undercurrent®
THE PRIVATE, EXCLUSIVE GUIDE FOR SERIOUS DIVERS

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Esperanza, Vieques, Puerto Rico

Calm Surroundings, Pleasant Diving

Discovering the undiscovered. That's what I like best about writing for Undercurrent. Though we indeed have the obligation to provide firsthand reports on the popular diving destinations, we have the equal responsibility to ferret out those destinations which few divers have discovered. Tropical dive operations exist undiscovered for a variety of reasons, but for most locations discovery comes only after a resort gets written up in Skin Diver. But, unless a resort has the capital to advertise and is large enough to handle a gaggle of divers, it doesn't get much of a play in Skin Diver. So resorts languish while divers continue to bypass the unknown for the known. Undercurrent, of course, has a mission separate from that of Skin Diver. We can search out those spots with a single dive boat, or with just a half a dozen rooms.

So, with this mission in mind, I stumbled upon the island of Vieques, a municipality of Puerto Rico, located just six miles off its southeast coast. Only 21 miles long and five miles across at its widest point, it's a serene home for roughly 7,000 friendly Spanish-speaking people who live in one of two towns in the central portion of the island: Isabel Segunda, the largest, and Esperanza, a small fishing village on the southern coast. The western part of the island is under the jurisdiction of the U.S. Navy which stores ammunition there; the eastern third comprises Camp Garcia, a training base for U.S. Marines.

Vieques is picturesque--a storybook example of tropical splendor. Except for occasional rock outcroppings jutting into the azure sea, Vieques is rimmed with beautiful beaches lined with coconut palms or mango trees. A chain of hills stretches east-to-west down the middle of the island, lending an undulating effect to the land. On the western end, the hills rise to more than 1000 feet. The entire island is heavily wooded and green. Sugar mills once kept the residents employed, but they are now closed and the land remains largely undeveloped. Most of the inhabitants today rely on cattle raising and fishing, or a few light industries for their income.

There is virtually no tourist industry. In Esperanza, where the only dive shop on the island is located, two small hotels provide rooms for visitors.

INSIDE UNDERCURRENT

The most charming, La Casa del Frances, is a turn-of-the-century plantation mansion converted to a guest home. It has eleven large rooms with 17-foot ceilings, each with double beds, an overhead fan and simple but pleasant decor. It's a clean and peaceful hotel, private, small, isolated--and lovely. It's not on the beach but one may walk ten minutes to any number of beaches or dip in the heated pool. Summer rates run from $39 to $49/day, double occupancy.

A second hotel, Duffy's, managed by a couple from Boston, is also small and attractive and just across the street from the beach in Esperanza. A clean and well-run establishment with 11 rooms, it is but a five-minute walk to the dive shop. Although the main roadway passes directly between Duffy's and the beach, auto traffic is rare indeed. Now and then a "publico," a van used for public transportation, will pass by.

Esperanza itself is a sleepy little fishing village with just a few scattered stores, six restaurants and a fishmarket, all surrounded by lush tropical vegetation. I ate at most of the restaurants (need I say that they specialize in native food and feature seafood) and found each worth the visit. Duffy's dinner menu includes steak, lobster, chicken, barbequed ribs, octopus salad or conch salad and fresh fish, with full-meal prices ranging from $6-$11. Here I had the superb fish, Capitan, a hogfish, (but not the Spanish variety) with a firm white flesh. El Quenepo served impressive native dishes: beans with dumplings, lobster salad, conch and their unique turnovers stuffed with crab or conch or lobster. Prices ranged from $4.50 to $10. The Posada offered spanish rice and beans, accompanied with a cold Corona, the local beer. The total tab was a meager $2. At La Casa del Frances, the menu was excellent; a four-course dinner for $12 included soup and salad, a fine fresh fish of the day with fresh vegetables and dessert.

So. Here we are in a somnolent Puerto Rican village surrounded by American military installations with nothing to do except indulge ourselves by sitting in the sun and letting the days pass. To a diver, nothing could be so boring. The Caribbean is at my doorstep, but Puerto Rico has no reputation for decent diving, no reputation whatsoever. Divers returning from San Juan bring tales of sparse, under-populated reefs and dive services suitable only to non-certified, don't-give-a-damn divers. Would it be any different here? Thirty air minutes from San Juan?

