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POINT & CLICK ON BOLD LINKS



Edited by Rosemary 'Roz' Lunn & Arnold Weisz

Equipment *chiz-zam*

Seac Sub F100 Pro fin

These fins have been designed specifically for heavy duty use by snorkellers and warm water divers. Seac have designed a series of channel patterns in the technopolymer blade to collect, contain and specifically funnel water giving the diver optimal thrust without excessive force. In addition the side ribbings are made of an innovative combination of soft and rigid materials that also increases thrust. Slippage has also been considered – there is a no-slip anatomic heelpiece positioned under the shoe to improve stability and give maximum grip on any surface. www.seacsub.com



MB Sub backup lamps X1-VB and X1-FF

The X1-FF is a 3.5 watt LED with a burn time of 4.5 hours (3 x AA batteries) or 15 hours (3 x C batteries). It has an intensive narrow beam (3 degrees) that means you can still signal, even in poor viz. A nice feature of this light is that it is modular, thus allowing you to upgrade your light in the future. The X1-VB is another modular 3.5 watt LED benefiting from the same burn times as the X1-FF. What makes this torch



different is that the beam is focusable from 3 – 25 degrees. MSub state that this torch offers "perfect light quality at each focussing adjustment". www.mb-sub.com



Mares Hybrid BCD

Weighting in at 3.8kg, the Hybrid is a compact travel BCD manufactured from 420 Cordura. What makes this BCD unique its stowing capability. The rigid backplate is hinged so that it folds in half, whilst the harness and aircell are completely detachable.

Mares state this BC "will still deliver stability in the water and excellent comfort". The Hybrid benefits from ultra low profile exhaust valves, seamless shoulder straps and special padding for the perfect fit. In addition it has trim weight pockets at the back. There is also a Hybrid "She Dives" version tailored specifically for the female form. www.mares.com

Oceanic B.U.D computer

A major rule of diving is "be prepared" and this can include having a redundant plan / profile / or piece of crucial kit. Enter stage left Oceanic. They've

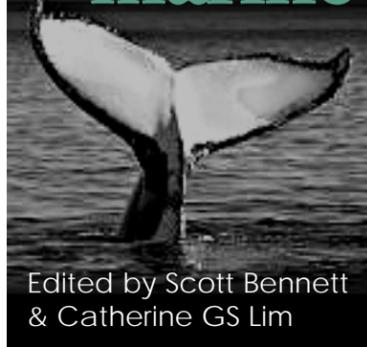
noticed a gap in the market and launched the BUD. It's a 'Back Up Device' for your computer. The BUD uses a Dual Algorithm which allows you to adjust its settings to match your primary dive computer. Then you simply clip the BUD to your BC, forget about it and go diving. Then if / when your primary computer goes pear-shaped, your Oceanic Bud will help you complete your dive safely. It's got a simple clean display, EANx to 50% and the ability to countdown a Safety Stop. www.oceanicworldwide.com



Dive Rite Tech Tool Bag

Designed specifically for diving tools, the Dive Rite Tech Tool Bag holds all the essentials in a compact roll-up design. We had a play with it and found we could accommodate two crescent wrenches, a screwdriver, a 1/2 wrench, a pick, pliers, nips, tie wraps, and O rings. The tools are kept in place by the 1,000 denier Cordura Stretch Pockets and silicone grippers. And you don't have to rummage for your small necessities – there's a handy zipper pocket for these! This handy tool bag is also a handy size, measuring in at 22.5cm / 9 inches long by 15.2 cm / 6 inches wide. www.diverite.com





Edited by Scott Bennett & Catherine GS Lim

Dolphins can detect electrical fields like sharks do

At the Dolphinarium of Allwetterzoo Münster in Germany, a 28-year-old Guiana dolphin (*Sotalia guianensis*) named Paco has led scientists to an exciting discovery—that his species, and perhaps other cetaceans, can detect electric signals in the water.

This is the first-ever confirmation of a placental mammal (or marine mammal, for that matter) possessing this ability to detect electrical signals.

Prior to this discovery, it was believed that only fishes, sharks, amphibians and some monotremes have this ability.

For the Guiana dolphins, being able to sense the electric fields emitted by their prey gives them an edge when hunting for food. Being benthic feeders, they search for prey near the ocean floor. But swimming near the bottom of the sea causes sediment and mud to become unsettled, thus reducing visibility.

In such turbid waters, having electroreceptors does come in

handy.

But how did the discovery come about? On a dolphin's rostrum (portion of the head containing the jaws), there are several depressions (or crypts) running along it. Well, sensory biologist Wolf Hanke (from the University of Rostock in Germany) and his team had suspected that the crypts were not whisker follicles. "We thought they [the crypts] must have some function—they were pretty big—and otherwise would have disappeared during evolution," said Hanke.

So, when a Guiana dolphin at the Dolphinarium of Allwetterzoo Münster died of natural causes, the researchers examined

the dolphin's rostrum and the crypts on it. Viewed through a microscope, the crypts' cellular structure looked like electroreceptors—with 300 nerve receptors plugged into it. There was also a gel-like substance in the cells, similar to the gel found in the receptors of fish.

To prove that the crypts were

indeed electroreceptors, the researchers turned to the zoo's remaining Guiana dolphin, Paco. They trained him to remain in a holding station, where his rostrum was ten centimetres away from two electrodes. A weak

electric current was randomly generated by the electrodes. For a reward, Paco was supposed to either swim away when the electrodes emitted a current or to stay put if

there was no current.

After 186 tests, Hanke concluded that Paco was indeed using his crypts to detect electric signals in the water—some as low as 4.6 microvolts per centimetre. Indeed, when a plastic shield was placed over Paco's rostrum, blocking the crypts, the dolphin showed no

"We have been so impressed by hearing and echolocation that we've ignored other, possible sensory systems in cetaceans."

reaction at all.

This discovery has expanded the horizons on cetacean biology. "We have been so impressed by hearing and echolocation that we've ignored other, possible sensory systems in cetaceans," said Paul Nachtigall, a sensory biologist at the University of Hawaii, Manoa.

Sensory physiologist Peter Madsen of Denmark's Aarhus University hailed it as a major breakthrough. "I think they've demonstrated in a convincing way that this dolphin species can use electroreception, and in a way that's sensitive enough to potentially detect prey," he said.

Amidst the praise, Hanke and his team aren't resting on their laurels. They intend to see if other cetaceans possess the same ability, and speculated that they might "in the future make plans to travel to South America to study dolphins in the wild." ■



ARCHILDER / GFDL

Dangerous toxin discovered in critically endangered Hawaiian monk seal

Researchers from NOAA have discovered a potent and highly-debilitating toxin in the endangered Hawaiian monk seal, a first-of-its-kind chemical finding that is now prompting investigations of other marine mammals in the state.



The toxin, ciguatera, is produced by marine algae common on coral reefs, and accumulates in fish species that are consumed by humans. Ciguatera, the human disease caused by ciguatera toxin, affects thousands of people every year worldwide and comes in the form of acute gastrointestinal and neurological illness with symptoms resembling chronic fatigue syndrome.

The study reveals that Hawaiian monk seals, whose population is estimated at 1,100-1,200, are exposed to significant levels of these ciguatera toxins. The threat could pose management challenges for this species that has been dwindling at four percent annually due to poor foraging success and additional environmental and human factors.

"Based upon this study, we believe that ciguatera exposure is common in the monk seal population," said Charles Littnan, study co-author and scientist with NOAA Pacific Islands Fisheries Science Center. "This study is an important first step. However, we still need to understand more clearly how widespread exposure is and more importantly what role it may be playing in the decline of the species." ■

Ciguatera lowers the threshold for opening voltage-gated sodium channels in synapses of the nervous system. Opening a sodium channel causes depolarization, which could sequentially cause paralysis, heart contraction, and changing the senses of hearing and cold.

Because they do not cross the blood brain barrier, ciguatera toxins solely affect the peripheral nervous system.

The major symptoms will develop within a few hours of toxin ingestion: vomiting, diarrhea, numbness of extremities, mouth and lips, reversal of hot and cold sensation, muscle and joint aches. The symptoms may last from days to weeks or even months depending on each individual situation. ■

SOURCE: WIKIPEDIA

“It is a tantalising possibility that this behaviour could spread before our very eyes—over a field season or two—and that we could track that spread.”

— Murdoch Cetacean Research Unit
Researcher Simon Allen



MURDOCH UNIVERSITY PRESS RELEASE

Dolphin with conch

‘Conching’

Ingenious fishing method may be spreading through dolphin populations.

Murdoch Cetacean Research Unit researcher, Simon Allen, said this previously rarely witnessed phenomenon might be on the increase, suggesting that the technique is spreading.

“If—and that is a big if—we are witnessing the horizontal spread of this behaviour, then I would assume that it spreads by an associate of a ‘conching’ dolphin closely observing the behaviour and then imitating it,” Allen said.

Exciting new questions

The prospect of observing a learned behaviour spreading through a population over a short period of time is exciting in itself, but the behaviour also raises new questions about how exactly dolphins engage in conching.



“As yet, we don’t know if dolphins pursue fish into the ‘refuge’ of the large, empty conch/bailer shells or whether they actually manipulate the shells prior—perhaps turning them over so that the opening is facing up in order to make them ‘appealing’ to fish as a place to hide from the jaws of death,” Allen said.

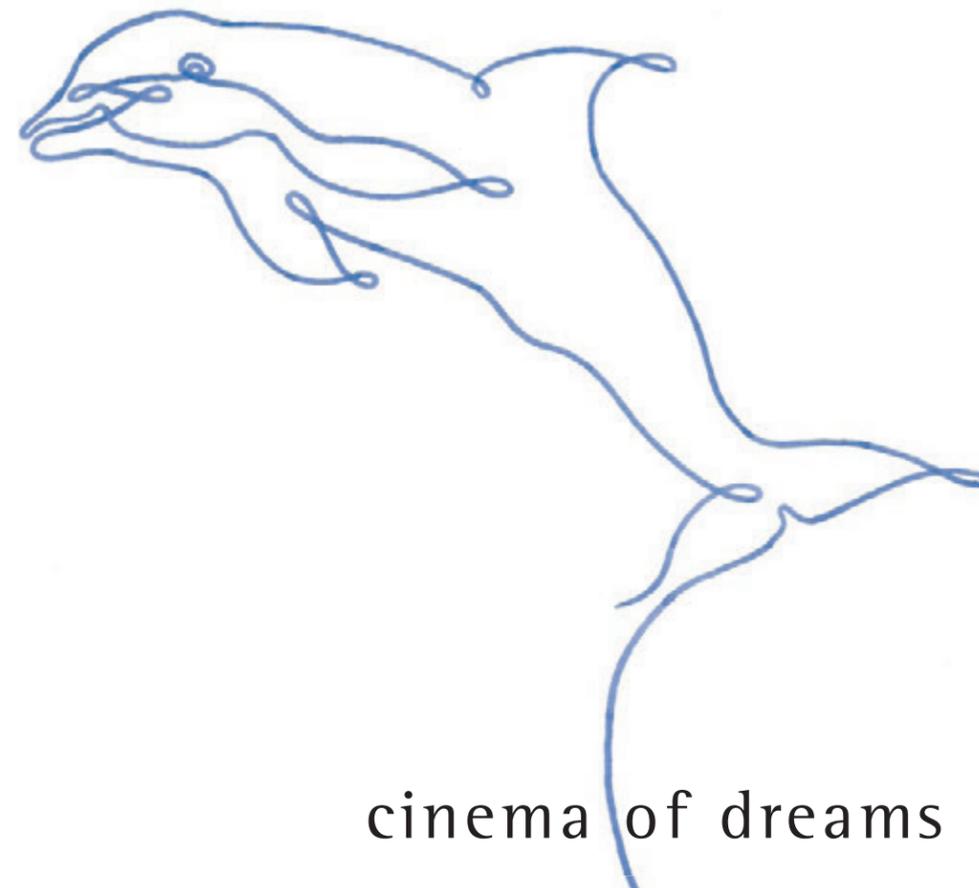
know simply the

Researchers from Murdoch University believe a recently documented method of fishing may be spreading throughout a population of dolphins.

“If we were to set up a few shells—opening down—in a known location and either witness dolphins turning them over, see evidence of them having been turned over when we weren’t around, or better still, get some video footage of dolphins manipulating them in some way, then that would be priceless, since that implies forward planning on the dolphins’ part.

“I wouldn’t be too surprised to find such cunning and devilish ploys being adopted by Shark Bay’s bottlenose dolphins.” ■

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Irrawaddy dolphins numbers triple in protected area

A recent survey in Burma's Ayeyarwady River reveals dolphin numbers have almost tripled in the past eight years. Several hundred more discovered to reside in coastal areas.

