

An underwater photograph of a coral reef. A diver is visible in the center, illuminated by a light. The reef is covered in various types of coral, including large, branching orange corals and smaller, more delicate ones. Numerous colorful fish are swimming around the reef. The background is a deep blue, suggesting a clear underwater environment.

# *Bali's Treasure* Liberty Wreck

*Microcosm of Life*

Text and photos by  
Don Silcock



THIS & PREVIOUS PAGE: Scenes from the wreck of the *Liberty*; Pinnate batfish (right)

**The *Liberty* wreck has long been a dive that most divers aspire to have in their logbooks, but in recent years the wreck has graduated onto the backpacker “must do” list of experiences that have to be completed before reaching 25.**

The first ones arrive just after eight and on a busy day, within the next hour the car park will be filled with a selection of cars, mini-buses plus the odd large coach and a quick walk around will expose you to a veritable United Nations of international accents. They used to come mainly from the east,

up the coast road and over the nearby mountains into the town’s main street—in fact, the only street—but now they are also being bussed in from the west and the new resorts that have been built in nearby villages where the real estate is cheaper.

This is Tulamben, the small town on the northeast coast of Bali, and “they” are the scuba diving tourists who come to experience the island’s most famous wreck, and arguably one of the best known wrecks in the world, the *USAT Liberty*.

I vividly remember my first dive on the wreck back in 1999 and how impressed



I was by the rich marine life and beautiful soft corals it supported, but I also recall being taken aback by the number of divers on the wreck.

That was some 13 years ago when there was no car park, only a hand-



Longnose hawkfish (above); Diver in huge school of jacks (top); Bumphead parrotfish and diver on reef (right)

full of dive resorts in operation, and it felt really crowded sharing the overall experience with 20-30 other divers.

These days, it is not uncommon to have more than 100 divers on the wreck during the busiest hours of the day, and in the peak seasons, those numbers can easily exceed 150!

So, is the *Liberty* wreck still worth diving, or is it being killed by its popularity and become a mere shadow of its former pristine glory?

**Liberty Insider's Guide**

If you had asked me last year, "Have you dived the *Liberty*?" I would have waxed lyrically about the various experiences I have had on the wreck and how I have learned to dive it early in the morning before everybody arrives. Plus, I would have told you about the various hot-spots you should visit on the wreck to see a particular type of fish or coral.

But then I realized that although I

had indeed dived it dozens of times over the years, I could still manage to get lost on it and did not possess the intimate knowledge of its topography that I needed to write a definitive article on this famous wreck.

So, I approached Tony Medlow of Tulamben Wreck Divers to see if he would help me write an "insider's guide to the *Liberty* wreck", and to my delight, my email was answered within minutes. The next week, I was

on my way back up to Tulamben.

Tony and his wife, Dot, are very well-known in the Australian dive industry as the people who developed the Exmouth Dive Center and scuba diving on Ningaloo Reef, in Western Australia, and also helped set-up the whale shark Code of Conduct that has been a key part of the successful interaction with whale sharks there.

Tony and Dot have been diving the *Liberty* wreck since the early



Liberty

THIS PAGE: Diver explores the architecture of the *Liberty* wreck, heavily laden with thriving corals and marine life

very early and then dive different sections during the day with specific objectives in mind.

His view is that the *Liberty* is basically a

that run down the northeast coast of the island into the mighty Lombok Strait. Those waters flush through Tulamben Bay and are the key to the sheer resilience of the wreck and its ability to regenerate.

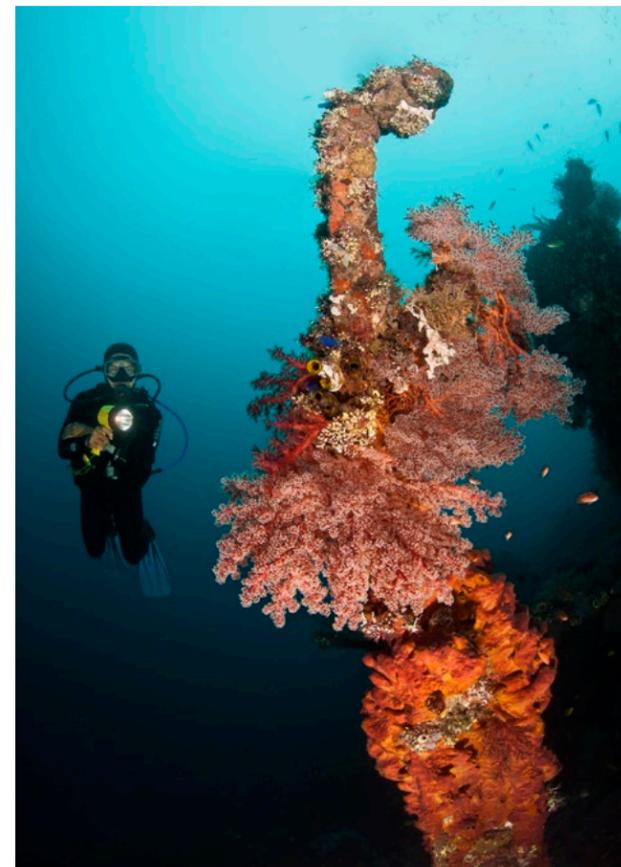
The rich marine population of the *Liberty* has also learned to adjust to the daily influx of visitors. So, if you arrive during peak hours with a fish-eye lens to capture the bigger residents, you are likely to be disappointed. But if you adjust your timing and expectations around the rush hour(s), it's possible to have some incredibly

memorable dives.

**Early morning on the *Liberty***

I used to be utterly convinced that entering the water around 07.30 was the best time of day on the *Liberty*, but the truth is that you really should be leaving the wreck at that time to enjoy a hot breakfast and reflect on what you have just seen. Zero-6.00 is the witching hour if you want to start the day with a "bumphead moment", because around the stern—the usual entry point for the wreck—in about 15m of water, you will encounter a large school of bumphead parrotfish performing their morning ablutions before heading out for the day.

Early risers, the bumpheads spend the night down around the bow in about 25m of water where they can rest in the shelter of the hull. They congregate around the stern as the sun's rays start



1980s, and when they decided to sell their business in Exmouth, a move to Tulamben became the logical next step. They set up Tulamben Wreck Divers in 2001 in partnership with former dive guide turned local entrepreneur, Wayan Ambek.

Tony's very clear advice to me was that if I really wanted to experience the best the wreck has to offer I should start

microcosm of the best diving Bali has to offer, but it is more than just a dive site—the wreck is a living thing, nourished and sustained by the rich waters



THIS PAGE: More scenes of the coral-encrusted wreckage; Candy crab (right)



to penetrate and light up the wreck.

If you are lucky, you will get 15 to 20 minutes with them. With a bit of careful maneuvering—whilst keeping a wary eye on those formidable teeth—it is possible to edge up really close to the bumpheads, which makes for some memorable photography.