Vieques Divers is the only dive operation. Vernon Beal and Pete Baumgardner (who was vacationing during my stay) are proprietors. Both Americans, they have been on the island for several years. Casey Celusnik, a rugged man, rife with expletives, who labors in Alaska in the summertime, assists in the winter. Vernon, I was told, picks up and delivers all divers at a pre-arranged time convenient to his guests. To board their 30-foot diesel-powered dive boat, my buddy and I walked waist deep into the water and then climbed up the old pilings to the pier which had been damaged in a recent hurricane. Though not required to carry my own tanks or equipment, I volunteered, and climbing up onto the pier was not difficult. The boat came along side, we loaded up, then quickly departed for our first site. Vernon explained that our first dive would not be especially satisfying. High winds and rugged water would force us away from the better dive sites to a sheltered area 20 minutes away. In 55 feet of water I encountered an average reef, and my dive proved a pleasant one, however common. There were ample coral, gorgonia, fans, and colorful sponges, some with flamingo tongues fastened tightly. A fair range of common tropicals scooted about: grunts, parrots, wrasse, hinds, tangs, and a

group of groupers fought over what appeared to be a torn-up lobster. For the first half of the dive Vernon watched me closely to judge if I were a qualified diver, (he did not ask for a c-card) and once satisfied, he drifted away, permitting my buddy and me to create our own experience. At the dive's conclusion, we followed, as instructed, an exit procedure I'd not observed before. A small lift bag had been hooked to the upper-most link on the anchor chain, the link connected to the rope. As each diver completed his bottom time, he was instructed to move the lift bag one link toward the anchor, which permitted other divers on the bottom to know how many divers had surfaced ahead of them. The last diver, who would determine his position by counting the links, had the task of freeing the anchor, which would then be lifted by the lift bag. A tidy gimmick, now, isn't it?

But raising anchors was not what I had come for. The diving wasn't much this day and my judgment remained in suspense. The next dives would have to provide my answer.

ESPERANZA, VIEQUES, PUERTO RICO

Diving for beginners	★	★	★	★
Diving for old pros		★	★	★
Beach snorkeling		★	★	★
Meals	★	★	★	★
Hotels	★	★	★	★
Money's worth	★	★	★	★½

★poor. ★★fair. ★★★average. ★★★★good. ★★★★★excellent.

The following day we dropped down to a V-shaped reef, with a large patch of white sand in the center. As I neared the bottom, I noticed slow and mystical movement below me. A large gathering of garden eels emerged from the sand, swaying like miniature cobras to the yogi's tune. Jawfish scurried back to their holes as I dropped to the bottom, while sand-tile fish and goat fish continued their search for meals. A 3-foot stingray shot from the sand as I approached too close for his comfort. The reef itself was pleasant and full grown, with plenty of varieties of hard coral, fans and sponges. Common tropicals were abundant, including hovering trumpet fish, trunk and cowfish, several morays, and so forth. The dive was surely pleasant with plenty to see, and though it was not to be labeled as adventurous it could indeed be labeled as satisfying.

And the description could be applied to the other dives I had during my ten-day Christmas vacation stay. Although two days of diving had to be canceled because of rough weather, the other days offered plenty of satisfying hours. On just about every descent, I saw french, queen and gray angels, hogfish, puffers, surgeons, morays, squirrels, arrow crabs, yellowtails, smallgroupers, and soulful Atlantic spadefish. I saw no pelagics, but spotted an occasional nurse shark. The gorgonia and coral were healthy, as were the many varieties of sponges: barrel, purple tube, yellow, azure, vase, basket, and finger. On another dive we dropped down to the bottom at forty feet, then descended a nice forty-foot wall to about 80 feet. Here, everywhere, sponges grew in multiple colors, and one basket sponge was so large that my buddy could crawl into it, pull his legs up, and disappear from sight. I saw lobster on every dive but here they seemed more abundant as their antennae protruded from holes in the side of the wall.

By Cayman standards, this was not a breathtaking wall, nor by Bonaire standards were these lush reefs. But by any other standards--including mine--this was pleasant, better-than-ordinary, easy--and satisfying--diving. Experienced divers, hoping for views of giant jewfish or whitetip reef sharks, or looking to ride a current or drop over a wall where the bottom is nowhere in sight, won't rise in applause here. More relaxed divers (and novices too) will find enjoyable, easy-going diving with thriving reef communities and professional, unpretentious service.

Vernon and Peter have 30 tanks in their small shop which they fill to 2250 psi with one of their two compressors. (They have a few aluminum 3000's which we didn't use.) They provide tanks and weights, of course, and have available for rent a few BC's, regulators, masks and fins. Spearfishing is permitted (only "nominal" catches are allowed) and guns may be rented. (I'm pleased to report

that no one during my stay was sufficiently callous to intrude on the quietude of the reefs.) Snares for catching lobster may be obtained from the dive shop. Conch can also be collected. Their 30-foot diesel power boat has an easy-entry easy-exit stern platform. The price for a two tank dive--$45--is a bit steep, necessitated, Vernon explained, by a recent leap in the price of diesel fuel.

I should add that I have a hunch that a few exciting sites are yet to be discovered--Vernon agreed. "Well, come on down sometime," he said, "and we'll drag you behind the boat and let you search for other spots. We haven't had the time, but we'd like to look if you want to help." Now, I would enjoy that. As I admitted in the first paragraph, I look forward to discovering the undiscovered. Perhaps, Vernon, someday I will. But for the time being, I'll leave that up to you and the Undercurrent readers who venture forth and want to help you look about. In the meantime, I'm getting ready to review another little, undiscovered site, this one in the Caymans. That's right, an undiscovered site in the Caymans. I'll tell you that story in a few months.