Established in December 2005, the Irrawaddy Dolphin Protected Area encompasses a 74-kilometre stretch of the river near Mandalay, from Kyaukmyaung and Singu townships in the north to Mingun in the south. "The Irrawaddy dolphin population has increased gradually, year by year, between Kyaukmyaung and Mingun. We found 32 in 2002 but this had increased to about 90 in 2010," said U Mya Than Tun, deputy director general of the Department of Fisheries.

Patrols

"We conduct twice-monthly patrols in the protected area. On the patrols, the project team conducts educational outreach activities, research on dolphin behaviour and fisheries, enforces the prohibition on illegal fishing techniques, and monitors the status of the dolphins and threats to their conservation," he added.

In another positive sign for the critically endangered species, several hundred more Irrawaddy dolphins have been discovered

to reside in coastal areas. In 2002, a survey of the entire Ayeyarwady River conducted by the department, Wildlife Conservation Society (WCS), Forestry Department and University of Yangon found Irrawaddy dolphins living in the 400-kilometre stretch between Bhamo and Mingun. In 2010, the department and WCS conducted survey activities into Gulf of Martaban area of the

Evidence is strong that very few young animals survive to adulthood, as older dolphins die off and are not replaced.

This tiny population is at risk by its small size alone. With the added pressure of gill net entanglement and high calf mortality, we are really worried for the future of dolphins.

— Li Lifeng, director of WWF's Freshwater Programme

Ayeyarwady delta; Rakhine coastal areas, including the Mayu River, Kaladan River and Laymyoe River; and the Myeik Archipelago, especially Thameehla Island.

100 dolphins

"In Sittwe, especially in areas with a mix of fresh and salt water, we found quite a few Irrawaddy dolphins; we estimate there are about 100 in Rakhine coastal areas," said WCS coordinator U Aung Myo Chit. In addition, almost 100 dolphins had been spotted in both the

Ayeyarwady delta and Myeik archipelago." Many of these were found in 'no fishing areas' defined by local monks, who order residents not to catch fish within 300 metres of the compound of a monastery situated on the bank of a river," he said. However, it was stressed that protected areas and education programs needed to be extended into these areas to ensure the species' survival.

Lack of education

According to U Aung Myo Chit, due to a lack of education programs in these areas, most delta and coastal region residents don't even know what a dolphin is, mistaking it for some kind of big fish. "We need more funding to extend protected areas and educate people about why it's important to conserve Irrawaddy dolphins. One of the successes of our education programs in this region has been that local residents now know to contact the Department of Fisheries when they find a dead dolphin," he added. "We then research its morphology; feeding and cause of death."

Causes for decline

U Mya Than Tun said there were several causes for the decline in the Irrawaddy dolphin population in modern times, including destructive fishing practices and gold mining operations. Rising sea levels and the deforestation of watershed areas of the Ayeyarwady River also had a negative impact. The Irrawaddy dolphin is one of 32 dolphin species globally and one of seven found in Myanmar. Despite its name, it is actually not a true river dolphin but an oceanic species that inhabits brackish water near river mouths, coasts, and estuaries. Considered critically endangered, the dolphins live not only in Myanmar but also in other areas of South and Southeast Asia.

"We need more funding to extend protected areas and educate people about why it's important to conserve Irrawaddy dolphins," said U Mya Than Tun. ■



According to Dr Li Lifeng, director of WWF's Freshwater Programme, the research is based on photographic identification of dolphins through individually unique features of their dorsal fins. "Most of the dolphins can be identified, and we use that information to estimate the population size."

Although this population estimate is slightly higher than the

previous estimate, the researchers were quick to note that the population had not increased over the last few years.

The population is ranked as critically endangered on the IUCN Red List, the highest international threat ranking for endangered species, and Irrawaddy dolphins are fully protected under the highest level of Fishery Law in

Mekong Irrawaddy dolphins on brink of extinction, said WWF

The Irrawaddy dolphin population in the Mekong River numbers roughly 85, with the survival of new calves very low, suggesting they are at high risk of extinction, environmental group WWF said.

Cambodia and Lao PDR. Dolphins in the Mekong continue to be threatened by gill net entanglement and the causes of calf mortality remain unclear.

"This tiny population is at high risk by its small size alone. With the added pressures of gill net entanglement and high calf mortality we are really worried for the future of dolphins," Li said. ■

SOURCE: WWF



SOURCE: USER JEAN-CLAUDE DURKA ON WIKIMEDIA COMMONS

Irrawaddy dolphin on Mekong River

Bahamas

— *Diving the Islands*

Text and photos by Charles Stirling

The Bahamas are an English speaking island nation known to most of us, but for very diverse reasons. For many living in Florida or nearby, it's a location for a quick day or weekend break for beach or casino. For Europeans, it's an offshore financial and investment capital. To many, it's the location for films and TV programs that feature water and sea, such as the *Pirates of The Caribbean*, *The Spy Who Loved Me*, or even the TV series, *Flipper*, plus many others. For divers, we think of Blue Holes and technical dives or one of the best places to see sharks.

Dive master holds a Caribbean reef shark at UNEXSO showing it in its state of stupor

Are the Bahamas a location worth going to as a visiting recreational diver? From an English diver's perspective, with the multitude of wreck dives around our UK

coast, the Mediterranean a short flight away, the Red Sea easily accessible, YES I still think the Bahamas offer something worth going for. Of course if you are in

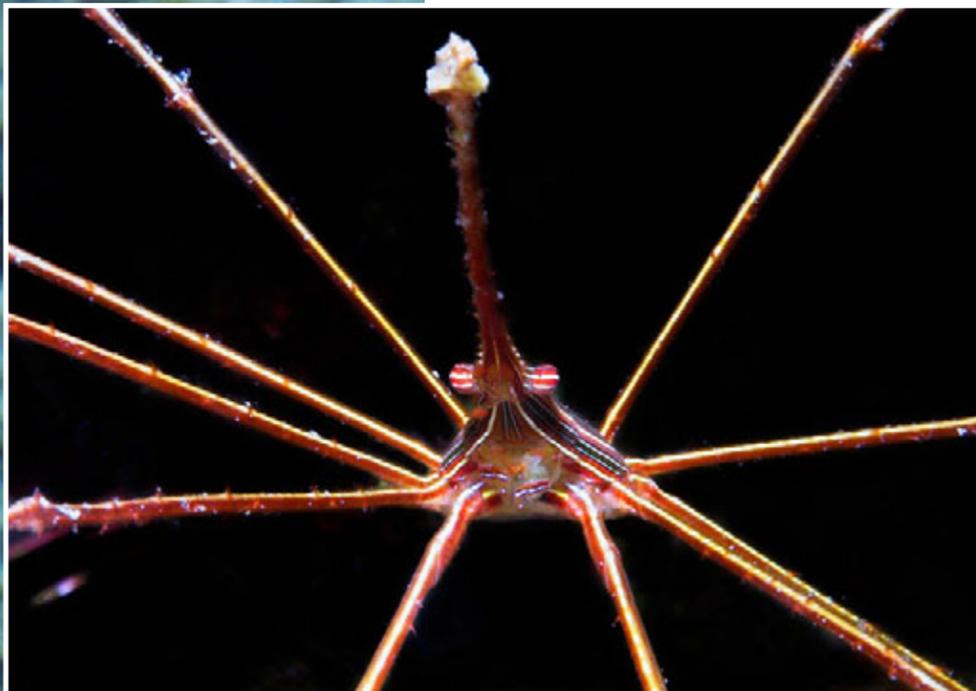
North America the yes decision should be even easier. They would be a good place to learn to dive with the family yet still offer a lot to experienced divers.

One of the reasons for the increasing use of the Bahamas for filming is of course the good diving conditions, so is that enough to attract sports oriented

divers? Without rivers visibility is excellent, water temperatures are tropical or near. The Blue Hole diving rapidly becomes one for technical or even very technical

dives with backup teams and lots of equipment, but some of this diving is possible and open for the recreational diver. Shark sighting is easily possible either naturally or





on specialist shark dives. Besides these two big attractions are the absolutely stunning great walls, many wrecks, and a big diversity in coral reefs with the worlds third longest barrier reef all giving divers plenty to see. Along with this it's not overly crowded and can be very personal.

Diving in the Bahamas can of course be done from a variety of liveaboard boats often out of Florida as it's so close. This gives a good all American experience, easy multiple dives a day and depending on the trip either a single or multiple objectives. It does mean being on a boat most of the time but with some of the large luxury ones it's not necessarily in cramped quarters. Liveaboard trips also start from Nassau, Grand Bahama and Exumas. I've not done this, maybe another trip another time. I do enjoy time for exploring land based opportunities, meeting local people and having the variety that can come from being firmly planted on land even though I wasn't able to do much of this because of time constraints, but the theory is present.

Types of dives

Sharks always seem high on most diver's "want to see" list. Some consider the Bahamas as one of the world's best places to have that introduction or even an extensive

exposure. The tourism attraction benefits of sharks mean many operators offer a "shark dive" with sharks being fed. OK, we now have controversy! This is a touchy subject as many believe that divers should never interact or in any way influence any animal on any dive, while others are happy to spearfish or collect shellfish. It's the "leave only bubbles" debate. There is also the controversy of possibly altering behaviour by associating people with feeding which has produced a ban on shark feeds

and even fish feeds in some locations. How much should people "interfere" with natural system? As a diver, environmentalist and photographer I try not to disturb the environment, we are all told / trained not to touch when diving, to leave only bubbles (or spend the money on a rebreather and don't even do that). Most sharks are not going to be interested in being near divers, they are shy, we are not food, and they are wide ranging, so, worldwide, attracting them into view is done with chumming or feeding of

LEFT TO RIGHT: Nassau groupers help to keep reefs healthy by controlling smaller fish but still want a clean occasionally. One problem for these important fish is they are tasty to humans; Yellowline arrow crab; Soft corals are plentiful on some sites, often as individuals in small patches not as great masses



Shark taken along the line of divers at UNEXSO to be seen and touched (left); Shark feeding site but not a feeding dive and the sharks ignored divers (below)

site on the bottom. We were lined up kneeling on the sand shoulder to shoulder with our backs to a section of wreck, OK, an old decompression chamber, with hands kept out of the way. Once settled then the chain mail clad shark feeder opened a container of fish to hand feed one fish at a time to any individual shark that was closest. This was started first in front of the whole group, as the shark temperaments were judged as OK the feeding moved closer along the length of the line for each diver. Yes, sharks would be everywhere coming into the feed just overhead or along in front. The sharks made direct contact with the person feeding being rather gentle in taking the food from her hand.

After the food was gone she put her gloved hand on one of the smaller shark's nose which made it go into a quiescent, almost stupor like state and this animal was gently held and taken along the line for each visitor to touch on

the back. Talking to some of the divers after, all agreed this was great and one experienced diver offered the comment that the feed then touching a shark was the highlight of all his diving experiences. Previously he had been terrified by even the thought of a shark. This quiescent behaviour isn't understood but is well documented. The sharks having been fed, contacts made, the divers were free to look for sharks teeth in the sand for another 10 minutes before being led back to the surface with the safety diver. The woman shark feeder, the official photographer and I stayed down longer and in these calm conditions she was able to rest one of the larger sharks in her lap for nearly 6 minutes. Handling the sharks also meant fish hooks and sometimes ectoparasites could be removed.

So is the shark behaviour modified with this interaction? Doing a dive in the same area without the feeding some

some sort. It's a controversy that some see as very important, wanting to stop the feeding' while others see it as a tsunami in a tea cup. Whichever, it is done here.

Yes, the right dive site in the Bahamas and you will see sharks going about their business off in the distance. Occasionally if you can be very stealthy its possible to get a bit closer. Getting really close I did shark feed dives with 3 of the popular operators. First, all 3 were very safety conscious with visiting divers. They were aware of how it might change behaviour so amounts and frequency of food was limited and the food was natural, i.e. fish. None fed enough to be a significant portion of a shark's normal daily needs. One of the big things they are concerned about is the plummeting numbers of sharks worldwide and how incredibly important it is to bring this awareness

to the public. Each dive operator had slightly different approaches and methods to their shark feeds, but all had sharks to see up close. I ended up thinking these dives were a worthwhile introduction for many so I rather broke my own rules. Actually they were great fun and educational, you would really be missing a lot if not going on at least one of these dives.