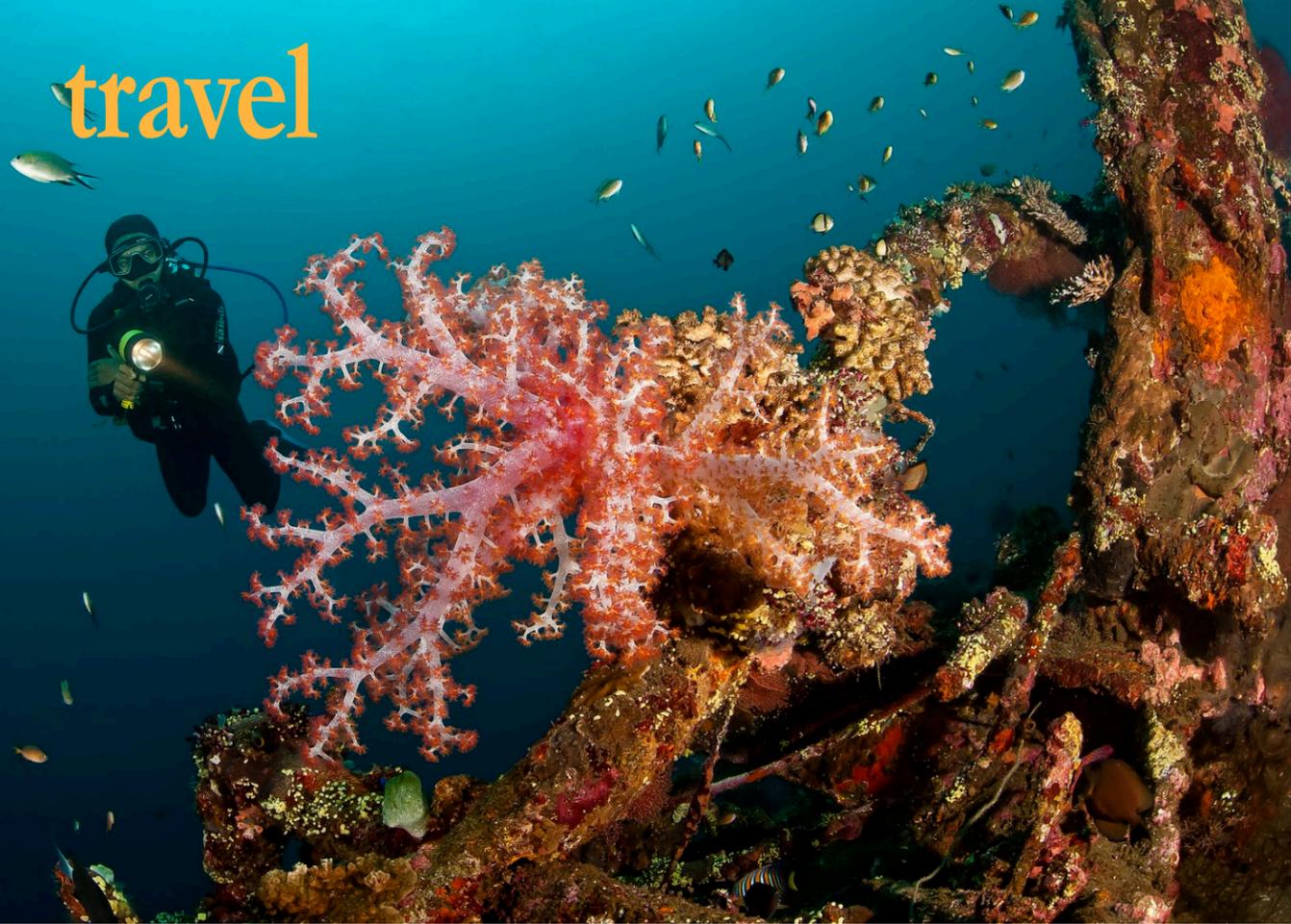
Early morning is also the best time for a random encounter with “George”, the giant barracuda that has made the *Liberty* his home. George appears to have lost much of his natural apprehension to scuba divers, and being a curious fish, will often come and eyeball you—offering a special Kodak moment if you are prepared, or one of immediate and imminent danger if you have never heard or seen him before.

At nearly six feet long, and equipped with some fierce-looking dental capability, George is a serious fish who graces you with his presence and moves on when his curiosity is satisfied.

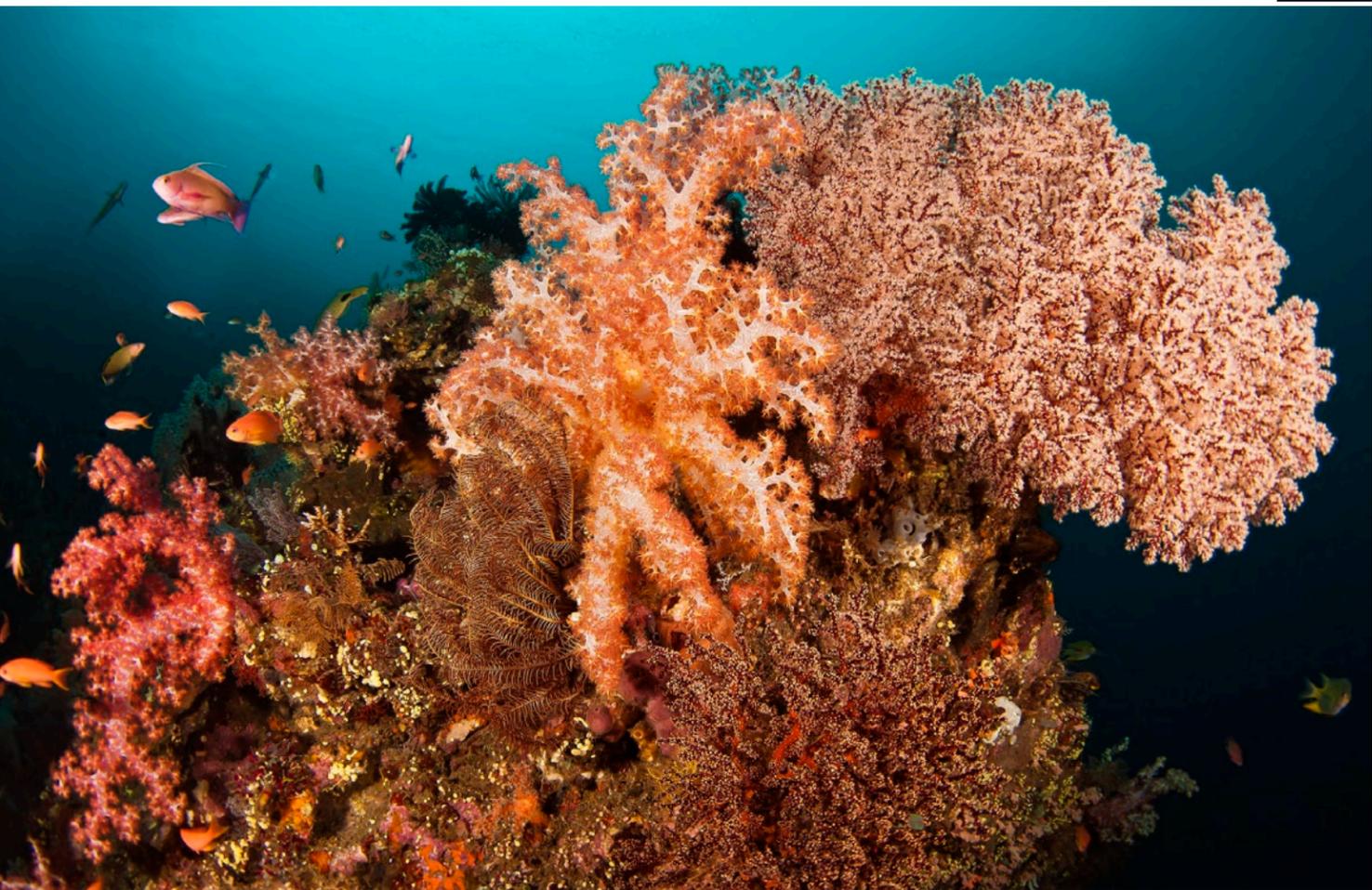
If George is nowhere to be seen, you can go for quantity, rather than individual quality, and spend some time with the huge school of jacks that hangs out around the stern. Used to divers and snorkelers, the jacks will allow you to enter their midst if you do so slowly and carefully. A good model will allow you to create some stunning images in the early morning light.