Getting There: Vieques may be reached by air from Isla Grande Airport in San Juan or by ferry from Fajardo, a town on the northeast coast of Puerto Rico. Two small dependable airlines fly from San Juan to Vieques several times a day; Vieques Air Links, Inc. and Flamenco Airways. The tariff is $20/person one-way, for the 30-minute flight at 1000 feet, clouds permitting. Vieques Air Links can be contacted by telephone, 809/722-3736 in San Juan and 809/741-3991 on Vieques. The airplanes are twin-engined Islanders, carrying about 8 people, in excellent condition and with very competent pilots. The ferry leaves twice daily from Fajardo. The one-way fare is $2 and the trip takes about 1½ hours. The problem with using the ferry is getting from San Juan to Fajardo, about 30 miles. Transportation "publicos," meet each incoming flight and ferry, and the maximum fare is about $2/person to the most distant point of the civilian part of the island.

Divers Compass: During this stay, visibility ranged from 40 to 120 feet, the lower murk due largely to violent thunderstorms....Puerto Rico is, of course, a U.S. possession, so no passport is required, there is no customs inspection (although there is an agricultural inspection) and U.S. money is used....Vieques Divers may be reached directly by telephone after 8 pm EST by calling 809/762-9702; their address is Box 1001, Vieques, Puerto Rico, 00765....The town of Esperanza was the site of the 1961 film, Lord of the Flies....Peter and Vernon can serve as your on-site travel agents, making reservations for you in either of the hotels or locating a rental house; call for information....there are plenty of grocery stores; fresh fish is sold at the fine market in the village for those who rent and cook their own meals....Sun Beach, adjacent to the village of Esperanza is a beautiful beach with picnic tables, lifeguards and sanitation crews to keep the beaches spotless....Yes, there are gnats, mosquitos and a few "no see ums" when the wind's not blowing.

Beating The Black Olive

Protecting Your Hoses From Unseen Damage

Every regulator has at least two hoses: a low-pressure hose running from the first stage to the second stage, and a high-pressure hose running from the first stage to the submersible pressure gauge. If improperly handled, or if weight is applied which creates stress (such as the weight of a regulator second stage or a console), these hoses are vulnerable to crimping and subsequent damage at the first-stage junction. Even the manner in which a regulator is stored can affect the life of the hoses.

Hoses are designed to withstand internal pressures four to seven times greater than the rated tank pressures. But they are not designed to be bent at sharp angles or against metal. Hoses consist of a tube wrapped in metal mesh which supports the tube against expansion from pressure. A rubber coating

protects the metal from corrosion. When a hose is crimped repeatedly or excessively, the metal will fatigue and break, creating a weak spot in the hose. Once the metal has been weakened, it is only a matter of time before the hose either leaks or ruptures. Often, the first indication of a problem is a black bump the size of a small olive on the hose.

High-Pressure Hoses

Several years ago, regulator manufacturers recognized the danger of ruptured hoses. To minimize the problem they collectively agreed that every high-pressure hose should have a restrictor built into each end of the hose. Tests showed that a 72 cubic-foot tank filled to 2500 psi took about 20 minutes to empty. Therefore, if a high-pressure hose with restrictors did rupture, the restrictors would slow the air flow and provide the diver with a margin of approximately 20 minutes to return to the surface. In this way the restrictor serves to reduce the severe danger of a high-pressure hose, and can even save a life. But a ruptured hose must be replaced, and should a hose happen to rupture on a beach in Belize, on a dive boat in New York or at a quarry in Ohio, you won't dive for the rest of the day—or the rest of a vacation.

Low Pressure Hoses

Today, the potential hazard from a ruptured low-pressure hose is much greater than the potential problem from a high pressure hose. Low-pressure hoses are not equipped with restrictors because the restrictors would limit the amount of air flowing to the second stage. Tests on low-pressure hoses show that if burst, a 72 cubic-foot tank filled to 2500 psi can empty in six minutes, surely a potential danger, especially if the hose should rupture after much of the air has been used (which is less likely, by the way, because the pressure is reduced).

"Tests on low-pressure hoses show that if burst, a 72 cubic-foot tank filled to 2500 psi can empty in six minutes."

For the diver using an octopus rig and power inflator for his BC, in addition to the normal second stage hose on the primary regulator, three times the potential for a low-pressure hose rupture exists compared to that of his diving contemporary ten years ago. Should one of these hoses rupture, he will need to get to the surface in fairly short order and if decompression is called for, he might need to grow gills to survive.

While ruptured hoses are indeed a *potential* harzard, it appears that to date no fatalities can be officially attributed to a hose rupture, says John McAniff, of the University of Rhode Island National Underwater Accident Data Center. However, he added, "there may have been some accidents caused by a rupture but we don't have the funds to study the non-fatal reports."