Shark Dives

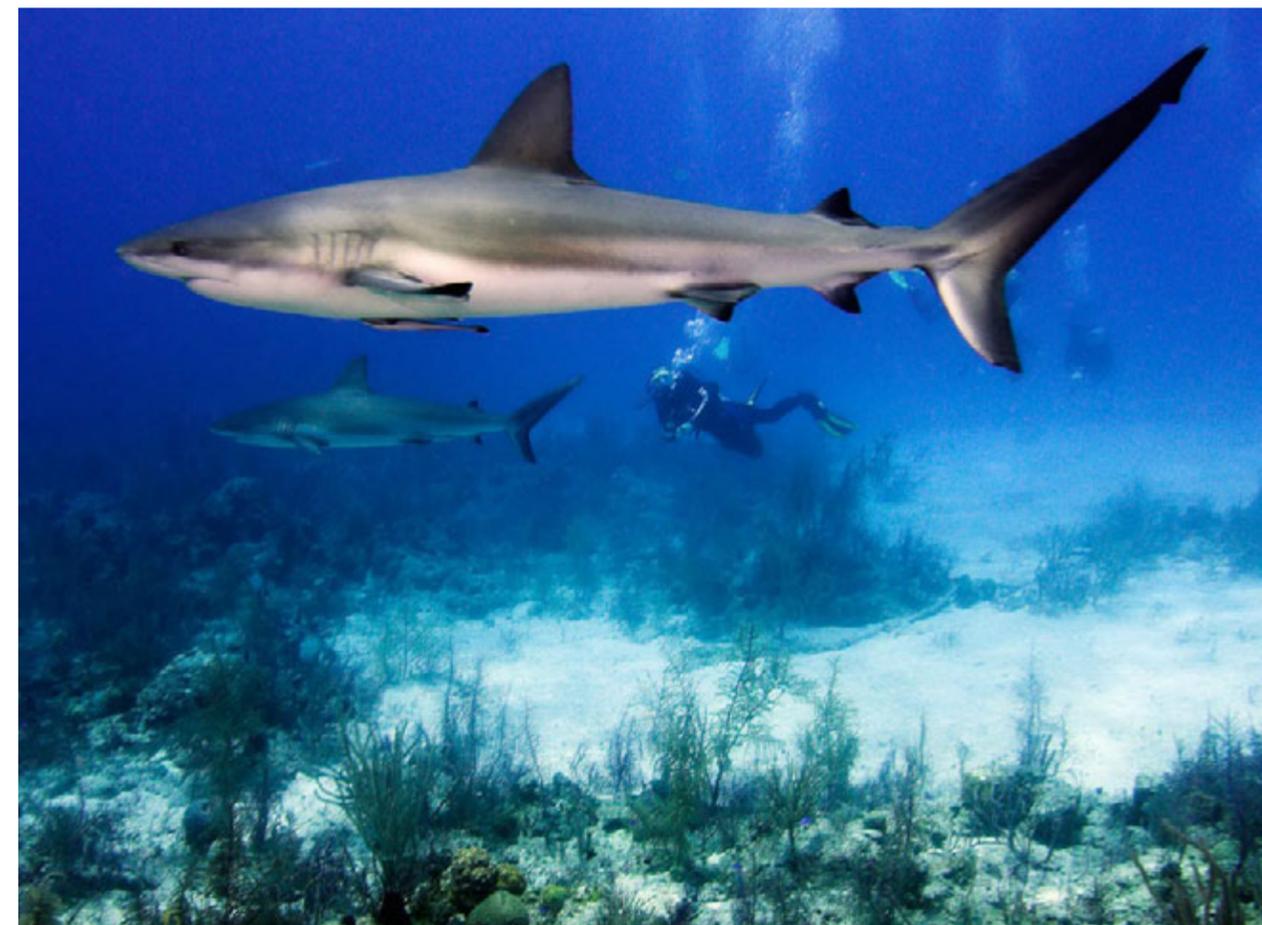
Sharks and fish do inevitably modify behavior when fed; they will learn the sound of a boat or divers with a pavlovian response to find food. How important is this, will it increase their chance of being caught by fisherman or be a hazard to us? Does the increased interest from divers seeing them outweigh the changes. Shark feeding in Hawaii was banned in 2002, now divers are not

aware of them as they aren't frequently seen so interest is lost for many. The cliché of "out of sight out of mind" could be appropriate.

UNEXSO wants to demonstrate that sharks are not wanton killers

The most hands on and interactive was UNEXSO, Underwater Explorers Society, on Grand Bahama who use a site called "Shark Junction". After a short boat trip a thorough briefing was given which covered safety and organisation of the dive. They then went on to place a lot of emphasis on how they want to demonstrate that sharks are not an automatic menace to divers and the need for divers to be ambassadors spreading the word that sharks are not wanton killers.

The dive starts with all entering the water about the same time to follow a safety diver all together down to a sandy





Shark encounter with Stuart Cove's (left); Small Hope Bay shark encounter with a more hands off approach still had plenty of sharks up close and personal (below)

short but still to an area away from much of the other diving, the site was again a sandy one near an area with patch coral reefs and deep drop off. After the briefing and entering the water together divers were organised in pairs behind small mounds of rocks in a circle but with space between buddy pairs. The food, fish, was lowered in a hinged lidded steel box for the shark feeder to spear out individual fish to feed to an appropriate shark. As conditions were judged safe this was then done in front of each buddy pair allowing a photographer to take pictures of a swirling mass of sharks around each pair in turn. Here sharks could easily move between as well as above the divers so close encounters were frequent and from multiple directions. At the finish a short

time was allowed for tooth hunting before the group was escorted back to the boat.

Diving this site without a feed in progress sharks were around but not interested in divers. During the feed a second boat with snorkellers was stationed a distance away but close enough for them to watch and the sharks weren't interested in this.

Different approaches, but all three operations provided a good number of sharks, predominately or all being Caribbean Reef sharks, which might be a bit seasonal, to be seen up close (one nurse shark had turned up to play with the feed tube at UNEXSO). These sites had been chosen as near deep drop offs where the sharks would normally be found and away from other activity. Feeding in these ways didn't appear to be detrimental to either the sharks



sharks were present but none would venture closer than I would have expected, i.e. they frustratingly kept their distance. It was also noted that the number of sharks which turn up at the feed varies and they are not always the same ones. So this population of Caribbean Reef sharks maintained at least a semblance of normal behaviour.

Small Hope Bay Lodge

—Andros Island didn't want to associate divers with food.

At the opposite end of the spectrum on shark feeds Small Hope Bay Lodge, on

Andros Island, does fewer feeds, does them at a location some distance from their other main dive sites and has no direct interaction. They keep the site secret, even to the point of having the permanent buoy tied below water so fisherman don't target the area. The divers are organised again on a sandy area this time in a semicircle. When all was settled with the divers a frozen ball of fish was lowered on a steel rope stretched tight between a bottom ring and top buoy so sharks helped themselves as the fish ball melted. This kept the divers at a moderate distance from the feeding but sharks would

still skim over the top and past the divers. Once the fish was gone the sharks dispersed but could still be seen around the area while the divers went looking for lost sharks teeth in the sand.

Stuart Cove's Dive

—Nassau/Paradise Island wanted divers to have a good view of sharks.

Somewhat between the first two in approach, maybe with a bit more showmanship, they wanted to have divers see sharks up close but without the interaction of UNEXSO. The boat ride was



Large hard corals can be seen even on relatively shallow dives and without a wetsuit for warmth, Pagoda Reef, Exuma (left); Sea fans near the top of the reef at Hole in the Wall, Cat Island (below)

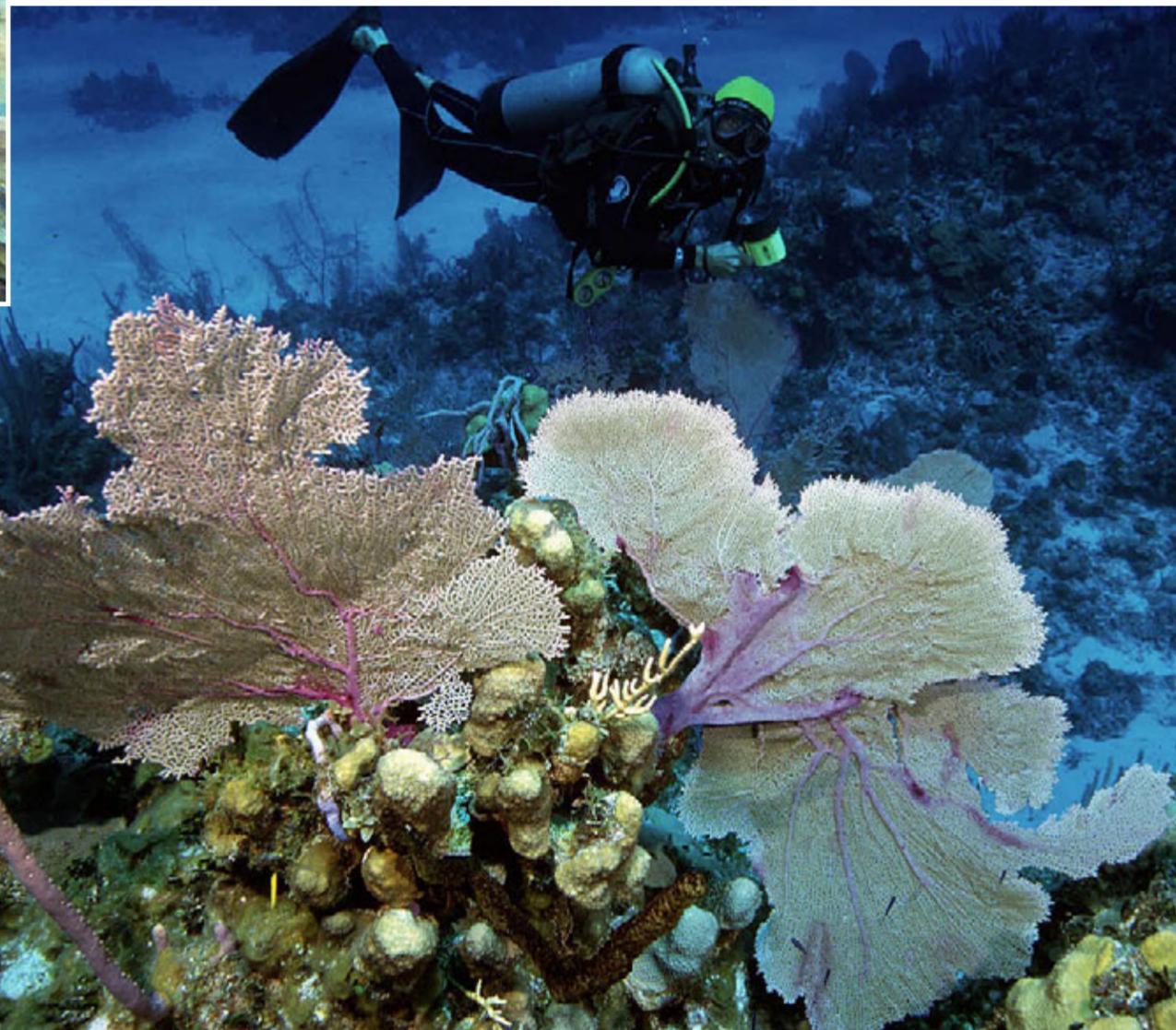
invertebrates.

As in so many other coral reef environments there are worries about both bleaching and coral disease, but here the visiting diver doesn't seem likely to find large areas of dead reef. What will be seen are patches or expanses of actively growing hard coral on the top of older coral which is becoming part of the inorganic hard surface needed for new growth. Whether the new growth is keeping pace with coral die-back can't be judged in a short visit and is more in the realm of long term research but what can be seen is good.

As so many other of our marine habitats the Bahamas have been over fished. The numbers and sizes of

fish doesn't seem as high as might be expected. What will be noticed is often the lack of larger fish though the range of species is reasonable. Different sites and even more so the different islands will show variety as would be expected considering the huge area and varying human densities covered by the country. The range of sharks present does give an indication that the reefs and environment are generally healthy as top predators need food and that food also needs to eat.

Large fish, even predatory ones such as the Nassau Grouper, have been shown as necessary for healthy reefs. Research in the Exuma Cays Land and Sea Park found, with protection, the grouper



or divers, more akin to putting a bird feeder out in the back garden.

Hawk's Nest

—*Cat Island had fisherman attract sharks.*

On Cat Island there wasn't a shark feed, but instead an impressive turnout could happen when visiting sports fisherman cleaned fish on the end of the jetty in the evening, and similar attractions occurred on Andros. Otherwise it was seeing sharks generally along the reefs on Cat Island, again at a distance but a thrill none the less. Occasionally a nurse or reef shark was seen sleeping under an overhang. On Exuma Island a shark feed was briefly tried at one location but it attracted in more sand tiger sharks so was discontinued as thought possibly dangerous for the

location. Jim Abernethy's Scuba Adventures liveaboard shark trips, out of Florida to Tiger Bay off Andros Island and other Bahamas locations, are designed specifically to see and dive with sharks and the variety can be good with many different species depending on location. Generally these are brought in by chumming and the trips are a favorite for photographers. At least 9 species of sharks can be seen in the Bahamas with probably the largest being the Great Hammerheads and Whale Sharks.