There are usually very few other divers around. So, early in the morning, if you are lucky enough to be diving on a rising tide bringing

in clear water from the deep, once you have had your fill of the jacks, it is a great time to photograph both the stern and the bow of the *Liberty*. Both are large steel structures, which at first sight are difficult to recognize as part of a large ship, but if you take your time to understand the orientation of the wreck, it is possible to define them



Liberty



THIS PAGE: Huge soft corals; Resident school of bumpheads (above)

against the negative space of the clear blue water. A good model, carefully positioned, will add a nice touch of scale. At that time of the morning, because of the wreck's position parallel to the northeast shore of Bali, the sun will be behind you and will help to illuminate the structures despite the low level of the overall light.

The sheer prolificacy of the currents that run through Tulamben Bay means that the prominent large structures of the bow and stern are richly coated in marine growth, and the two guns that were mounted on those structures are hardly recognizable as deadly armaments anymore.

Prophetically, the gun on the bow now has a large flower like growth of gorgonian fan on its breech, which will make you

want to put that "If you're going to San Francisco" tape you have been saving into the cassette player of the VW Combi hippy wagon...

**Mid-morning, early afternoon**

From 08.30 in the morning, the car park will be filling up, and the volcanic stone beach will have a lot of divers getting ready to enter the water. This is the time to forget about the larger residents of the *Liberty* and its structures and concentrate on the smaller stuff that lives in the nooks and cracks of the wreck.

It is also when your dive guide

transforms from super-model to critter finder and becomes worth their weight in gold. Depending on how deep you meander on the wreck, the maximum bottom time you can probably expect is about one hour, and with the right guide, this can be a very productive period. On the other hand, if you





Diver hovers over the *Liberty* wreck (left and right); The volcano, Mount Agung, on Bali (lower left)

unlike places like the Lembeh Strait where critter locations are networked, in Tulamben, the location of a photogenic critter is kept as tight a secret as the U.S. nuclear codes.

That's why you need a good guide like Made Sadia from Tulamben Wreck

Divers, who was the perfect combination of super-model and critter-spotter.

The *Liberty* wreck is not critter-



central like Lembeh Strait or the Twilight Zone, but it has a lot to see—if you can find it in amongst all the wreckage. The mid-section of the wreck is the most prolific area, but there is stuff all over the place, and a good guide like Made will know where to find it.

You can easily do two very productive and enjoyable dives mid-morning and early afternoon by looking down in amongst the wreckage and simply ignoring the promenade of scuba-diving tourists doing their obligatory circuit of the wreck above you.

**Late afternoon**

By about 15.30 the tourists are packing up and getting back in their cars and busses, and just like the house vendor after one of those necessary but very painful open houses, the residents of the wreck start to reclaim their home after everybody has left.

Usually, the visibility is not too good at this point because all the visitors have stirred things up a bit, plus the light fades rapidly, as the sun dips behind the 3,000m-high Mount Agung volcano that dominates Tulamben. But it is still a good time of the day to put a wide-angle lens back on your camera and photograph the beautiful and incredibly prolific soft corals around the deeper sections of the wreck's mid-section. It never ceases to amaze me just how rich these corals are, and very interestingly, how much they evolve over time.

I have been diving and taking

**THE WRECKING OF THE *USAT LIBERTY***

The *Liberty*, contrary to urban myth and what its name suggests, is not a Liberty class ship. It was actually built in 1918, at the end of WWI as a freighter in Kearny, New Jersey, by the Federal Shipbuilding Company, with a length of 120m and a beam of 17m. Its draft was 24m and had a gross tonnage of 6211 tons.

At the start of WWII, it was requisitioned, fitted out with guns on the bow and the stern, and then operated by the U.S. Army as a transport ship.

At 04.15 on the morning of 11 January 1942, it was torpedoed by the Japanese submarine *I-166* in the Lombok Straits, as it was passing through in a convoy of ships taking supplies from Australia to the Allied campaign in the Philippines.

Badly damaged, two of the destroyers protecting the convoy took the *Liberty* in tow to the ship repair facilities at Singaraja on the north coast of Bali, but the damaged ship was taking on so much water that it had to be beached in Tulamben Bay to prevent it from sinking.

There were no casualties in the actual torpedoing and all the crew was safely evacuated after the *Liberty* was run aground, but the imminent arrival of the Japanese forces in Bali prevented any of its cargo being salvaged.

The *Liberty* remained beached for another 21 years, providing a source of assorted hardware to the local villagers and a fishing platform into the deeper waters of Tulamben Bay until 17 March 1963.

On that fateful day, the nearby volcano, Mount Agung, which had been rumbling for several days, exploded with such violent seismic force that the rusting carcass of the *Liberty* was physically lifted and rolled down the slope, breaking its back in the process and leaving the wreck on its side some 40m offshore, parallel to the shore. ■

go alone you will probably finish the dive wondering what all the fuss is about.

The bottom line in Tulamben is that scuba diving is the only industry in town, and its relative prosperity revolves around visitors coming to experience the *Liberty*. So jobs in the town all relate, in one way or the other, to the wreck and the dive guides are the local alpha-males.

They all know each other, but

group has grown in numbers, as there always seems to be much more than 20 porters on duty whenever I have been in Tulamben.

The system works really well, whether you are day diving or staying at one of the resorts, as the porters just seem to appear when they are needed, nonchalantly hoisting at least two sets of gear on the heads before heading off down the beach. The group operates as a collective and pools their earnings and tips and the portage fees. So, make sure you give them a reasonable tip, because they are definitely worth it! ■

**TULAMBEN'S DIVING HELPER CLUB**

One of the things that always intrigues visitors to Tulamben is the sight of local women carrying multiple sets of diving gear on their heads. No mean feat in itself, doing it with what appears to be at least twice their body weight while walking along a volcanic pebble rock beach is something else!

Run by the villagers themselves, the Diving Helper Club was an initial group of 30 women who arranged to have 20 of their numbers always available on any given day to carry the heavy equipment of the diving tourists to where they want it. Started in 1978 by Pak Kari Yasa, the



Woman of Diving Helper Club carrying air tanks



Liberty

Just look at the life! The *Liberty* wreck is a thriving ecosystem of marine organisms (left); Circling school of bumphead parrotfish with diver; Diver at forward gun (below)

photographs of the *Liberty* for over 13 years, and strikingly photogenic hard and soft corals in this area seem to come and go from year to year. Without a doubt, the heavy traffic of inexperienced and often deliberately over-weighted “resort divers” take its toll. But incredibly, the wreck seems able to regenerate itself. The only rational explanation of this regeneration phenomenon has to be the sheer fecundity of the currents that wash over the wreck, as they head for the Lombok Strait and the Indian Ocean to the south.

**After dark**

A night dive on the *Liberty* is a special

thing, but one that needs to be considered carefully because it's easy to get lost and a little bit disorientated even during the day, so after dark, you can almost guarantee you will. The Tulamben dive guides know the wreck better than the backs of their hands—so would you if you were diving it every day of the week. They also know the best place to find stuff once darkness has fallen on the *Liberty*. So, do yourself a favor and use a guide to dive the wreck at night and experience it at its eerie best!