The Problem and the Solution

Hose crimping occurs when the hose is bent sharply or stressed at the juncture of the metal fitting that connects the hose to the first stage of the regulator. A hose can be crimped when it's coiled up and stuffed into a dive bag. It can also be crimped if hung during storage and the weight of the console bends the hose improperly. A hose can also be harmed if it is used to move a tank around—that is, pulling the tank by the hose rather than lifting the tank by the valve.

In short, every time you bend a hose unnaturally, you run the risk of weakening the hose. You may never notice anything wrong until that "black olive" suddenly appears.

Crimping problems can be easily avoided, simply by reinforcing the hose in some manner at the point where the hose joins the first stage of the regulator. With several layers of waterproof tape, wrap the area where the hose and the metal fitting meet, or slip on a commercial hose sleeve, which can be purchased in any dive shop.

The sleeve has an advantage: it can be pulled back to visually inspect the hose for crimping and the fitting for corrosion. For a similar inspection of a taped hose, the tape has to be removed and the hose then rewrapped.

We wondered whether crimping is rare or whether it is a common problem. Calls to several shops in California and Florida had similar responses: On one regulator out of ten, one or more hoses needed replacement, we were told. We tried a couple of shops in other states (Georgia and Illinois) and learned that hose replacement on serviced regulators is rare. As one Illinois operator told us, "perhaps divers don't notice the problem until they leave our area to dive and end up buying the hose from a dive shop in Florida and replacing it themselves."

"On one regulator out of ten, one or more hoses needed replacement."

One owner wondered, "why don't manufacturers fit hoses with permanently affixed sleeves." He speculated that perhaps the manufacturers made more money selling hoses, but after checking out his hypothesis it seems unsubstantiated. Several manufacturers have looked into the possibility of designing sleeves as an integral part of the hose, but not succesfully. If a sleeve were stiff enough to give support it would be too stiff to pull back for cleaning or inspection of the area around the metal fitting. As it turns out, sleeves already on the market are less expensive than the manufacturers could build in or provide.

Tekna, however, has reinforced the rubber at the end of the high-pressure hose where the submersible pressure gauge or console is attached, an area stressed both by the weight and by divers bending the hose to look at their gauges. The reinforcement, however, does not prevent crimping at the first stage connection.

Oceanic will introduce a new regulator this spring equipped with hose protection. Oceanic Sales Manager, John Hayes, says they believe they "will be competitive with the protectors on the regulator compared to having to purchase them separately."

It seems, then, that if divers are to become educated about hose-protecting sleeves, the dive shops will have to "educate" the divers, although skeptical divers will no doubt presume that shop operators are just trying to make a buck. When a diver knows that he can protect a hose for *his* lifetime with a $3 sleeve, compared to the $20-$25 replacement cost of a hose (and the hassles of getting a replacement if it ruptures on a dive trip), his education ought not to be too difficult. That's what Dave Inman, president of Diver's Unlimited in Hollywood, Florida, believes. He told *Undercurrent* that he's able to market hose protectors with substantial success: "50% of all new regulators go out of here with sleeves and about 30% of those coming in for repair leave with hose protectors."

Mike Ford of Pinnacles Dive Shop in Novato, California, gives proof of their cost efficiency. "Every rental regulator in our two shops has sleeves on the hoses. I sure wouldn't spend the money if they were not cost effective."

Al Thompson—Professional S.C.U.B.A. Repair in Los Angeles—told us that since the sleeves have come on the market, "I've noticed a sizeable drop in hose replacement. A couple of bucks for a sleeve is a lot better than $20 for a hose." And we agree.

Warming Up Your Wetsuit

Protocol For The Socially Conscious

A while back we discovered a short piece in the *San Diego Divers' Log* entitled "To Piddle or Not To Piddle." We've always had a warm spot in our wet suit for Southern California divers, and now we know why. We've taken the liberty to expand their brief tome, adding a few drops of our own fluid thoughts:

To many trainees, it may come as quite a shock when a fellow diver suggests that the solution to a full bladder while dressed in a wet suit is simply to empty the bladder—that is, while one is underwater. But, it doesn't take long for the novice to realize that trekking back to the shore, undressing, relieving himself,

Continued page 9

Undercurrent Travel Questionnaire

Response Requested

Mail to: *Undercurrent*, PO Box 1658, Sausalito, CA 94965

Location being evaluated _____ Would you return? _____

Date of your trip _____ Hotel _____ Dive shop _____

What other resorts have you dived? _____

fish size	☐large ones plentiful	☐a few big ones	☐too small to eat
tropical fish	☐abundant	☐not bad	☐sparse
kinds of tropicals	☐impressive variety	☐fairly interesting	☐common ones only
hard coral	☐plenty and colorful	☐o.k.	☐kind of a bore
soft coral	☐plenty and colorful	☐o.k.	☐kind of a bore
sponges, gorgonia...	☐very nice	☐pretty average	☐not much
caves, ledges...	☐good variety	☐some of interest	☐none worth diving
wrecks	☐exciting	☐worth a tank or two	☐none
sharks	☐a couple for fun	☐none	☐too many
shelling	☐excellent	☐o.k.	☐none or prohibited
snorkeling from boats	☐some of the best	☐not bad	☐nothing to see
water temperature	☐80° +	☐74°-79°	☐less than 74°
visibility	☐90 ft. or more	☐50-90 ft.	☐less than 50 ft.