Coral Reefs

So, you dive or maybe you don't dive with sharks on one of these organised shark attractions, what else? Coral reefs are fantastically complex ecosystems and one of the big things

for many tropical dive destinations and it's no different in the Bahamas. On offer will be the worlds 3rd longest barrier reef, off Andros Island, other shorter barrier reef off other islands, patch reefs, small and large pinnacles and more. With tunnels, chimneys, canyons, sand shoots and of course walls all represented as types of structures within the overall systems. The corals themselves seem in reasonably healthy condition in the locations I've visited, with a diversity of both hard and soft coral species dependent on the actual site. But, corals are only part of the coral reef ecosystem and its the reef ecosystem we are really interested in when diving. That ecosystem has the hard corals forming the basic structure and providing nooks and crannies which can act as homes for fish and



Caribbean Trumpetfish (above); Smallmouth grunts (top right), often along with French grunts, were an ever present fish; Caribbean Spiny Lobster seen on many dives (bottom right)

were able to grow large. They are predating on parrotfish and others which eat algae off the reef, so at first the worry was fewer parrotfish would mean more algae smothering coral. Instead it was found the grouper predated smaller bite size fish reducing them in number but allowing some to grow beyond predated size. These larger parrotfish graze more seaweed than the larger numbers of smaller fish. Complicated, but

protection from human predation allowed healthier reefs in protected zones due to a better distribution of fish sizes. This over spilled to adjacent areas which then had both better fish to catch and better reefs. The lessons have been learned, just not acted on, as so often the case, we need many more protected zones.

Some put the blame for low fish numbers and small size on big American pleasure fishing boats



who have come in, fished to load holds with tons of fish bedded down in ice then departed to pay for the holiday by selling the catch privately back in the USA. The Bahamas government have recently, January 2007, started trying to control this with tough new legislation and catch limits. Others put the over fishing down to Bahamians who supply local restaurants on a casual basis. Protection is being provided in addition to fishing limits with several important protected areas: the Exumas Land and Sea Park and the Pelican Cays Land and Sea Park plus a few small sites. These protected locations are showing larger sizes and populations of both fish, conch and lobster. Campaigners have been working on adding other protected areas but progress seems slow according to environmental groups. Whatever,

the fish are needed to keep the reefs healthy and with time hopefully what we see as divers will improve from good to great.

Diving the reefs can be as relaxed as a shore or maybe a boat dive in a few meters depth at some locations, but most often will be by short boat trip with depths to the more usual 10 to 30 m not counting some of the walls which can be sheer with effectively no bottom. The patch reefs often have sand adjacent providing a reef friendly diver entry point which can cater for all levels of experience.

For example on Cat Island out of Hawk's Nest it can be a stroll to the beach and dive staghorn coral with schools of yellow snapper to keep you company. Or a night dive on Andros with flashing underwater luminescence on the boat ride out, then after slipping into the dark water on

site to have it come alive with more bioluminescence before finding your light attracts krill that can literally explode when hit by a nematocyst from a seemingly docile coral. Down amongst the



Bahamas

coral heads the arrow crabs and feather stars are out the, parrot fish in. Maybe it's the shallow fore reef of Jean's Dream on Andros, a coral garden with a topography of hard coral columns for as far as one could swim in any direction. The columns or heads maybe a foot or two in diameter, 6 foot high a few foot apart, some acting as cleaning stations with little yellow wrasse and blue damsel fish. The blue surgeon fish, parrotfish, French grunts or smaller grouper would call in the cleaners with a flick of the tail and a vertical orientation. The hard corals having the usual Christmas Tree worms, the banded coral shrimps and other invertebrate life. Maybe you dive Duck Cay off Exuma with its sandy rivulets running between the good mix of hard corals in large bommies and the lobsters hiding under ledges.

Just a little deeper might be something like that on Caves Reef out of Grand Bahama with its deep hard coral gullies and shoals of good sized goat fish, large parrot fish and squirrel fish holding



Theo's wreck

One of two sisters

the "Playground" just off Cat Islands Hawks Nest, or Turnbull's Gut off Andros. To float along a wall with with table corals, whip corals extending out, the shark lazing along above you, the turtle keeping you company gives a fantastic feeling.

Not all areas of wall will feel the same. On the northerly islands of Grand Bahama, Andros or Paradise some of the walls edging the deep channels started with the flat reef top then 50 degree sloping sandy sections with only scattered coral growth down to a deep diver depth over which much of the dive was conducted, this before dropping to near vertical and below live coral depths. These sections are not as dramatic so check the descriptions with the dive shop. This contrasted with walls at Cat Island and I gather on Long Island and others where a reef top possibly as shallow as 10 m depth could immediately change to vertical and be covered in splendid live coral for some distance down the sheer face.

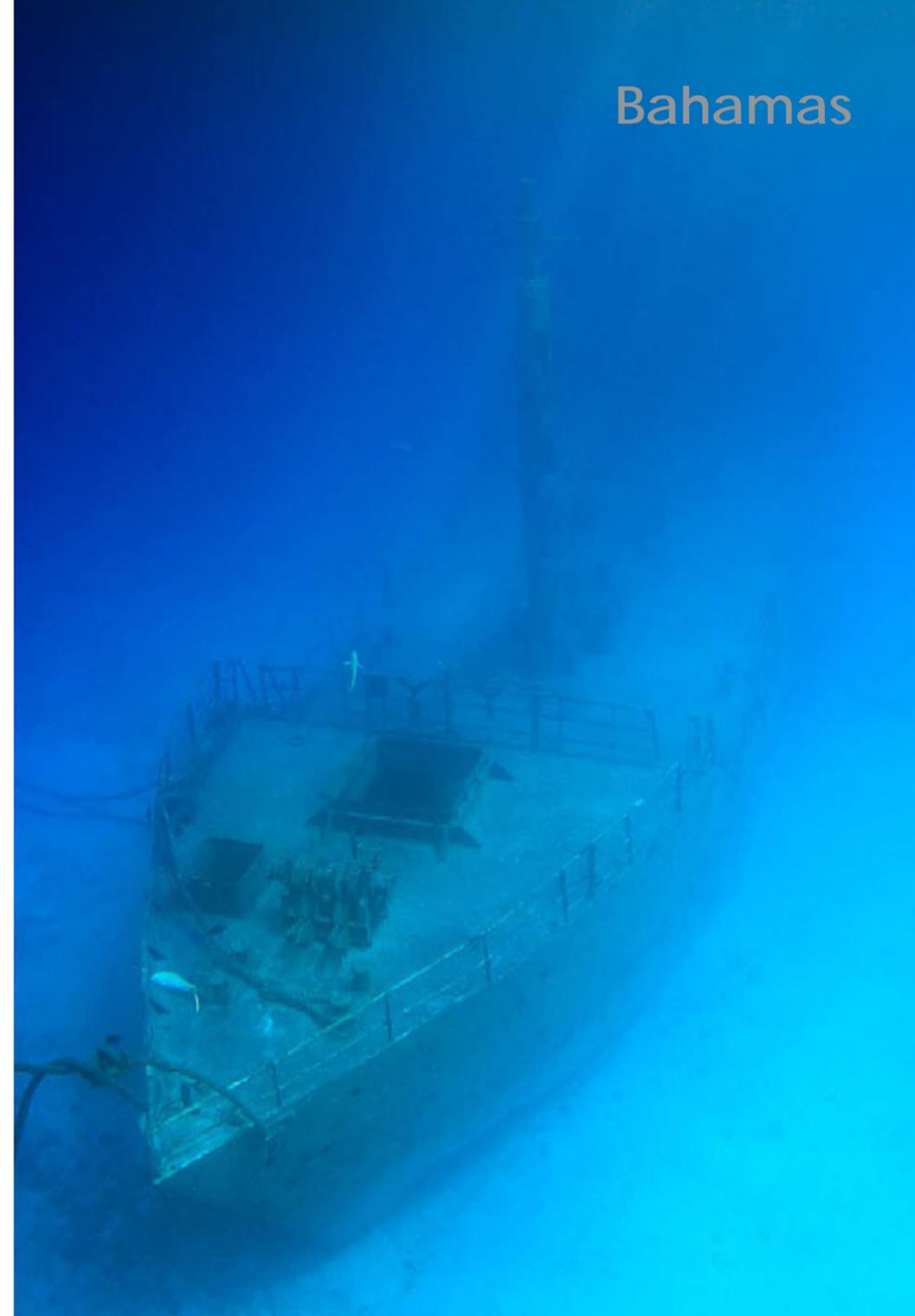
Many of the areas of wall, indeed other reef areas, have been little explored on many of the island. Some of my dives on Cat Island my buddy and I were the only ones present without another boat let alone a diver seen the whole day while much of the reef on Andros hasn't been fully explored. Check out the Family or Out Islands for the unexplored. Yes, you can have great dives on coral reefs, you don't need to be a specialist in these animals to enjoy them and what they have produced.

Bored with coral?

Wrecks, both ancient and modern, accidentally or purposely sunk are on many of the islands and many a diver's "to do" list.

Those sunk for diver tourism are as interesting or even more so as accidental ones and offer both habitat and structure to explore. What is it that wrecks do to attract divers? A bit of adventure, often some history, a man made structure to explore in a way impossible on land, they are habitats and, hey, it can just be fun. There are way to many in the Bahamas too visit them all, I managed a few: Papa Doc and Theos Wreck on Grand Bahama, the Marion on Andros, the Twin Sisters out of New Providence were all great fun dives.

Theos Wreck Theos Wreck, a 70 metres (230 feet) long cement hauling freighter was purposely sunk in 1982 by the suggestion of Theo Galanopoulos as a gift, the first artificial reef of the Bahamas and tourist attraction for the Bahamas government. It is rated as one of the best dives of Grand Bahama by many and it is a great dive. It lies at 30 m (100 ft) in an area with some tidal currents so is treated as a dive for the experienced. The ship was built in Norway in 1954 as the M/S Logna and used for cargo sailing between Spain and Norway then bought by the Bahama Cement Company to carry sand between Florida and Nassau and Eleuthera. A refit couldn't be financed economically so it was decommissioned and Theo came up with his suggestion. Now it has good growth of gorgonians, sponges and corals with grunts, a few lobster, eels and more making it home with visits from the occasional shark, ray or turtle. It's an easy wreck to penetrate with open holds and access to the engine room with enough space so it doesn't feel claustrophobic and it looks like a ship not just a scrap yard.



Papa Doc wreck At nearly the other end of the scale from Theos is the Papa Doc wreck which is a big boat really not a ship. It came about as the original by this name was a gun runners wooden vessel now all but gone. The site was popular so a new steel vessel, 50 foot length, was added in the same location in 45 foot of water. It looks like a boat should

look, upright on its keel and small enough to easily take in, possibly with time to explore the adjacent reef as well.

The Marion Andros Island, The Marion, a construction barge with crane was commissioned to move some equipment for the US Navy AUTEK base in 1988. It happened that trying to lift a

position near the bottom, maybe a small reef shark cruising past or other sites with tube or barrel sponges. What will be seen does change with depth, the largest differences above or below the 7 to 10m depth band. The sites are numerous just to make a major

understatement and you can go on getting deeper till you drop over the edge of a wall. It can feel incredible gliding through a large archway or navigating a narrow coral tunnel to exit in clear blue hovering over 1000 m (3000 ft) of nothingness as at

buoy a bit heavier than its rated lifting capacity didn't quite work, it sank, giving us a good barge with a lot of interesting shapes in the crane to swim around at a maximum depth of 70 feet (21 metres) on a white sandy seabed. A fun dive with potential to explore; maybe its not going to enter the records as a classic site but instead will show you a grouper or two, French angelfish, grey snapper, fairy basslets, goatfish. maybe the resident eel and passing barracuda. While if you look hard enough invading lion fish may also be found.

Film set wrecks New Providence has remnants of film set wrecks such as the vessel Tears of Allah from 'Never Say Never Again' and the Vulcan

Bomber from 'Thunderball', the Treasure Wreck wreck built as a prop for 'Into the Blue' and sunk in 2004 along with many others which can be dived. I only managed the Carib Breeze and Tropic Breeze Wrecks site also known locally as the Twin Sisters. These are two 200 foot tankers donated by Shell and sunk next to each other in 2000 to create an artificial reef. They sit in about 70 foot on a white sandy bottom just next to a sand slope covered in garden eels. On top of the shallow plateau, up the sand slope, the garden eels attract in visiting rays and turtles browse the eel grass. Both the wrecks are ship shape in great condition giving more than enough to visit for a dive or two.

I've only had a taster of the possible wrecks on offer, maybe

one of the problems with the Bahamas, there can be too much to do and see. For a real wreck junkie it will take a bit of extra research finding which island offers the most of what you want to see then organising a specific itinerary with a dive shop before arriving, as the normal fare offers variety not specialisation. For my British cohort wreckies, the wrecks, as for most diving, are no take zones so you can't bring back the odd chunk of brass or old porthole.