**Random encounters**

As the old saying goes, “you should have been here last week”—you will be

sure to hear that regularly in Tulamben, because the wreck acts as a beacon to the true pelagics of the Indo-Pacific. Mola mola's are spotted regularly around the *Liberty* in the deep waters around the mid-section, particularly around August and September when they become quite common. Whale shark's also put in periodic appearances. On my last dive of this trip, while I was down at the bow in the early morning light trying to get that front cover shot, a four-meter-long whale shark



was entertaining a group of Japanese divers at the stern. We emerged around the same time,

and while my Japanese was limited to “thank you” and “one more beer please”, I could tell they were very excited about something and eager to share their images.

That's the thing about the *Liberty* wreck, you just never know what is around the corner, and it seems to possess an almost infinite capability to surprise and enthrall its visitors. ■

*Correspondent Don Silcock is based in Sydney, Australia. He travels widely in Asia and his website (Indopacificimages.com) has extensive information and imagery of the USAT Liberty wreck and other great dive sites across the Indo-Pacific region.*

# fact file



## Bali, Indonesia



SOURCES: US CIA WORLD FACT BOOK, SCUBADOC.COM, E-MED.CO.UK

**History** In the early 17th century, the Dutch began to colonize Indonesia. During WWII, the islands were occupied by Japan. After Japan's surrender, Indonesia declared its independence, but four more years passed with intermittent negotiations, recurring hostilities, and UN mediation before the Netherlands let go of its colony. Home to the world's largest Muslim population, Indonesia is the world's largest archipelagic state. Its government faces several challenges including alleviating poverty, preventing terrorism, consolidating democracy after 40 years of authoritarianism, reforming the financial sector, irradicating corruption, halting human rights violations by the military and police, and controlling avian influenza. Indonesia reached a historic peace agreement with armed separatists in Aceh in 2005, which led to democratic elections in December 2006. In Papua, a low intensity separatist movement continues to confront Indonesia. Government: republic. Capital of Indonesia: Jakarta. Main city of Bali: Denpasar.

**Geography** Indonesia is located in Southeastern Asia. It is an archipelago of islands between the Indian Ocean and the Pacific Ocean with a total coastline of 54,716 km. The island of Bali is

one of Indonesia's 17,508 islands, an archipelago located south of the equator where the Indian Ocean meets the Pacific. The tropical Indo Pacific region in which Bali is located is considered to be on of the world's richest ecologically biodiverse systems. Bali is in essence a volcanic island with the volcano, Mount Agung, revered as a great spirit by the local people, as its highest peak rising 3,142 meters above sea level. Another peak, Mount Seraya, which lies east of Agung, rises 1174 meters above sea level. Volcanic island with high crater peaks, deep valleys, cultivated lowlands, lush terraced rice fields and thick tropical forests in the highlands.

**Time Zone** GMT plus 8

**Climate** Tropical, hot and humid. Temperatures range from a high of 31°C (88°F) to 25°C (78°F) low. Highlands are cooler and drier. Lowlands along the coast are pleasantly drier than



the main tourist areas in the south. Monsoons. The dry season takes place April through November, and the wet season, December through March. Natural hazards include occasional floods, severe droughts, tsunamis, earthquakes, volcanoes and forest fires.

**Environmental Issues** Deforestation, sewage, industrial water pollution, urban air pollution, forest fire smoke and haze

**Health** In Bali, there is no major risk. Unlike islands further east in the archipelago, there is no Malaria/Dengue fever in the



RIGHT: Location of Bali on global map  
BELOW: Location of Tulamben on map of Indonesia  
FAR RIGHT: Diver hovers over wreck of the *USAT Liberty*



When traveling in the rest of the country, be aware of the high degree of risk of food or waterborne diseases such as bacterial diarrhea, hepatitis A and E, and typhoid fever, as well as vectorborne diseases such as chikungunya, dengue fever, and malaria. Please note that highly pathogenic H5N1 avian influenza has been identified in Indonesia, but it poses a negligible risk with extremely rare cases possible among visitors who have close contact with birds (2008)

**Population** 3,000,000 (2011 est.); Religion: 87% Hindu, 3% Christian, 8% Muslim

**Visa** Travelers from most Western countries do not need a visa and are automatically given a 30-day stay permit upon arrival. Passports must be valid for at least six months upon arrival in Indonesia. Indonesian immigration is very strict. No work is permitted while visiting on a tourist visa.

**Indonesian Law** Very hard on drug offenders; the death penalty is regularly applied on narcotics couriers.

**Driver's License** A valid international driving license is required. Rental car insurance is highly recommended. Drive care-

fully. Traffic rules are not followed as well as in the West. Accidents are frequent.

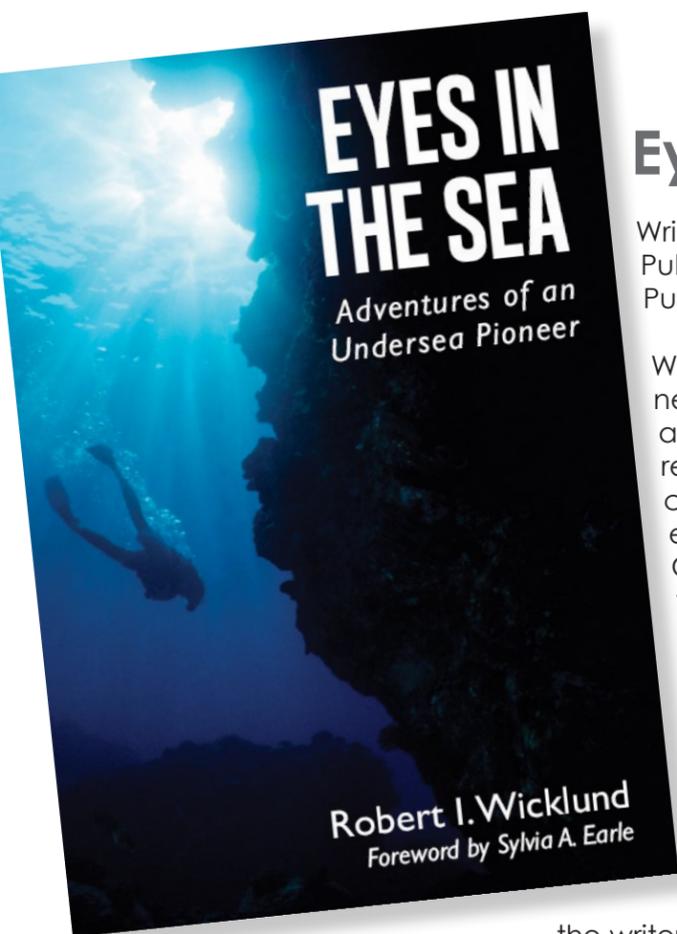
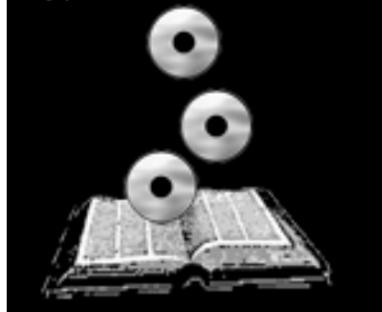
**Currency** Indonesian Rupiah (IDR). Exchange rate: 1 EUR=10,002 IDR; 1 USD=9132IDR; 1 GBP=14537IDR; 1 AUD=9,500IDR; 1 SGD=7,316IDR. Credit cards are accepted by most higher end resorts and businesses. Payment in US\$ cash and traveller's checks is widely accepted.