rules for experienced divers	☐no restrictions	☐a little tight	☐treated as a novice
guides for new divers	☐top-rated	☐acceptable	☐lousy
diving frequency	☐3 or more tanks/day	☐2 tanks per day	☐one per day
night diving	☐frequent	☐1-2 times/week	☐none
boat diving	☐two tanks under $25	☐$25-$35 for two	☐over $35 for two
beach diving	☐as good as the boats	☐fair possibilities	☐no way
dive shop manager	☐a great person	☐just does the job	☐a real bastard
air quality	☐no problems	☐I wondered	☐I worried
air fills	☐3000 psi +	☐2250 psi +	☐short-changed often
rental gear	☐everything you need	☐tanks, wt. belts...	☐bring everything
repair capability	☐can handle anything	☐some repair capacity	☐pray nothing breaks

hotel food	☐gourmet	☐not bad	☐ugh!
nearby restaurants	☐must try	☐adequate	☐better off fasting
accommodations	☐luxury	☐o.k., decent	☐far below par
car needed	☐of no use	☐only for touring	☐a daily must
nightlife	☐swinging	☐enough	☐dead
locals	☐helpful, friendly	☐no complaints	☐hostile
weather	☐great every day	☐o.k.	☐many bad days
insects	☐none	☐now and then	☐too many bites

Comments and comparison to other places visited: _____

Circle the number of stars applicable to your experience, from 0 to five (for the tops)

Diving for beginners	★	★	★	★	★
Diving for old pros	★	★	★	★	★
Beach snorkeling	★	★	★	★	★
Hotel meals	★	★	★	★	★
Hotel otherwise	★	★	★	★	★
Moneysworth	★	★	★	★	★

Location being evaluated _____

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soft coral	☐plenty and colorful	☐o.k.	☐kind of a bore
sponges, gorgonia...	☐very nice	☐pretty average	☐not much
caves, ledges...	☐good variety	☐some of interest	☐none worth diving
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sharks	☐a couple for fun	☐none	☐too many
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Diving for old pros	★	★	★	★	★
Beach snorkeling	★	★	★	★	★
Hotel meals	★	★	★	★	★
Hotel otherwise	★	★	★	★	★
Moneysworth	★	★	★	★	★

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City _____ State _____

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and returning to the water is a bit excessive. Furthermore, when a cold diver learns that by not controlling his bladder underwater, he can in fact cut his chill, he tends to give in to his impluses and warm up a bit. It's not uncommon for old timers to load up with coffee, tea, soups and other liquids prior to a dive to ensure a high rate of urine production to keep warm.

Of course, trainers can't expect encouragement from dive shops for peeing in a rented wetsuit. Many shop keepers who rent wetsuits often advise against the practice, claiming that the effect is only temporary and that the diver actually loses some of his body heat which had been stored as urine. But the facts provide a different argument.

First, liquid has a much greater heat capacity than does its equivalent volume of gas.

Second, the volume of urine produced is controlled by the level of antiduredic hormone (ADH) which is secreted into the bloodstream. The more ADH produced, the less urine.

Third, a cold environment has an effect similar to that of ingesting alcohol. The body inhibits the production of ADH and more urine is produced. Most divers wonder why they feel the urge so often when diving. A lower level of ADH is the answer.

Fourth, the body must burn up enough energy to maintain the constant body temperature in a cold environment. The more mass that must be heated to prevent chilling, the more energy required.

Therefore, when one urinates under water he is reducing his mass by the amount of expelled urine. This in turn results in having to expand *less energy* to keep his body warm."

And, the warm urine has a temporary warming effect on the exterior of the body.

So, if you want a little extra warmth respond to the urge. However, let us suggest that you follow a few basic rules.

- One should not urinate in his wet suit while on board a dive boat headed to a dive site. This is especially true if he is wearing only a wet suit top, and truer yet if the beaver tail is not fastened.
- One should not urinate underwater in the presence of marine biologists. The resultant thermocline will only cause their hearts to flutter as they believe they have discovered new substrata hot water vents and within seconds they will no doubt embolize while dreaming of grants from NOAA for further study.
- Cut your chill at the beginning and midpoint of a dive, not the end, to give the sea water ample opportunity to dilute the urine. Pulling off a smelly suit in public is an unacceptable social behavior, no matter how solid your friendship with your buddy.
- One should not force urination, for the resultant jaw pressure can cause one to bite off the nubs on the regulator mouth piece.
- One should not urinate in the presence of a professional photographer. If the thermocline is visible to the naked eye, it is most certainly visible on Kodachrome 25. The resultant photo may someday appear on the pages of *National Geographic Magazine.*
- Do not eat asparagus prior to a dive. If your olfactory glands are not sufficiently sensitive to understand this, ask around until you find a friend who will share such private information.
- One should not urinate in the presence of a damsel fish. Damsels nip at any intrusion; if they are nipping at your knees and you spring a warm water intrusion on them, they will change targets quicker than a cowboy with a cattle prod.
- The suggested technique is appropriate only in a wet suit. In most circles, urinating in a dry suit is considered tacky, though New York divers may have their own standard of acceptable behavior.