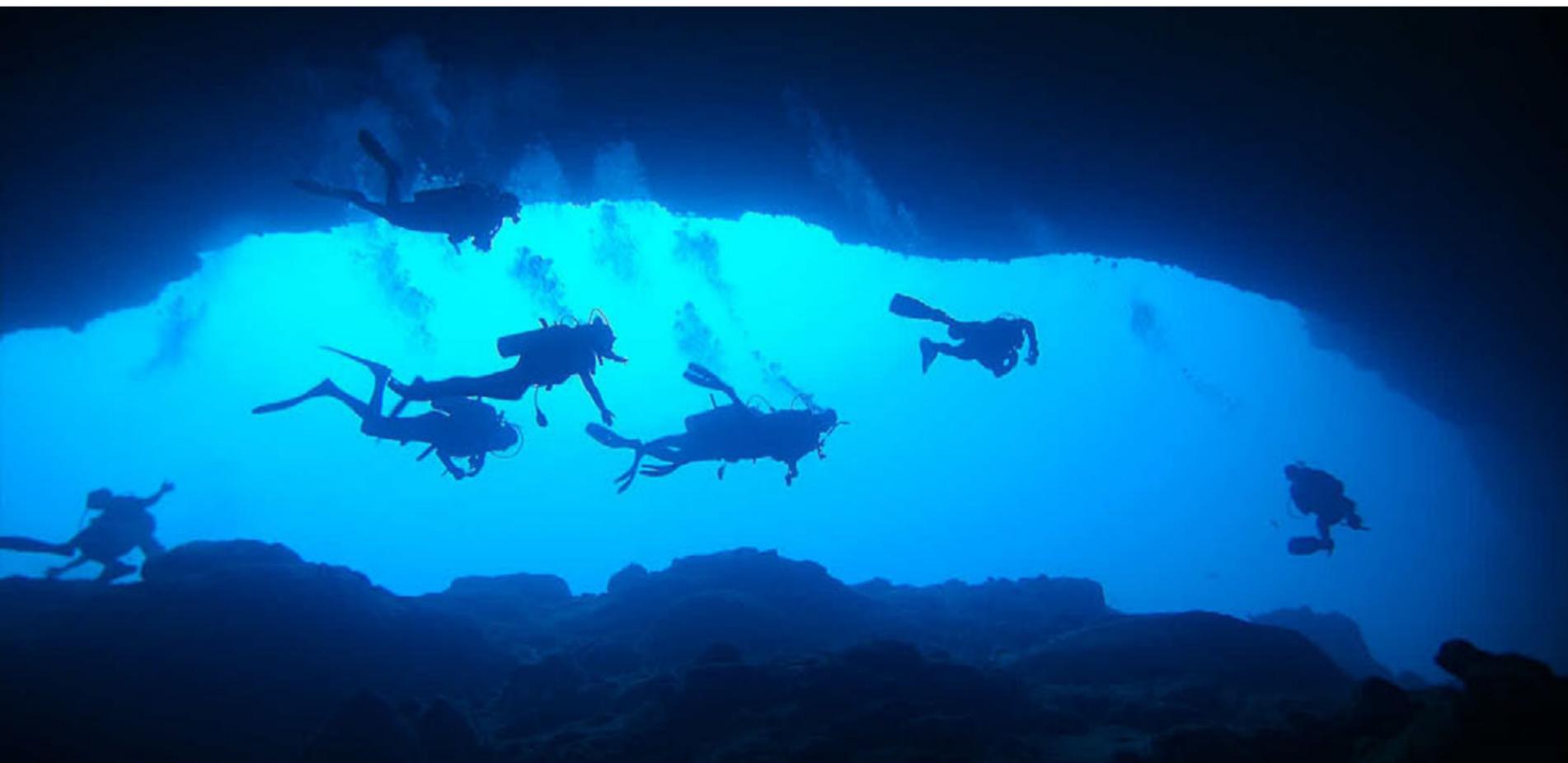
Blue holes

All of the main islands of the Bahamas have blue holes as might be expected from the geological history. Blue holes generally are the collapsed roof to an underground cave

Barral sponges (left) of a number of species along with other sponges commonly seen at some locations; Divers (below) in the Great Blue Hole

which were formed when the sea level was low enough to leave the islands high and dry. These are often listed on itineraries but not always visited regularly either due to some having awkward locations, with others the technical diving requirements don't place them at the recreational level. I suspect some divers also find blue holes less interesting than first imagined as they have dived ones which can be seen as "just a clear blue water dive in a hole without much else" but this depends greatly on the individual site. Andros Island has the best known ones and is the capital for blue holes with at least 178 on land another 50 or more in the sea, more than anywhere else in the world. Some of these are classics

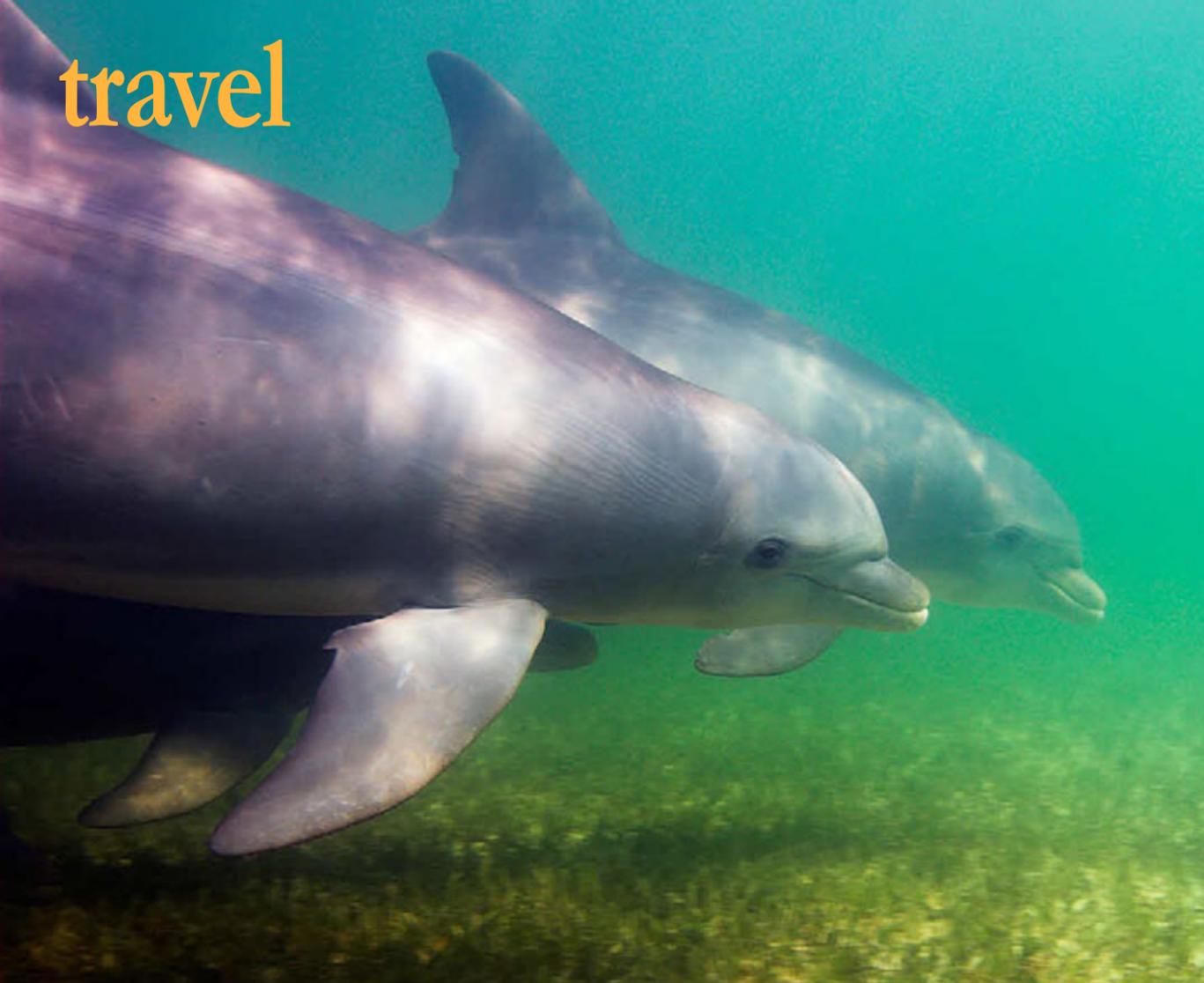
Bahamas



of diving history both in exploration expeditions and resulting from this in filming terms.

One of the exceptional marine ones known as the Great Blue Hole or as King Kong's Cavern is visited by Small Hope Bay Lodge on a regular basis. It is the second deepest in the

Bahamas and measures about 300 foot across at the top. Its entrance region is large and diverse enough to need a number of dives just to see all the potential at this level. Most commonly one descends to the rim at 12 m (40 foot) over its edge and down an ancient waterfall chute



CLOCKWISE FROM LEFT: You may find Atlantic bottlenose dolphins out in the wild if you are lucky, these off Andros; Yellow sub get together; Fish meet the yellow sub

Bahamas

Swimming with dolphins Another activity which, here in the UK really gets the controversy going with a few, is swimming with dolphins. It's an activity done in many countries around North America and the Caribbean and in the better offerings seen as fun-

vehicles, OK there are some differences from most others. Here you have a bubble top even allowing for your hair to stay dry, glasses to be worn, and no need for any previous scuba experience. They are free ranging but tethered to the surface with a float and accompanied by swimming scuba diving safety attendants. The participants have a briefing on shore, join the dive boat and proceed to a rather good area of shallow coral reef with sandy bottom adjacent. The SUBs are winched overboard with

maybe show non diving family members some of what we see. For experienced divers it may seem a little tame, but one comment I heard was that with the bubble top they had a much wider all round view so could better understand the reef than ever with the more restricted view through a mask.

educational. The programme at UNEXSO strives to be very dolphin friendly with controlled conditions so no harassment and good conditions. Three levels of interaction are offered; standing in the water with them, swimming with them in confined conditions and swimming with them in open seas encounters. The



before continuing along under a huge overhang effectively producing a cavern of amphitheatre proportions. Giant boulders are wedged floor to ceiling here and the dive continues, depending on air, under and among crevices of these boulders exiting in what they call the big room before returning to the waterfall chute. More specialist dives, still at the recreational level, explore other areas around this blue holes entrance and tunnels leading off it to other entrance points while technical divers could have a field day exploring deeper reaches of it. The Great Blue Hole is a fantastic site and totally blows the concept of blue holes just being plain boring holes in the ground. It does need to be dived on an outgoing tide, preferably in the morning for better light penetration, but isn't constrictive nor need lights.

As a note on the more technical side Small Hope can take recreational divers

into twin set realms with full introductions then a range of great dives that require this form of redundancy for blue hole, cave and deeper dives on walls along with helium for trimix.. They have nitrox and can mix to requirements including hot mixes. They didn't have rebreathers on offer, but can arrange supplies of absorbent.

Life is not all diving

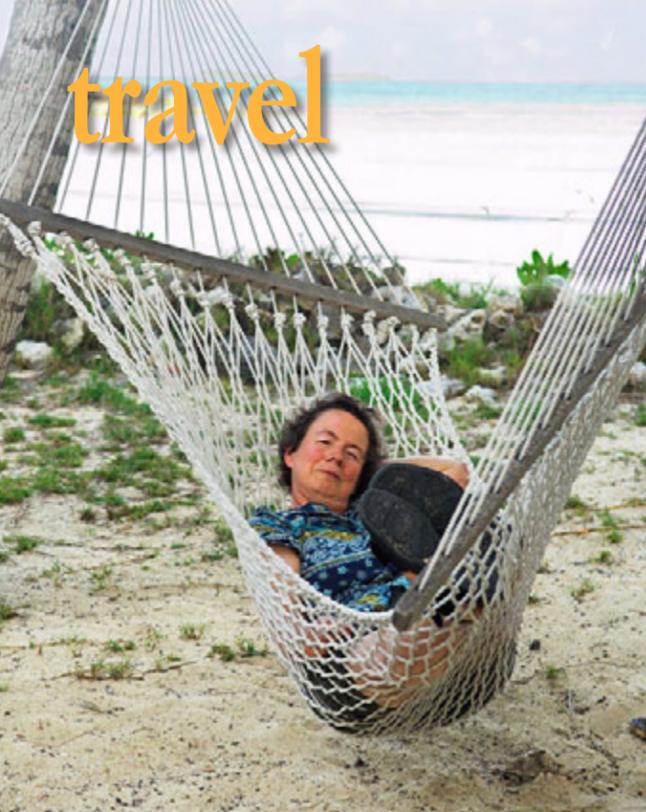
With the tourism hat on, the Bahamas offer the non-diver some attractions which are at least approaching the realms of the diver and what we find so exciting about our special underwater world. Yes, they do have aquaria but moving beyond that are little Yellow Submarines at Stuart Cove's Diving in Nassau/Paradise Island.