**Dive Season** All year round; Underwater visibility varies 15 to 35 meters during dry season, 10 to 20 meters during wet season.

**Decompression Chambers** Hyperbaric Medical Department Sanglah General Hospital USUP Sanglah Denpasar  
Jl. Diponegoro Denpasar80114 Bali, Indonesia  
info@sanglahbalihospital.com  
www.sanglahbalihospital.com

Rumah Sakit Angkatan Laut (Navy Hospital)  
Jl. Bendungan Hilir No.17 JAKARTA 12950, JAVA, INDONESIA  
Tel: +62-(0)21-2524974

**Web Sites**  
Bali Tourism Authority  
[www.balitourismauthority.net](http://www.balitourismauthority.net)  
Bali Guide  
[www.baliguide.com](http://www.baliguide.com) ■

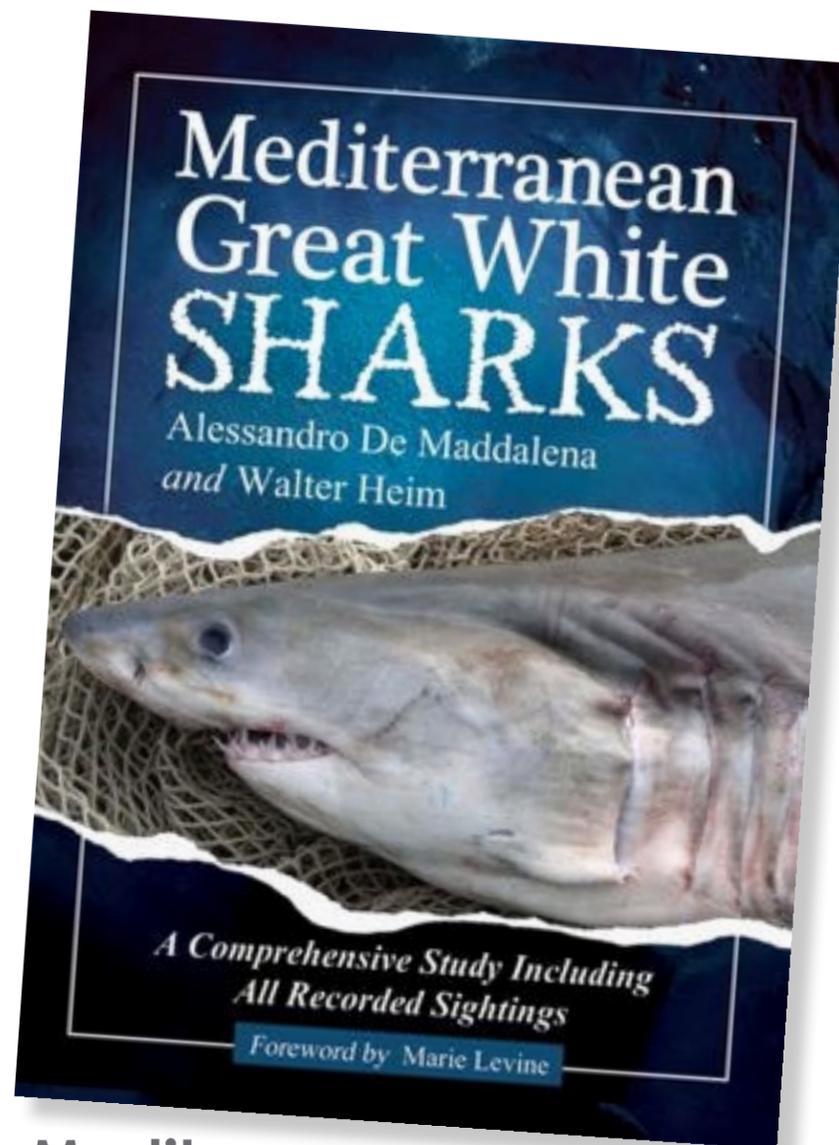


## Eyes in the Sea

Written by Robert Wicklund  
Published by Mariner Media  
Published in March 2012

Written by underwater pioneer Robert Wicklund, this action-packed book takes readers on a literary roller-coaster from underwater encounters with Fidel Castro to spending time with Prince Charles in the hydrolab, to expeditions in icy Arctic waters and standoffs with drug smugglers. Yet you won't find this book under the Fiction section of your bookstore—the stories within depict

the writer's real-life experiences, which had propelled him to become one of the world's leading underwater scientific observers. In writing the book, Wicklund "wanted to chronicle the events and adventures that we had". He sought to share with others the natural history and marine life within our oceans, depicted through his experiences over the last 50 years. As Sylvia A Earle wrote in the Foreword, "Bob Wicklund shares an insider's view of historic events [...] some terrifying, some wise, some breakout-laughing hilarious, others painful sagas of loss, both of treasured friends and of treasured places in the sea." So, if you're in the mood for a thriller—albeit one that's based on actual events—Robert Wicklund's *Eye in the Sea* is a pretty good bet.



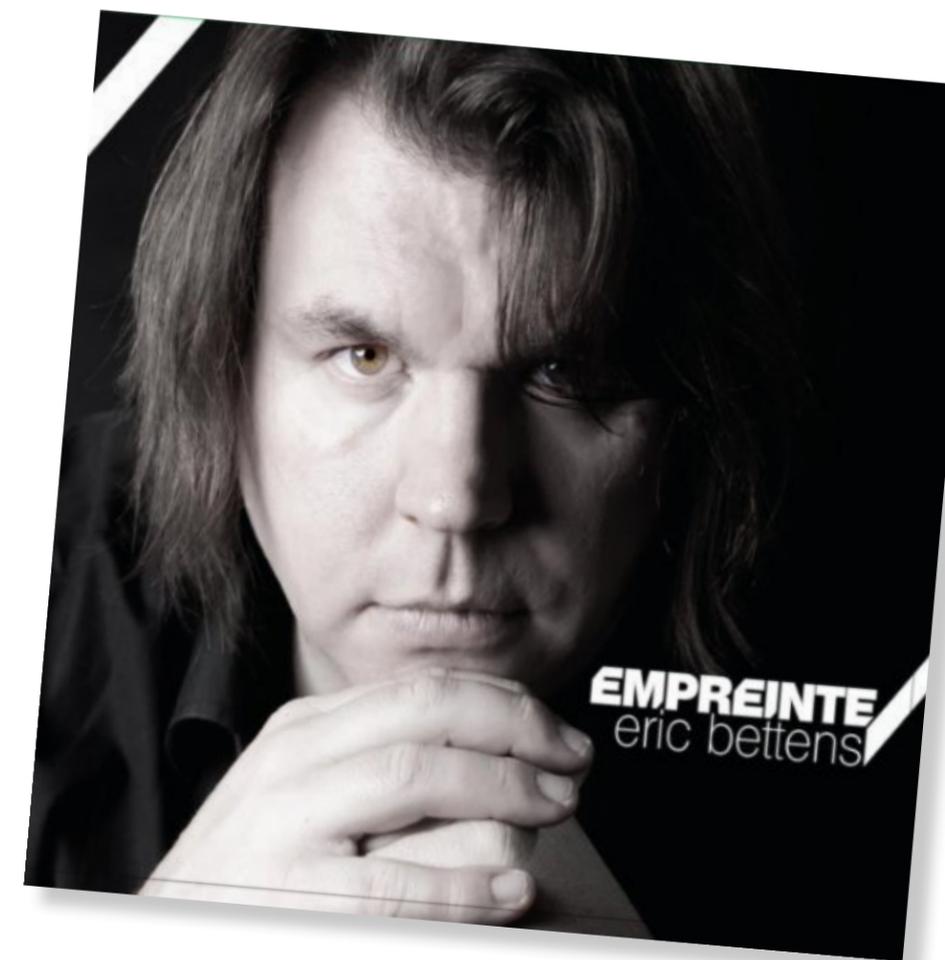
## Mediterranean Great White Sharks

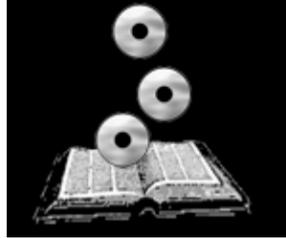
Written by Alessandro De Maddalena and Walter Heim  
Published by McFarland