The Dangers of Diving in Caves

The Errors Of Instructors, Students And Untrained Divers

If a diver hasn't been trained to dive in caves, he should stay out of them. Unfortunately, too many divers fail to follow that advice and run into trouble. Many don't get out of it alive. The following article explains the dangers of cave diving and shows how instructors and divers alike fail to give cave diving the respect it deserves. We urge our readers to heed the warnings of the following article and, unless certified as a cave diver, stay out of caves entirely. The risk isn't worth it.

* * * * *

In Northern and Central Florida hundreds of springs and sinks with crystal clear waters attract thousands of divers each year. Unlike Florida's coastal waters, the springs are not teeming with dangerous marine creatures, but a deadly menace nevertheless lurks beneath the surface of these placid waters.

From 1970 to 1978, 1,106 diver deaths have been recorded in American waters. Of these deaths, 141 or 13% occurred in caves. Since 1960, 234 divers have died in Florida caves. In 1981 alone, sixteen deaths occurred in Florida caves.

The number of Florida cave deaths doesn't simply suggest a "problem." Rather, it is an epidemic which, if not addressed and corrected, will result in many of Florida's freshwater dive sites being closed

to the public. But more important, innocent victims, uninformed of the dangers of spring diving will continue to lose their lives—in epidemic proportions.

"Caves seldom claim trained or experienced cave divers. Dave Desautels, executive director of the National Association of Cave Diving says that of all the deaths in Florida, "only six of eight" were certified cave divers."

The caves seldom claim trained or experienced cave divers. Dave Desautels, executive director of the National Association of Cave Diving, says that of all the deaths in Florida, "only six or eight" were certified cave divers. Nearly all those who died are untrained as cave divers, and many are even inexperienced at scuba diving.

Dive instructor and certified cave diver Phil Gerrel says that: "Most of the people who dive in caves are right out of basic classes. They go there without the proper equipment. Many go in out of natural curiosity to see what it is like. Before they know it they get turned around, become lost and die. Many are so poorly trained that they just swim around until they suck a tank dry. I have breathed six people back to the surface in Morrison Springs who just swam around until they ran out of air. They didn't even think to look at their pressure gauge to see how much they had left."

Desautels claims that statistics support Gerrel's point. "Most of the drownings are fairly young people between 18 and 23, fresh out of a scuba course. They just want to go in the cave and look around. Some panic when they get into trouble, freak out, drop the regulator out of their mouth and inhale water."

All too frequently, the uninformed or untrained diver jeopardizes himself as soon as he swims into the caverns or caves. He can quickly lose sight of natural light when it becomes blocked out by dark water or if he goes too deep into the cave. If he is unskilled in buoyancy control, he can inadvertantly stir up silt, which blocks out the light and can lead to disorientation. To avoid such mishaps, cave diver training emphasizes the additional equipment and training necessary, how to prevent silting, how to keep calm in low visibility waters, and how to avoid loss of direction and so forth.

Properly trained and equipped drivers who encounter difficult situations are unlikely to panic, whereas divers unaware of the consequences of their actions may not know a problem exists until it is too late. Novice divers frequently panic when faced with adverse circumstances. Panic, in turn, leads to mishaps, often resulting in multiple deaths: We published an example in our July, 1981, issue.

"A triple cave diving death is typical. The trio, who were visitors from another state, were in their mid-twenties and apparently had little or no cave diving experience. They entered the cave with only one light each and without the all-important reel of safety line. The recovery divers first found a slate about 75 feet into the cave with the message "Which way is the shortest way out?" All three victims were located about 10 feet apart and about 250 feet into the cave, which was 35 feet deep. All three were facing toward the right direction for the exit, but all had empty single 80-cubic foot tanks. All three lights were in working order."

Another poignant example of the problem occurs at Morrison Springs near Ponce de Leon in Western Florida. Morrison Springs is classified as a "cavern" dive and is generally regarded as a safe dive by individuals familiar with the spring.

During dry periods of the year a diver can easily see the surface from the bottom of the second room (a depth of about 90 feet). The spring usually flows at sufficient velocity to dissipate silt in suspension and the relatively coarse silt settles quickly.

But it's not uncommon for divers to disturb so much silt as to block out all light leading to the narrow passageway which connects the large room with the surface. At other times, after periods of prolonged rainfall, river water backs up over the spring's surface (even though the spring water underneath is clear) preventing light from entering the submerged rooms. Untrained divers unfamiliar with silting or tannic-capped waters are placing themselves in situations with which they may not be able to cope. In fact, in these seemingly calm and placid waters, more than twenty divers met their death.