Little Yellow Sub To a diver the Yellow Submarines are manned dive propulsion

the bubble top above water level where you enter it before it is lowered further and freed. The new driver heads off, maybe with a gentle crash or two with other SUBs as steering is learned, to explore along the reef at 15 foot depth and hair still dry. The attendants on scuba point out interesting features and fish then feed tiny amounts of fish feed, which brings in absolutely hordes of yellow jacks and more, in front of each SUB diver.

These SUBs seem a stunning way to

CLOCKWISE FROM LEFT: Learn to just relax; Exploring the mangroves at Lucaya National Park on the boardwalk Not everything is diving on Grand Bahama even if it is wet at times; Dive boats weren't overcrowded, this one at UNEXSO



Topside

—Life, besides not being all diving, not all of the Bahamas is underwater Americans comment that the Bahamas are now an expensive destination, while from England I noticed it was just a little less expensive than staying at home. Value partly depends on expectations and what you do. The Family Islands (i.e. all but the highly populated main two) have small populations, relatively few tourists, a laid back lifestyle and an infrastructure which fits but that infrastructure can creak if pushed too far. Life here doesn't always depend on the clock, nor on your wallet, just sometimes, and you need to learn which applies to a situation.

human participants I talked to really enjoyed the experience, and one who had done this at another location said this one was far better as it offered more freedom of interaction both for her and the dolphin.

On Exuma I stayed at the Club Peace and Plenty, Georgetown, diving with the attached Exuma Scuba, all very convenient except ordering lunch in the hotel between dives took



only gets about 8000 tourists a year, most for the world class bone fishing. These small numbers mean a choice of accommodation is limited but there are a number of small hotels, some very reasonably priced, but not necessarily in easy reach of

friendly and helpful, at the Andros Yacht Club they hunted down a computer guy, a friend of a friend sort of contact to try putting it right. Sadly that was to no avail, the sickness continued, but Small Hope and Stuart Cove's all helped out with access to their computers, till after 2:30 in the morning on one occasion. It's the sort of friendly helpfulness which seems



longer than the surface interval. I ended up using the local store to buy quick soup packs, at 20 cents, to heat in my room's coffee maker to save time and money. Lunch was thought of as a relaxed laid back time to contemplate life not a fast, quick snack in a busy schedule.

At Small Hope Bay the package is an all inclusive one including food and drinks (out of busy hours you are welcome to be your own bar tender, without a tab!) which gave an incredibly friendly, sociable and relaxed ambience, but cost was more than at the Andros Lighthouse Yacht Club & Marina so I stayed 3 nights at Small Hope and two at the Yacht Club. Andros Island



Small Hope which is now the only diving establishment.

With digital cameras a computer is essential, mine went sick, really sick. I found the Bahamians and other locals

is present to explore / exploit, sadly I didn't. Ideally for this your own transport would be useful. On Paradise Island I never really got beyond the Nassau Beach Hotel except on Stuart Cove's

endemic in the Bahamas, but you need to play your part with flexibility.

So little time

Limited time is always a problem for divers. On Grand Bahama and Nassau/Paradise Island the shopping experience

Swimming with the dolphins can be hard work keeping up as not holding just gentle contact



Diver (left) signals OK in the Great Blue Hole; The wreck of the *Marion* (below)

oriented shopping, entertainment; hotel region adjacent to the capital city of Freeport. It does have a moderate amount going on even attracting in locals from other regions, but it can be worth exploring further afield. I did some exploration of Grand Bahama which is a nearly flat island intersected with many purpose built canals allowing the many prestigious houses to moor their boats adjacent. These canals plus the mangroves offer excellent breeding grounds for marine life. I was able to have a quick tour driving around areas in and outlying Freeport; seeing the banking and business district

through the car window, the horse riders along a beach and in the sea, the mounds of conch shells by market stalls, and other near empty beaches. These explorations did take me east to The Lucayan National Park, a 30 minute drive on empty but good roads to one of the few protected zones. Here a boardwalk trail through mangroves meanders to an absolutely stunning white sand beach deserving more leisure time than I could give it.

The Family Islands generally offer less for the shopaholic but I found they can be great for the eco-tourism, local crafts and customs and I understand also for fishing, sailing, general water sports and simple relaxation on good beaches. With Hawk's Nest I wandered up the local estuary exploring mangroves in a flat bottom boat, and I met local basket makers on a car drive both on Cat and Andros while on Andros a visit to the batik factory, which supplies most of the other islands with printed materials, was a walk down the road from the Yacht Club.

Diving is well catered for, but I still took my own kit. The internal flights don't have big baggage allowances nor offer extra for divers but flights are short so the extra charges are not completely prohibitive just annoying. I have looked at dive operations on 5 of the islands and all offered up to date, good kit for hire but official regulations are limited so check what you are hiring. The one item I would always recommend taking on any trip is your own exposure suit, in this case a 5 mm wetsuit



Bahamas

Shallow reefs with the deep blue of the Tongue of the Ocean as seen flying between Grand Bahama and Nassau

seems the most appropriate, you know it fits. People come in too many shapes and sizes for any hire shop to always have a wetsuit that's right.

Yes, the Bahamas are tourist centric for a visitor and it does take a little effort to move beyond that but they do offer some really good diving and more than enough to keep non-divers happily occupied. At least at some places, such as Small Hope, families can be catered for with child care provisions. So just a bit of added effort and more time a great deal extra could be done or maybe just learn to relax, lay back and the Bahamas can be a great place to unwind. I must give that a try sometime. ■

Interested in marine life since childhood in California, Charles Stirling tried scuba in University but the need for glasses and at the time lack of knowledge about prescription masks stopped this as

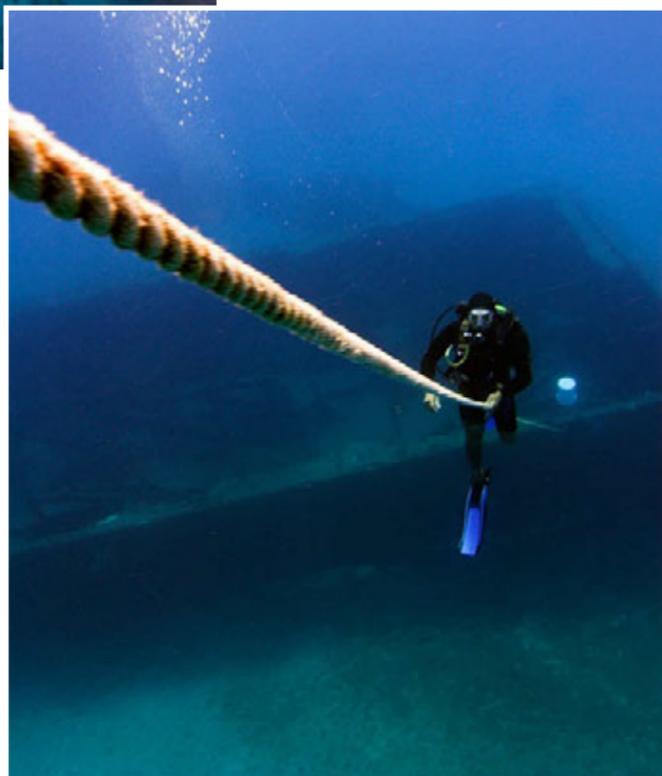
an activity. Did research on marine invertebrates going on to do PhD in Zoology emphasizing neurophysiology and electronmicroscopy. Rediscovered diving about 10 years ago when heard prescription masks were available. Did CMAS, then PADI, BSAC and TDI training before adding underwater photography. Now publishes frequently in the UK Sport Diver and other UK diving and more general magazines. Became the environmental correspondent for the BSAC Travel Club a few years ago.

Great Barracuda



pickup bus. The hotel is in a complex of interrelated hotels (OK, it was, as now being demolished for a larger more upmarket one), a casino and a couple of restaurants isolated from anything else within walking distance. No feel at all of the Bahamas will be obtained with this isolation. Previously I have stayed at the Orange Hill Beach Inn, also isolated. This isolation seems part of a modern day way to contain tourists and can be great if it's what you want otherwise transport becomes essential as there can be so much to experience.

On Grand Bahama UNEXSO are located in the Port Lucaya area and I stayed in both the Pelican Bay and adjacent Sheraton Our Lucaya Hotels. Port Lucaya is a relatively newly developed rather tourist



Grand Bahama

Dive diversity

Text and photos by Matthew Meier





Black grouper (left) having its mouth and body cleaned by cleaning goby fish; Large green moray eel (top left); Scuba diver at large coral bommie as a Caribbean reef shark swims past (above)

Have you always wanted to dive with sharks? Hug a dolphin? Explore shipwrecks, caves and colorful coral reefs? What if you wanted to have all of these adventures wrapped into one destination? Then, it is time to visit the Caribbean island of Grand Bahama.

Located 55 miles due east of Florida and roughly 100 miles from Ft. Lauderdale

or Miami's International Airports, Grand Bahama is easily accessible from the U.S. mainland by plane, boat or cruise ship. It is the fifth largest of the approximately 700 islands in the Bahamas island chain while enjoying a modest population of only 75,000 people. The Bahamas capital city of Nassua alone has 250,000.

The relaxed atmosphere of Grand Bahama is apparent as soon as you set foot on the island. Simply looking down upon the turquoise waters during the flight in is enough to kick start your attitude adjustment. Those crystal clear waters are leg-



Common lionfish on reef. PREVIOUS PAGE: Cristina Zenato hand feeding Caribbean Reef Sharks





Common bottlenose dolphins leap out of the water in unison next to a UNEXSO dive boat

trainer gave a briefing explaining the plan for the day and an overview of hand signals with which to elicit behaviors from the dolphins. Once at our destination, the trainer expertly managed the dolphins as they were sent to one diver or snorkeler at time to perform behaviors at our request. We were able to swim alongside the dolphins, have them spin us in the water, give them a hug and go for a ride while holding onto their dorsal fins.

I have spent a lot of time in the water with dolphins and have to admit that I never tire of the experience. There is something truly remarkable about

interacting with these amazingly intelligent and playful creatures.



Common bottlenose dolphin poses for pictures with a scuba diver kneeling on the sea floor (above); Snorkelling with a common bottlenose dolphin (left)

endary for their astonishing visibility, so it is no wonder they have played host to several Hollywood movies including *Pirates of the Caribbean*, *Splash*, *Cocoon* and the James Bond movies *Thunderball* and *Never Say Never Again*.

Dolphins

Grand Bahama is the only place in the world where you can interact and swim with captive dolphins in the open ocean. The Dolphin Experience is run by UNEXSO (Underwater Explorers Society), and they are responsible for a breeding program of 16 Atlantic bottlenose dolphins. These second and third generation captive dolphins live in a natural nine-acre lagoon called Sanctuary Bay.

There are several different dolphin encounters to choose from, with varying levels of involvement. The dolphin interactions range from standing on a submerged platform, to swimming with dolphins in the lagoon, to open ocean snorkeling and scuba diving with dolphins along the coral reef and ultimately to becoming a trainer

for the day. At every level, the dolphins perform behaviors on your command, interact up close and personal and even pose for photos while you give them a hug or a kiss.