It started out as a university thesis about great white sharks in the Mediterranean, but it became a platform for something far greater. After Maddalena submitted his thesis, he continued working on it, unleashing its full potential as a database of the entire great white shark population in the Mediterranean. Today, the Italian Great White Shark Data Base is possibly the world's most extensive study of the great white sharks in the region. Information about the species' size, habitat, behaviour, diet, reproduction and other related factors can be found in this book. All recorded sightings of the mammal since the Middle Ages can also be found in this book. Author Maddalena is a founding member of the Mediterranean Shark Research Group and has written 17 other books about sharks.

## Empreinte

It is quite rare that we give music a mention on this section but Belgian Eric Bettens composes music for the underwater world and has performed at several dive festivals as well as created music scores for several films. I first met Eric at the World Festival of Underwater Pictures in Antibes, France, where the jury awarded him the François de Roubaix Prize for his work—for a good reason, as Eric Bettens' compositions work very well with underwater footage. An often symphonic blend of acoustic and electronic music with elements of both classical music, jazz, folk and ambience, his music defies easy classification but it's got its own complex yet pleasant character that seems to work equally well on the Hi-Fi, the iPod and in the car. Soundbits of his music can be freely sampled and later purchased on various sites such as iTunes and MySpace. Check it out. [Eric-Bettens.com](http://Eric-Bettens.com)



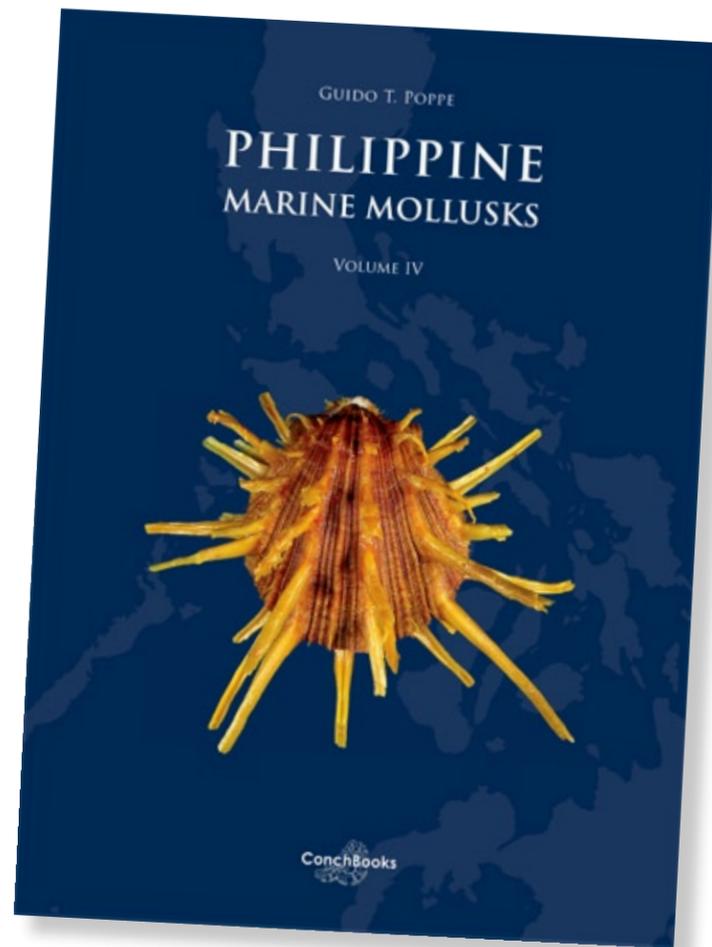
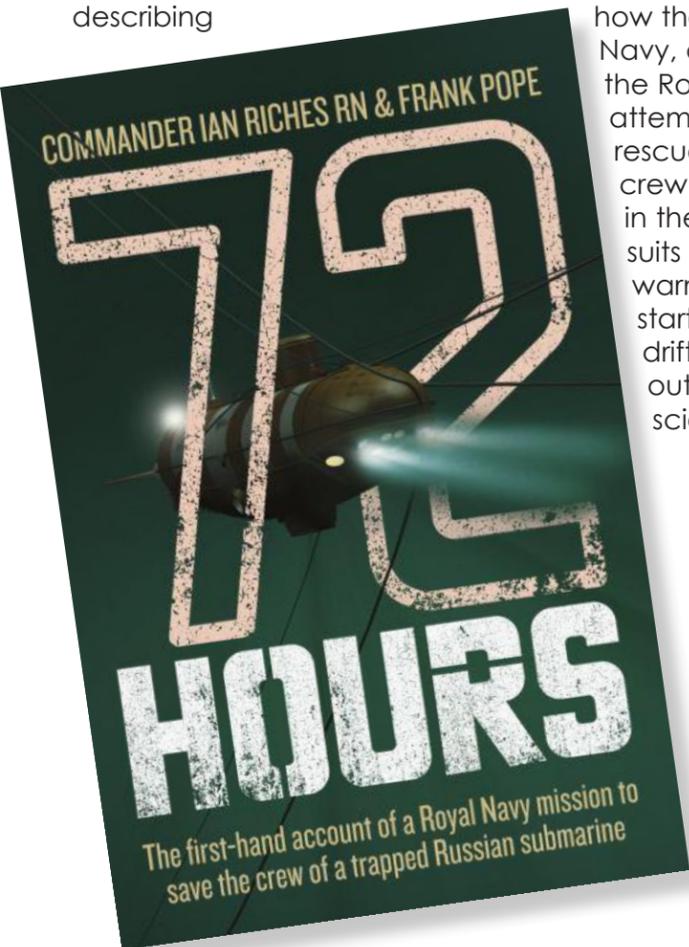


## 72 Hours

Written by Frank Pope  
Published by Hachette Australia  
March 2012

We go through life hardly thinking about the air we breathe. Yet when air becomes scarce, this very basic function becomes an all-consuming compulsion. This was possibly what a seven-man Russian crew on a secret mission experienced when their submarine got snared by cables deep in the ocean, sinking to the sea floor and leaving them with 72 hours' worth of air. This book is based on actual

events in 2005, how the Russian Navy, and then the Royal Navy attempted to rescue the crew who, in thermal suits to keep warm, had started to drift in and out of consciousness.



