taxes and service charges, and airport transfers to and from the resort. As with the liveboards, airfare is not included.

The 10-day trip to Palau includes 9 days of diving (two tanks/day), an introductory cocktail party, a daily buffet breakfast, lunches on dive days, and a private Undercurrent dinner the final night.

To reserve your spots at the **Sand Dollar** or the **Palau Pacific** (or on the **Wave Dancer** or **Okeanos Aggressor**), please call **1-800-237-8400 Ext. 222**.

Whichever trip you select, you'll be guaranteed great diving with fellow Undercurrent subscribers. Good luck, have a ball and let's go diving!

THE WINNING LIVEBOARDS

Liveboard	Date	Cost/person*	Deposit required	# of Spots
Wave Dancer	1/8/94 - 1/15/94	\$1,495 (Twin stateroom)	\$500	2
Wave Dancer	7/2/94 - 7/9/94	\$1,595 (Master stateroom)	\$600	6
		\$1,495 (Deluxe stateroom)	\$500	8
		\$1,495 (Twin stateroom)	\$500	6
Okeanos Aggressor	3/24/94 - 4/3/94	\$2,495	\$800	21

* Excludes airfare and taxes

THE LAND-BASED WINNERS

Resort	Date	Cost/person*	Deposit required
Sand Dollar	2/5/94 - 2/12/94	\$1,077 (1 bedroom, double occupancy)	\$350
		\$769 (2 bedroom, 4 person occupancy)	\$250
		\$691 (3 bedroom, 6 person occupancy)	\$200
Palau Pacific	1/16/94 - 1/26/94	\$1,599 (Gardenview Deluxe)	\$500
		\$1,999 (Oceanfront Royal Pacific)	\$600

* Excludes airfare and taxes