I was fortunate enough to be able to participate in both the open ocean snorkel and the scuba diving encounters with the dolphins. On both occasions, two dolphins escorted us from Sanctuary Bay, following their trainer's boat through the canals to the open ocean. Along the way, the dolphins were asked to perform jumps and spins beside the boat, and at their trainers command, they exploded out of the water in perfect unison, soaring high in the air, before splashing back into the ocean. Prior to each encounter, the dolphin





Scuba diver hovers over the bow of this 50-foot, triple-decker tugboat called *La Rose Wreck*

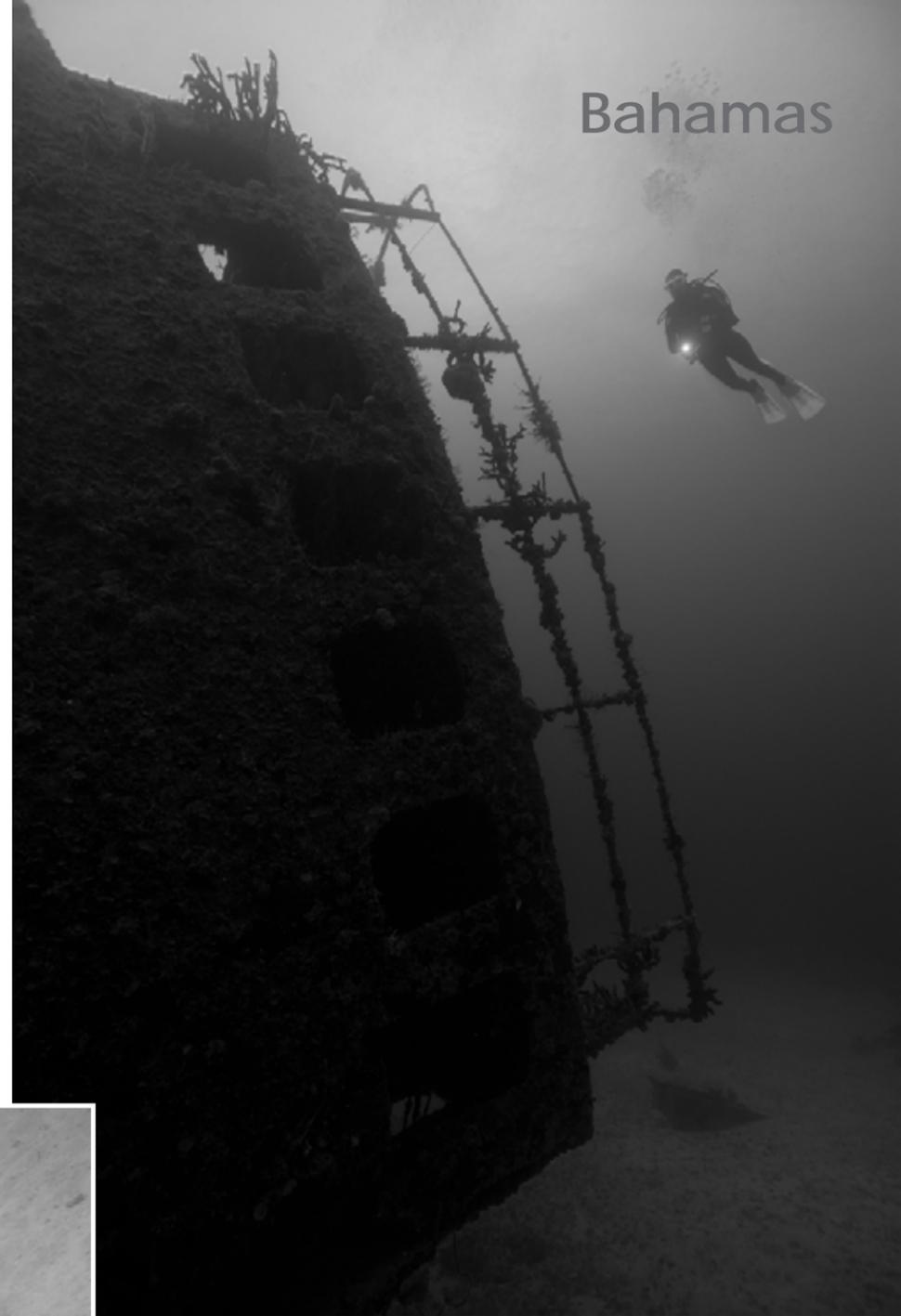
mooring line, *Theo's Wreck* is an impressive site as she materializes from the depths. The wreck has a myriad of coral and sponge growth on her hull and a resident green moray eel can usually be found. Given her size and depth, it takes several dives to explore the full structure properly. Sadly, we were only able to dive *Theo's Wreck* once during our stay, and I look forward to seeing more of her on my next trip.

La Rose is a classic triple-decker tugboat that sits upright in 95 feet of water next to a dive site called Moray Manor. Sunk in 2004 as an artificial reef, the wreck's close proximity to the sloping coral reef allows for longer bottom times by using a tiered dive profile. We were able to spend 10-15 minutes on the wreck at 80-90 feet and then work our way up into the large coral heads that populate Moray Manor, all the while being escorted by a large, inquisitive barracuda. Once on the reef, we were entertained by a school of bar jacks congregating above a huge colony of

great star corals.

Another popular site we dove was Papa Doc's Wreck. Though truth be told, the only thing left of the original 1968 shipwreck were the engine blocks. Sunk in a storm, the original boat carried a group of mercenaries headed to fight in the Haitian revolution to overthrow François "Papa Doc" Duvalier. Now in its place, sitting 50 feet deep and upright in the sand, is a tugboat named the *Badger*. The wreck supports a healthy array of reef fish safely tucked away in the wheelhouse and significant coral and sponge growth is starting to show on its hull. If you look closely out in the sand you may even find a kitchen sink nearby. In my case, a Caribbean reef shark and some trailing bar jacks were kind enough to swim between the sink and the tug making for a fun photo.

The last of the shipwrecks we visited during our stay was called the *Pretender Wreck*. Other than the base of the hull and twin props sticking up a few feet out of the sand, there was little left to see.



Shipwrecks

There are numerous shipwrecks to be explored in the waters around Grand Bahama. Some were sunk as the result of storms or ran aground on the coral, and others were sunk intentionally as artificial reefs.

The largest vessel we explored

was called *Theo's Wreck*. Sitting on her port side in 100 feet of water, the adventurous may penetrate *Theo's* hull both at the cargo hold and the engine room. Formerly a 228-foot cement hauler, she was sunk intentionally by UNEXSO in 1982. Working your way down the

In fact, I would bet that most folks who dive this site never even notice the wreck at all. That is primarily because this spot is also called Shark Junction, and divers are usually kneeling in the sand along the edge of the *Pretender*, surrounded by circling Caribbean reef sharks.

Sharks

The shark feeding dive on Grand Bahama is not to be missed. There are a couple of outfits that offer this dive, but I would recommend

Scuba diver hovers over the conning tower of *Theo's Wreck* (above); The *Badger* wreck (left)—this tugboat was intentionally sunk near the site of Papa Doc's Wreck



Caribbean reef sharks swim circles over the sandy bottom

in animals that is often induced by turning an animal onto its back, or in the case of some sharks, by placing one's hands on its snout. The shark becomes rigid, and its breathing becomes steady and relaxed. While in a state of tonic immobility, the feeder is often able to bring the shark over to the guests so that they might touch a shark in the wild. UNEXSO also offers a shark feeder course if you would like to learn to hand feed sharks yourself.

Before and after the shark feeding dive, the crew educates guests on the need to conserve sharks, dispels myths surrounding sharks, describes specifics of shark behavior and explains the dangers sharks currently face from humans.

Scientific studies estimate that humans kill between 26 and 73 million sharks each year, and you will often see that number quoted as high as 100 million

Bahamas



UNEXSO, who pioneered shark feeding on Grand Bahama over 20 years ago. Diving supervisor, Cristina Zenato, has been feeding sharks here since 1995 and was recently inducted into the Women Diving Hall of Fame for her efforts in ocean and shark conservation.

I have never experienced a more peaceful, fascinating and exhilarating dive in my life. A dozen or more Caribbean reef sharks swam slow circles around the feeder and in and around the divers, waiting for their opportunity to be fed. This was not a feeding frenzy where sharks fought one another for food in a cloud of stirred up sand. This was a chance to see these wondrous creatures up close in a carefully controlled encounter, making for an amazing underwater adventure. Never did

I feel threatened or that the sharks were looking at me as food. I had countless sharks pass within inches of me without a hint of aggression. The sharks knew exactly where their food was located, and we humans were simply not on their menu.

During the dive, divers line up shoulder to shoulder, kneeling on the sand in 40 feet of water. Once everyone is in position, the shark feeder approaches, dressed in a chain mail suit and followed by a procession of eager sharks. The feeder then methodically extracts one fish at a time from an enclosed container and hand feeds an individual shark as it passes by. If guests are lucky, they will also get to witness a shark being put into a state of tonic immobility. This is a natural paralysis



Shark feeder, Cristina Zenato, picks up and positions a Caribbean reef shark in a vertical head stand after inducing a state of tonic immobility (above) and surrounded by Caribbean reef sharks in shark feeding dive (left)



Scuba diver in the main cavern of Ben's Cave

Bahamas

cialized cave training, a certified guide and permits. For divers like myself that are not cave certified, there are also a few large caverns at the mouth of these caves in which we were able to dive.

The largest cavern is at the entrance to Ben's Cave, on the eastern side of the island, within the Lucayan National Park. The cave is named after Ben Rose who first dove here in 1967. Ben still lives and works on Grand Bahama and is one of only two people certified to train new guides. (Cristina Zenato is the other.) Accessed by way of a spiral staircase to a long wooden deck below, the cavern is roughly 200 feet long, 100 feet wide and 50 feet deep.

As you descend into the water, the first 25-30 feet consists of crystal clear fresh water. Beneath the fresh water sits a halocline, which is a salinity gradient within a body of water (Wikipedia). Less dense fresh water from the land forms a layer over salt water, which connects through the cave system to the ocean. Passing through the halocline stirs up the salt and fresh water and reduces visibility, so it is imperative to mind your depth. Within the cavern there are large rock boulders that are likely the result of the roof collapse that exposed the



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Opening to Owl's Hole Cave

Wooden boardwalk (left) and spiral staircase inside Ben's Cave

sharks. Most of these sharks have their fins cut off while still alive and are then thrown back into the water to drown. The fins are valued for shark fin soup and command a high price on the black market.

Caverns and caves

Grand Bahama has the second largest underwater cave system in the world, with over 32,000 feet of mapped tunnels. The vast majority of those tunnels require spe-





to the cave system connects to another, called Mermaid's Lair, by way of roughly 3,000 feet of underground tunnels.

Reef

The coral reefs surrounding Grand Bahama Island are colorful, varied and full of life. They play host to large star coral formations, flexible sea rods and vibrant sponges in every color. West Indies spiny lobsters hide under ledges, as do the occasional spotted and green



opening to the cave. There are also huge stalactite and stalagmite formations created over the millennia before the cave was flooded.

Bats nest in the roof of Ben's Cave from the first week of May through the first week of September. In the past, the cave was closed during this time, but is now open to the public year round. The cave system connects underground to another opening within the National Park called Burial Mound Cave. Several Lucayan Indian remains were found, perfectly preserved, under a mound of rocks, in a water-filled cavern near this entrance.

Owl's Hole Cave is another spot with a fairly large cavern at its entrance. This limestone sinkhole is approximately 50 feet in diameter and requires a harrowing 30-foot descent down a vertical steel ladder before hitting the water's surface. Named for the owls that nest on the interior ledges, this entrance



moray eels. Reef fish abound from jacks to groupers, porkfish to squirrel-fish, parrotfish, surgeonfish, filefish, goatfish, grunts and chubs.



CLOCKWISE FROM FAR LEFT: Colony of painted tunicates and mangrove tunicates attached to a sea rod; Longspine squirrelfish on reef; Detail of large colony of great star coral; Large coral head covered with sea rods, sponges, sea fans and great star coral; West Indies spiny lobster



Bahamas



CLOCKWISE: Large red hibiscus flower; Sunbather enjoys a deserted stretch of Gold Rock Beach; Chef makes conch salad, or cerviche, at Junkanoo Beach Club on Taino Beach

Garden eels and jawfish can be found in the sand if you are patient and slow on approach. Unfortunately, the common lionfish, an invasive species in the Caribbean, can also be found here. Native to the Indo-Pacific, they have no natural predators, a voracious appetite and are breeding exponentially. Some of the local dive guides have taken to spear fishing them to help cull their numbers on the reef. I am told that if prepared properly, they are quite delicious to eat as well.

The dive sites around the island are categorized by their depth and degree of difficulty. There are deep-water tongue-and-groove coral formations where you can expect to see sharks, turtles and other pelagic species. Medium depth reef formations, from 40-60 feet, typically consist of scattered coral bommies growing up out of the sandy bottom. Shallow reefs rise from 20

feet nearly to the surface and are perfect for beginner divers.