## Ships and Boats: Prehistory to 1840

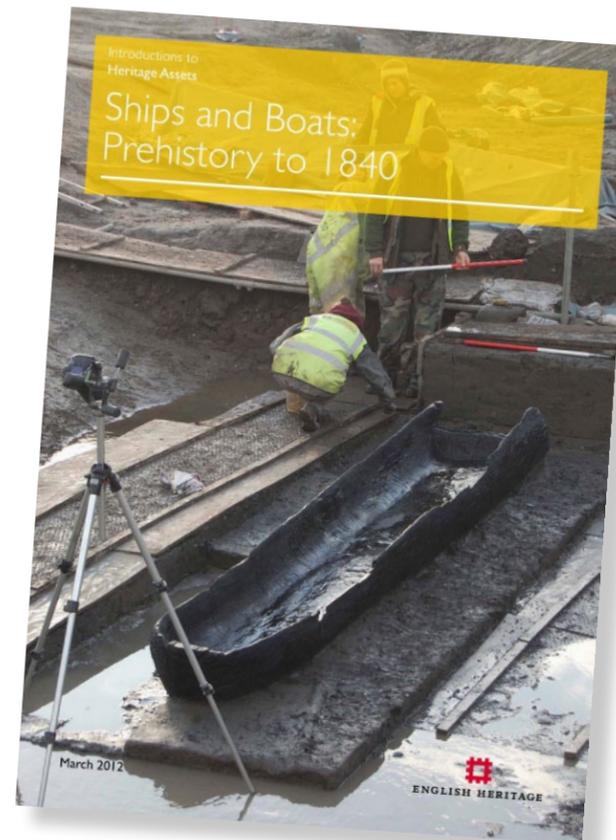
Published by English Heritage  
Published in April 2012

This compact volume packs a wealth of information in just 16 pages. It covers the history of shipbuilding in Europe, starting from the basic hollowed-out logs of prehistory to the racing yachts of the 1800s. The evolution of shipbuilding is explored, describing vessels that have sailed in inland, coastal and open waters. Even ships that have been long abandoned or buried are featured. Without beating about the bush, the author dives into the whirlpool of different seafaring vessels through the centuries: from simple dugout canoes and skin boats to Viking ships, steamships and military craft. Personally, more diagrams would have been more useful to help illustrate the technical details. Nevertheless, this book is jam-packed with more data than most readers would be able to absorb at one reading. Definitely a worthy addition on the bookshelf of anyone interested in seafaring history.

## Philippine Marine Mollusks Volume 4

Written by G. T. Poppe  
Published in March 2012

This 680-page book – the fourth volume – concludes this comprehensive series on the marine mollusks in the Philippines. Published early this year, this book has become an invaluable resource for conchologists studying the mollusk species in the region. From the Bivalvia and Lucinidae, all the way to the Chamidae, Tellinidae, Psammobiidae and Mactridae; readers get to sieve through as many as 1,005 different species, via thousands of pictures. Many of the photos depict live specimens. As the knowledge about the region is constantly increasing, this volume includes more than 280 species not described in the previous Volumes because they were not yet discovered (either in the region or at all) at the time of writing. And, as if the information contained in the series is insufficient, there is also a seven-page round-up of the complete literature concerning this particular region.



## Apps

**Marine Fish ID: Great Barrier Reef**  
app by Neville Coleman

is a must-have iPhone app for snorkelers, divers and others interested in marine species. For over 45 years, Neville Coleman OAM, world renowned underwater naturalist, photographer and marine life author, has explored the world's oceans, found new species and observed marine life behaviour. The *Marine Fish ID: Great Barrier Reef* app contains a comprehensive selection of 890 fish species found in the seas of the Great Barrier Reef and Queensland, Australia—an area of great diversity in marine fauna.



## WhaleALERT

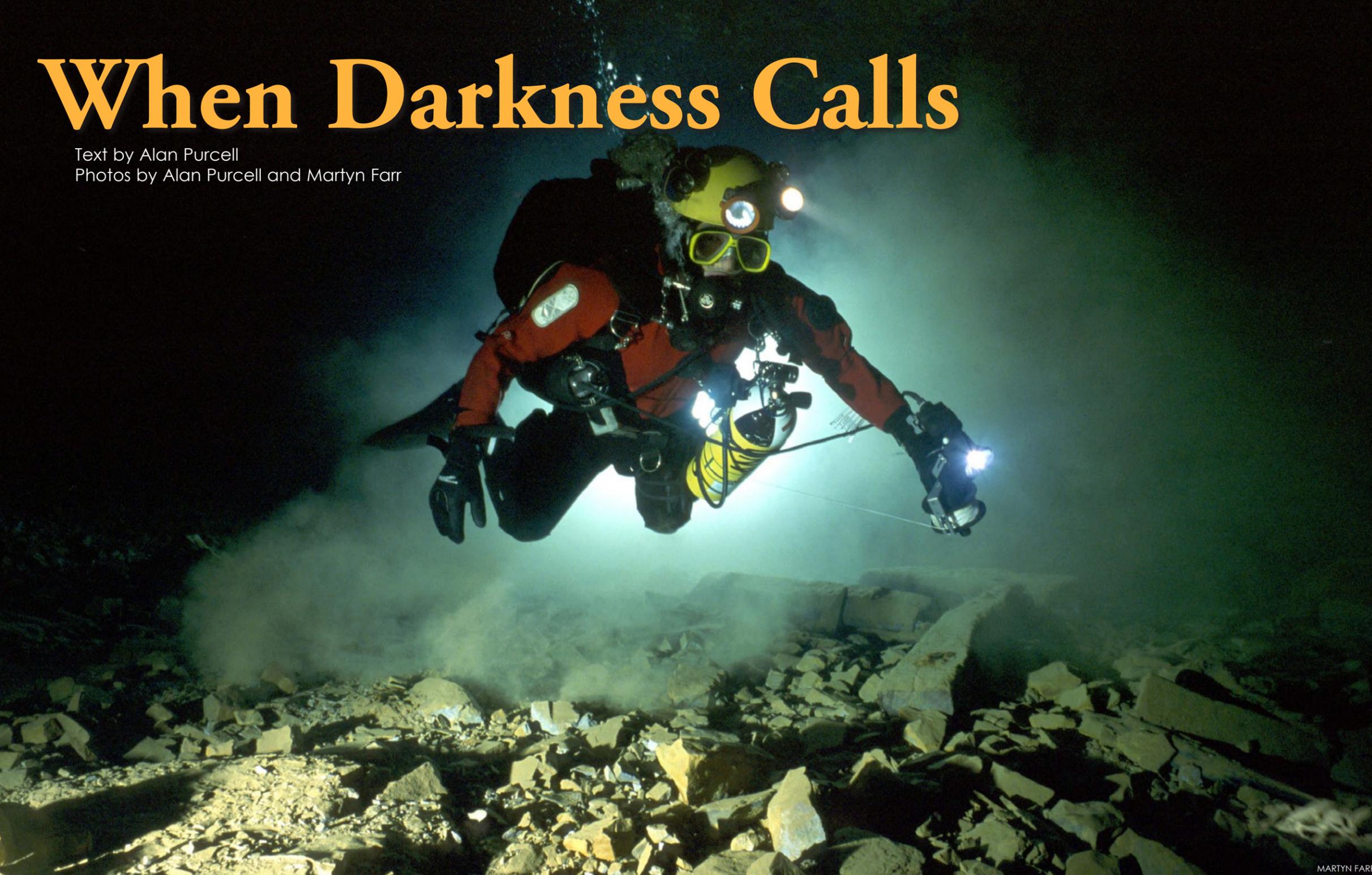


Mariners along the U.S. east coast can now download a new iPad and iPhone application that warns them when they enter areas of high risk of collision with critically endangered North Atlantic right whales. The free Whale Alert app provides one source for information about right whale management measures and the latest data about right whale detections, all overlaid on NOAA digital charts.