A large number of certification classes use Morrison Springs for open water instruction David Morgan, writing in the *Panama City News Herald* reported:

" 'As many as 20 classes a week use Morrison Springs during the summer. I've been at Morrison when there were 50 people in the water,' said Buddy Page, a former UDT diver and instructor in the U.S. Navy. 'It looked like a swimming pool on the Fourth of July.'

"In many classes, 10 to 15 students are supervised by only one or two instructors. 'That is not enough,' said Barry Kurley, a Tallahassee certified cave diving instructor. 'I have seen groups of 15 students go into Morrison with only one instructor,' he said. 'There is no damn way one man can watch that many people.'

"The problem of poorly trained divers is emphasized by Kurley who claims 200-300 dives in Morrison with beginning classes 'without even a near accident. I take my basic classes to Morrison,' he said. 'It's a very safe dive, and isn't even a real cave dive. It's amazing to me that anyone could die there.'

"According to local divers, many of the groups are from the North and have no sites to compare spring diving too. 'People come down here from up north for their open water work,' Page said. 'All the diving they have had is in a swimming pool and the instructors don't go over the dangers of spring diving before they go into the water. It would be safer to dive in a river or the Gulf, but that would cost the instructors more money.'

"Kurley echoed Page's feeling, saying, 'A lot of instructors just tell their students not to go into caves. That is like telling a kid not to eat candy because it will rot his teeth. The first time he gets a nickel he goes out and buys a candy bar. The instructors need to be telling students about the dangers involved,' he said.

" *'The only person that can teach cave diving is a cave diver,' Kurley said, 'and there are not many of them around.'* "

"While a basic diving course fails to teach students how to cave dive, in many cases basic scuba instructors are also not trained. 'The only person that can teach cave diving is a cave diver,' Kurley said, 'and there are not many of them around.' He went on to say that the diving industry is helping to send untrained divers into potential death traps. 'The diving industry is pushing for shorter and shorter instructor courses,' he said. 'It is a snowballing effect. The shorter the course, the less they can teach their students and the less the students know. The diving industry loves short classes. They make more money.' "

Another serious problem occurs within the water-filled labyrinth of limestone cave at Peacock Springs, located in north central Florida. Unlike Morrison Springs, however, most of the springs and sinks in this area are *strictly cave dives* (as opposed to cavern dives where a ledge or cavern cannot be penetrated beyond 100 to 200 feet.) Nonetheless, visitors from all over the country flock to this area just to dive these waters.

Probably the most popular run is a 400-foot tunnel which connects Peacock Springs with Pot Hole sink. Since it is not very practical to exit at the small sink (Pot Hole), most divers retrace their original path and exit at Peacock, doubling the distance of the traverse (to 800 feet.) Although the spring and sink are linked by a permanent safety line and are no more than about 40 feet in depth, *the run is still a cave dive.* For many individuals, this will be both their first and last attempt at cave diving.

A tragic cave diving accident described in *Undercurrent's* series on "Why Divers Die" seems to typify many deaths which occur at Peacock:

"A 27-year-old man was accompanied by a 13-year-old boy to a depth of 37 feet and a cave penetration of 65 feet. Later, the man's underwater slate was found with the message, 'Don't worry, I know the way out.' Neither made it."

Divers not properly educated and equipped have no business going into a cave system. This applies to instructors and experienced divers, who even though they may have logged hundreds of open water dives, are not trained and do not meet the necessary requirements to make a safe cave dive.

The Requirements for Cavern Diving

Florida's underwater systems contain both caverns and caves. A cavern dive takes a diver no more than 100-200 feet back under a ledge or into a large room, and in most cases natural light is still visible. Cave diving entails deeper penetration; natural light disappears, and passageways narrow. Under no circumstances should an untrained diver engage in cave diving, but experienced and cautious divers can enjoy general cavern diving in Florida's inland waters. Of course, the rules of safe scuba must be followed and divers must be equipped with the additional equipment required for safe cavern diving:

★ At least two lights per diver.

★ An octopus rig or a "safe second," which consists of two second stages attached to the same first stage of a regulator, with the extra second stage having a five-foot long hose connecting, in case the dive team must share air.

★ Working submersible pressure gauges, so that the diver with the worst air consumption uses no more than ⅓ of his total air supply on the way in.

★ Both oil fill and capillary depth gauges, the former is more accurate at depth, while the latter provides more accuracy for decompression (although decompression dives are never recommended for sport divers). Obviously, reliable dive watches and/or bottom timers, as well as decompression tables are required.

★ A compass.

★ A full wet suit (or dry suit), including hood. The average temperature of Florida springs and sink holes is about 70°F, so divers not properly protected are likely to experience hypothermia.

★ A small, sharp knife in case a diver becomes entangled in line.