Topside

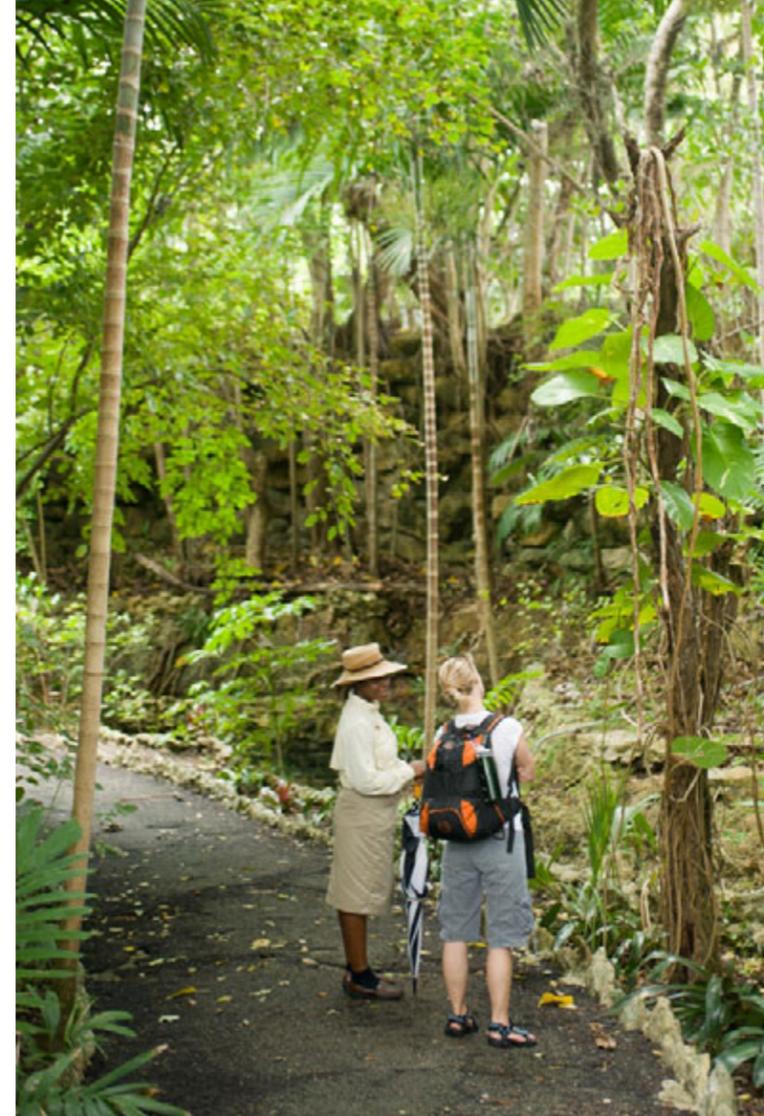
Grand Bahama offers a nearly endless array of non-diving activities to keep you entertained. Sporting pursuits include fishing, golf, tennis, bike riding, sailing, kayaking, horseback riding, windsurfing, parasailing and water skiing. There are casinos, shops, fantastic restaurants, live music and dancing at your fingertips. If that all sounds too hectic, perhaps you would enjoy a quiet stroll along an empty, white sand beach or simply sitting by the pool to soak in the sun.

A must see during your visit is the weekly, Wednesday night, Smith Point Fish Fry. Locals and tourists alike gather at family run restaurants right on the beach to enjoy delicious local fare, dancing and music. Whole fried fish and fried chicken are served with



Wednesday night fish fry at Outriggers Beach Club draws a crowd (above); Colorful entrance to the Port Lucaya Marketplace (top right)





CLOCKWISE FROM LEFT: Waterfall at the Garden of the Groves botanical garden; Red mangrove plants in Gold Rock Creek, Lucayan National Park; Fern Gulley section of the Garden of the Groves; Jeep tour by Grand Bahama Nature Tours; Cuban emerald hummingbird

peas 'n' rice, mac 'n' cheese, potato salad, coleslaw, conch salad and conch fritters. Slug down a Gulley Washer or a Rum Punch afterwards and you have had a night to remember.

A Jeep tour is a great way to see the island of Grand Bahama. Guests drive their own vehicles and follow a guide, caravan style, as they explore some of the beautiful beaches on the south side of the island and learn a bit of history as the guide narrates along the way. Continuing east the tour pass over the Grand Lucayan Waterway on the Casuarina Bridge. At 58 feet tall, the bridge is the second highest point on Grand Bahama and is the only way to get across to the east side of the island.

The Grand Lucayan Waterway is an 8.5 mile long canal that cuts the island in half

and allows small boat traffic easy access from north to south and back again. Construction on the waterway started in 1955, and the bridge was erected ten years later. As the tour proceeds towards the north side of the island, red mangroves and shallow wetlands replace sandy beaches. This area is famous for its bone fishing and is vital as a nursery to many young fish species, in addition to providing protection to the island from storm surge.

Pit stops along the way include the Garden of the Groves, a 12-acre botanical garden featuring lush vegetation, waterfalls and indigenous and migratory birds and wildlife. While strolling through the garden, savor a bite to eat or browse the Garden Shoppes to experience authentic Bahamian arts, crafts and prod-

ucts. Named after Wallace Groves and his wife Georgette, who founded the city of Freeport, the newly renovated garden re-opened in 2008 after sustaining significant damage from two different hurricanes in 2004. The island is nearly covered in Caribbean pine tree forests and they were the original draw for Groves, who settled here to start a lumber company.

Another stop might include the Lucayan National Park and Gold Rock Beach. Here you can examine Ben's Cave on foot, take a kayak tour through the mangroves along Gold Rock Creek or enjoy a quiet lunch on the white sand beach.

If you are interested in a more private and customized tour experience, I would suggest one of the local guides. Several are available, but after repeated local recommendations, I spent a lovely after-





Bahamas



LEFT TO RIGHT: Caribbean pine trees and Sabal palmetto plants line the Old Freetown Road; Little Bahama curly-tailed lizard sunning itself; Cristina Zenato, in a chain mail shark suit, hand feeding a Caribbean reef shark in shark feeding dive; Sunset behind a palmetto palm on the island's West End



been on Grand Bahama for over 45 years.

I look forward to visiting Grand Bahama again soon. There simply was not enough time for all the things I wanted to do on one trip. Numerous dive sites were missed, several wrecks still need to be explored and countless topside adventures have yet to be experienced. Perhaps I will even muster up the

noon with Ms. Paddy Wildgoose. She escorted us on a cultural tour towards the West End of the island, highlighting several of the local communities along the way. Ms Paddy is a wealth of information and a pleasure to be around. Originally from Nassau, she has

courage to hand feed the sharks. Come join me in Grand Bahama for your next dive trip or family vacation. You will thank me if you do. ■

Matthew Meier is an underwater photographer and dive writer based in San Diego, California. To

see more of his work and to order prints, please visit: www.matthewmeierphoto.com

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Special thanks to Cressi-sub for providing gear used in the production of this article. Visit: www.cressi.it



Common bottlenose dolphins leap out of the water in unison (above); Photographer, Matthew Meier, and UNEXSO Diving Supervisor, Cristina Zenato, in Neptunic shark suits (left). Zenato was recently inducted into the Women Diving Hall of Fame

Text and photo by Matthew Meier

Recently inducted into the Women Divers Hall of Fame for her efforts in shark and ocean conservation, Cristina Zenato has made scuba diving her life since she first got certified in 1994. She is currently the Diving Supervisor for UNEXSO (Underwater Explorers Society) on Grand Bahama Island and has held that position for the last ten years. In addition, Zenato is a full cave instructor and in charge of all technical diving and specialty programs at UNEXSO. Zenato owes her love of the water, at least in part, to her father, Cesare Zenato. He was in the Special Forces as part of the National Association of 'Arditi Incursori' with the Italian Navy.

ing sharks, and the following year, UNEXSO created a shark feeding class for divers. By 1997, she was teaching the class and slowly putting her mark on how the shark feeding was conducted. The dive has evolved into a more relaxed and controlled encounter as opposed to a frenzied rodeo. Over her career, Zenato has dived with great white sharks, tiger sharks, lemons, bulls, hammerheads, makos, blues, Caribbean reef and nurse sharks.

Due to her incredible versatility and skills working in caves and with sharks, Zenato is in high demand from professional photographers, videographers and TV crews alike. She has worked with the Shark Man, Mike Rutzen, on a film about tonic immobility with sharks. She has helped the BBC, Discovery and National Geographic, collaborated on videos like *Gimme a Hug* and *333 Nina Salerosa* and been featured in *Shark Diver Magazine*.

Through the years, Zenato has continually lobbied for their protection and conservation. Thanks in part to her efforts on 5 July 2011, the Bahamas created a sanctuary in the approximately 630,000 km² (243,244 sq mi) of the country's waters to prohibit commercial shark fishing along with the sale, importation and export of shark products.



Zenato has supported professional photographers such as Stephen Frink, Bob Talbot and Todd Essick and also assisted Wes Skiles on his August 2010 National Geographic article on Bahamas Blue Holes.

Zenato is an amazingly accomplished young woman with a very bright future ahead of her. To learn more, please visit her website: www.cristinazenato.com ■

Cesare Zenato



Cristina Zenato

—Shark Professional, Cave Diving Instructor & Explorer



Born in the Veneto Region of Italy, Zenato grew up in the Congo (formerly Zaire) from the ages of three to 14. She finished high school back in Italy and then went on to Lindau, Germany, to learn the hotel industry. After two years of working for a hotel back in Italy, Zenato's boss forced her to take a vacation. She wanted to go learn to scuba dive and

ended up at UNEXSO on Grand Bahama. After her vacation, Zenato flew back to Italy, quit her job and returned to Grand Bahama 12 days later. She took a job at a local hotel and spent whatever free time she had, six to seven days a week, scuba diving. Within eight months, she became a certified dive master and began work full time at UNEXSO. She has been there ever since.

Zenato's fascination with caves began early in her diving career when she dove the cavern at Ben's Cave, with the caves namesake, Ben Rose, himself. In 1996, she travelled to the United States, to get her cave diving certification. At 24, she was too young to rent a car and had to use borrowed gear, but she managed to go from zero to hero, cavern to full cave, in 14 days.

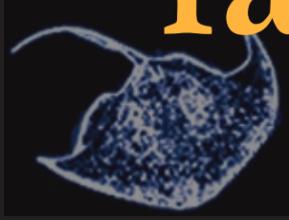
Not something she recommends for her current students. Zenato started her Cave Diving Instructor training in 2000 and completed it in 2001. In her free time, Zenato maps and explores cave systems to provide vital information used to extend their protection and conservation. Her ongoing project on Grand Bahama has mapped over 32,000 feet of tunnels.

In 1995, Zenato began feed-



fact file

Bahamas



SOURCE: CIA.GOV WORLD FACTBOOK

History The Spanish gave the island the name Gran Bajamar, meaning "Great Shallows", and what the eventual name of the Bahamas islands as a whole is derived from. The islands were claimed by Great Britain in 1670. Grand Bahama was to remain relatively quiet until the mid-nineteenth century, with only around 200-400 regular inhabitants in the capital, West End. The island finally gained a stable source of income when in 1955 a Virginian financier named Wallace Groves began redevelopment with the Bahamian government to build the city of Freeport under the Hawksbill Creek Agreement and create the Grand Bahama Port Authority.

Geography Grand Bahama Island is approximately 150km (93 mi) long west to east and 20km (12 mi) at its widest point north to south. It has an area of 1,373km² (530.1 sq mi) and is the closest major island to the United States, lying 90km (56 mi) east of the state of Florida.

Climate The Bahamas are slightly cooler than other Caribbean island groups owing to their proximity to the continental North American cold air systems. The subtropical climate sees about 340 sunny days per year. Average air temperatures: Winter and Spring (December to May): 18-25°C / 65-77°F. Summer (June-August): 24-33°C / 75-91°F. Average water temperatures:

Winter (December to March) 24°C / 75°F. Spring 27°C / 80°F. Summer (June to August) 31°C / 88°F. Average water visibility: 24-30 metres / 80-100 feet

Economy The Bahamas is a stable, developing nation with an economy heavily dependent on tourism and offshore banking. Tourism alone accounts for more than 60% of the GDP and directly or indirectly employs 40% of the archipelago's labor force.

Currency Bahamas Dollar
The Bahamian dollar (B\$) is freely interchanged with the American dollar throughout The Bahamas. It is not necessary to change U.S. dollars into Bahamian currency. Traveler's checks in dollar denominations may be cashed almost anywhere. Credit cards are widely accepted. The Bahamas maintains cordial relations with all international banks and is known internationally for its banking and financial services.

Population Grand Bahamas population is approximately

RIGHT: Location of the Bahamas on global map

BELOW: Location of Grand Bahama Island on map of Bahamas

BOTTOM LEFT AND RIGHT: Diver being kissed by a common bottlenose dolphin; Red mangrove plants in Gold Rock Creek



75,000 (as of 2007)

Language English

Time Zone Eastern Standard Time prevails on all the islands except during the summer, when Eastern Daylight Savings Time is adopted.

Voltage Electricity in The Bahamas is the North American standard 120 volts at 60 cycles.

Food Grand Bahama offers a wide variety of international cuisines for all tastes. The local Bahamian cuisine consists mainly of seafood, poultry, or pork, typically fried, steamed, or curried,

Tipping The usual tip on the islands, similar to the U.S. practice, is 15 percent. Sales tax does not exist in the Bahamas.

Driving British rules apply, so please drive on the left and watch those roundabouts. Visitors may use their home license for up to three months and may also apply for an international driver's license.

Airports/Visa Daily flights are available from Ft. Lauderdale (FLL) and Miami's (MIA) International airports to Grand Bahama International Airport (FPO). Citizens of the United States, Canada and The United Kingdom and Colonies do not need a passport for a visit that does not extend beyond three weeks. Visitors from these areas do need to pres-

ent adequate proof of citizenship, such as birth certificate and photo identification.

Telephone From North America, dial 1 + 242 + the seven-digit local number. From elsewhere, dial your country's international direct dialing prefix + 1 + 242 + the seven-digit local number.

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