★ A line reel is *not* recommended, unless one has expert training regarding its use.

For example, in the Peacock system (although the tunnel between the spring and sink has no narrow restrictions) the bottom is extremely silty with little current to flush the silt downstream. So the passageway becomes completely silted, which is often the case when divers do not employ the proper techniques, it would be difficult for the untrained cave diver not to give way to panic.

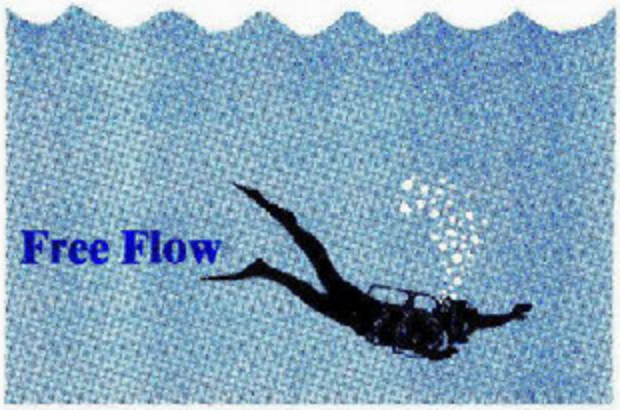
As for the improper use of equipment, several years ago my buddy and I planned a dive into Cow Springs, which is a short distance downstream on the Suwannee River from Peacock Springs. After descending below the ledge, we were greeted by a tangle of water ski rope. Rather than continue with our dive plan, we spent our time extricating the "safety" line, knowing that other divers might attempt to follow it, and in so doing, become helplessly trapped. Even though the divers who placed the line inside the cave were attempting to be safe, they created an even greater hazard because they lacked the proper knowledge of what type of line should be used and how to lay it.

If a diver contemplates making a cave dive, he must ask himself a number of questions: What if the safety line breaks? Will I be able to get myself and my buddy back to the surface? Or what if all the lights fail? Will I be able to make a blind exit? What if a member of your dive team runs out of air? If one is not able to answer these kinds of questions, he should not attempt cave diving.

However, if adequately educated and properly equipped, diving in Florida's many beautiful freshwater caverns (not caves) is not that difficult. The first step a diver should take is to gain as much open water experience as possible. Then, contact a local dive shop or a shop in the area you wish to visit and see if a course in cavern diving is offered, or if spring diving tours are available. If not, contact PADI, NAUI, NASDS or the YMCA to determine where these courses and tours might be available.

As for cave diving, (*remember cave diving is much more difficult than cavern diving*), interested individuals should contact organizations such as the National Association of Cave Diving, P.O. Box 11492, Gainesville, FL 32602 or the Cave Diving Section of the National Speleological Society, P.O. Box 60, Williams, IN 47470, which is primarily concerned with the scientific and exploratory aspects of cave diving. But even before considering cave diving, one should be aware that the shortest of courses would probably run several months, and that a great deal of specialized equipment, not readily available, is required for this unique and dangerous activity. Quite simply, it is not for amateurs.

The author, Michael Wisenbaker, is currently an archeologist for the State of Florida, Division of Archives and History. He has served as underwater archeologist in the excavation of the Spanish galleons San Jose *and* Nuestra Senora De Atocha, *and has made more than 200 dives in Florida caves and caverns.*



Degeneration in the spinal cord of goats after experimental decompression sickness is well documented, but rarely does an opportunity arise to examine the long-term effects on man. Recently a sport diver died 3½ years after an incident of decompression sickness from which, after treatment in a recompression chamber, he had apparently recovered. His death was not related to diving or the the bends incident. Upon examination after his death, residual damage was discovered in the spinal tract, raising real questions, according to the *British Medical Journal* "concerning the definition of clinical recovery from spinal decompression sickness and the advice that should be given about subsequent diving activities." In essence, the bends may never go away.

Pioneer and Co., the Westmont, New Jersey, marketing arm of EWA-Marine, the West German producer of underwater camera housings, is introducing Water Sound, a flexible and sturdy plastic housing to hold a portable stereo tape player such as the Sony Walkman.

Water Sound comes with a belt to carry the player on the waist and a watertight cover for the headphones. The $49.95 unit has been designed mainly for use while swimming, water sking, surfing, boating or jogging in the rain. But a spokesman says the water-tight unit is submersible, so divers will now be able to boogie at the bottom of the sea.

The South Korean government has recently approved the construction of an $88 million, 62-story hotel that will float off Inchon, on the nation's east coast. The conical hotel is to be supplied energy by a combination of solar energy panels and a windmill on the top of the building. The hotel will have 1200 guest rooms, 12 conference rooms, a revolving restaurant, a swimming pool, a yachting area, an aquarium, an ocean museum and an ocean botanical garden. All guest rooms—above the below-sea level (seven stories of the 62 stories will be underwater) will have windows. Those underwater will be magnifying windows, enlarging the view of Korean women who will dive regularly for fish and shells.