# When Darkness Calls

Text by Alan Purcell

Photos by Alan Purcell and Martyn Farr



Diver in  
Silica Mine

(Garbh Eileach), the drift dives on Skye and Falls of Lora and the odd wreck (*HMS Port Napier* and the *Thesis* being my favourites) but mostly I just like getting under the water. I'm not brave, or looking for that next "thing" to add to my list. Diving is the most adventurous thing I do (when my children allow it).

After seeing a documentary with David Attenborough about caves and some amazing underground locations, which showed divers floating through crystal clear water, I thought that maybe one day that would be something I would like to do. I then came across an advert for Farworld in a magazine, which looked pretty interesting, only, when I got home, I did a web search for "Farrside" instead, by mistake. I eventually came across Farworld and Martyn Farr—this looked like the thing!

There were numerous courses on offer, and at this point, I didn't actually think it would be something that I would do. (adventurous things were what other people did.) It was just really interesting. I bought some of Martyn's books—*The Darkness Beckons* and *Diving in Darkness*. Even if cavern or cave training doesn't appeal to you, these are still fantastic books.

The techniques, kit configuration and numerous stories were all fascinating, and I started to seriously think about doing the initial course, more so to get a better appreciation of what people like Martyn Farr, Jochen Hasenmeyer and other cave diving legends, had accomplished.

I'll confess that the kit configuration part became a bit of an obsession. Why did they wear their gauges on their arms? Why weren't their knives on their legs? Why did they have three lights, etc, etc? Gradually, it all started to make sense. After reading other people's trip reports on numerous forums, I decided this was something I needed to do. I contacted Martyn and got the course booked for February. Christmas came

**Alan Purcell talks about the moon, jelly doughnuts, and what happened when he went to South Wales, UK, to meet renowned author and cave diving expert, Martyn Farr, to try out the first part of his Cavern and Overhead Environment course.**

I'm in a mine in South Wales (this doesn't happen every day), I'm underwater, and my computer registers a depth of seven metres. The only light comes from our helmet-mounted torches shining out into the 30m+ visibility, and where only two metres above my head, my expelled air gathers like pools of liquid mercury on the ten metres of solid rock that make up the cavern roof! I gaze down at the boulder

strewn floor, a carefully positioned line marks our way out. My instructor swims into view and indicates to my buddy and I that it's time to run through our zero visibility drill—following a line in the darkness using touch alone. I grab hold of the line and hesitantly switch out my light... Madness! That's what you're probably thinking at this moment, but let me tell you what made me go on this course,

and why I think everyone could learn something from it.

First of all, a bit about me. I'm essentially a novice diver with just over 100 U.K. dives and 30 odd dives in various places from the Mediterranean to the Maldives. My favourite place to dive is definitely Scotland, so far. I don't have a particular favourite type of diving. I like the big wall dives and overhangs at the Garvellachs

MARTYN FARR





ALAN PURCELL

The Abyss: This is the bottom of the hole and the exit point of the dive from the White Lady Cave entrance

and he didn't waste a moment.

The practical lessons were in a pool. The pool was covered, which gave us a great feel for being "underground", and we took it in turn to practice laying line before conducting a lights out or silted environment drill, which entailed being placed at one end of the line and feeling your way round the course without getting tangled up or wrecking the line.

Martyn placed a black cloth in my mask and then led me into the water. I got a little disoriented and didn't have a clue

where I was facing, so I made sure I was a little negatively buoyant and then focused on not letting go of the line.

It's quite strange how your body compensates for having one of its senses cut off. Hearing was of little use, so I focused totally on the information my fingers were getting through my 5mm gloves. This quite literally was my lifeline—at least, that's how I treated it—and slowly but surely I worked my way to the end and came back to the surface to words of encouragement from my buddy and Martyn (this was a great confidence

boost).

With the pool session over, we went over what would be expected of us on day two, with Martyn explaining everything on a plan view of the Silica Mine. We then met up for drinks (after I'd had lamb chops at the Vine Tree for the second night in a row) and Martyn went through more theory and a general recap.

**Day 2.** We met up at Martyn's, packed up our gear, and then headed off to the Silica Mine. Martyn was kind enough to answer some of my ques-



ALAN PURCELL

and went, and then the number of "sleeps" left countdown began.

## The trip down

I drove down from Scotland, and the journey wasn't too bad. I eventually got to Langattock, and after a few wrong turns, I found my guesthouse, Park Place, which was actually just outside Langattock. It was very nice, offered massive breakfasts and was only two minute's drive from Martyn's house.

**Day One.** I arrived at Martyn's, slightly nervous—just what was this guy going to be like? I needn't have worried. He came rushing out of his house with a smile,

signalled for me to pull into the drive, and I instantly knew this guy was going to be a lot of fun.

My buddy for the weekend turned up a few moments later. He had driven down from Lochaline (there's me thinking, I'd had a long journey!) We got invited into Martyn's straight away, and Helen was instantly welcoming us, making us tea and getting us to sign the usual training documentation.

Martyn gave us a slide presentation, taking us through different types of cave diving, line laying techniques and what constitutes a cavern dive, etc, before taking us out to his equipment room, which looked like Aladdin's cave with maps of the Silica mine

at Dinas Rock, amazing photographs and loads and loads of equipment. We then went through the required equipment for the course, safety reel, helmet and Martyn's own equipment.

This was great for me—getting an insider's guide from the guy who had quite literally written the book on cave diving. The key was simplicity, with everything to hand within a moment's notice. Martyn then took us through our own kit and made the necessary changes in preparation for the practical lessons in the afternoon.

I should point out here that over the course of the two days, Martyn was always providing bits of useful information. The two days were quite literally packed,

This is the entrance to White Lady Cave where we got ready





MARTYN FARR



ALAN PURCELL

## Caverns

This is about 20 metres inside the White Lady Cave and shows the entrance

FAR LEFT: Cavern diver in training

tions about his own explorations and his experiences with Jochen Hasenmeyer. We then split up our gear so as to make two trips over the "hill". Other people have relayed that this part was "a bit of a trek", and they weren't joking.

I'm basically a jelly doughnut in human form so was beginning to pant when only half way up. Martyn and my buddy were way ahead of me, but I eventually caught up and got into the mine for a cool down. We kitted up, fitted our helmets, switched on our torches and made our way down to the water. I did feel a little nervous and mentioned this to Martyn. He explained that this was just because I was doing something new and that I would be fine.

The water didn't look deep enough, but when I stepped in, it reached waist height. We went through our buddy checks, our air (calculating out loud our turn points and rules of thirds) before running through the dive plan and last minute queries.

**Exercise 1.** Exercise one was to be led by my buddy. We would then turn around and switch our lights off at a designated point and make our way back to the entry point via the pre-laid line.

The dive itself was fantastic. It was very exciting to be diving through the tunnels (we were at no point any further than about five meters from a main air filled chamber, but you certainly got the full overhead experience). I did not feel tense or worried in the slightest, and this surprised me. It was very relaxing, and the 30m+ visibility (yes, really) made for a fantastic "floating through air" experience. This was what I had come for—absolutely superb.

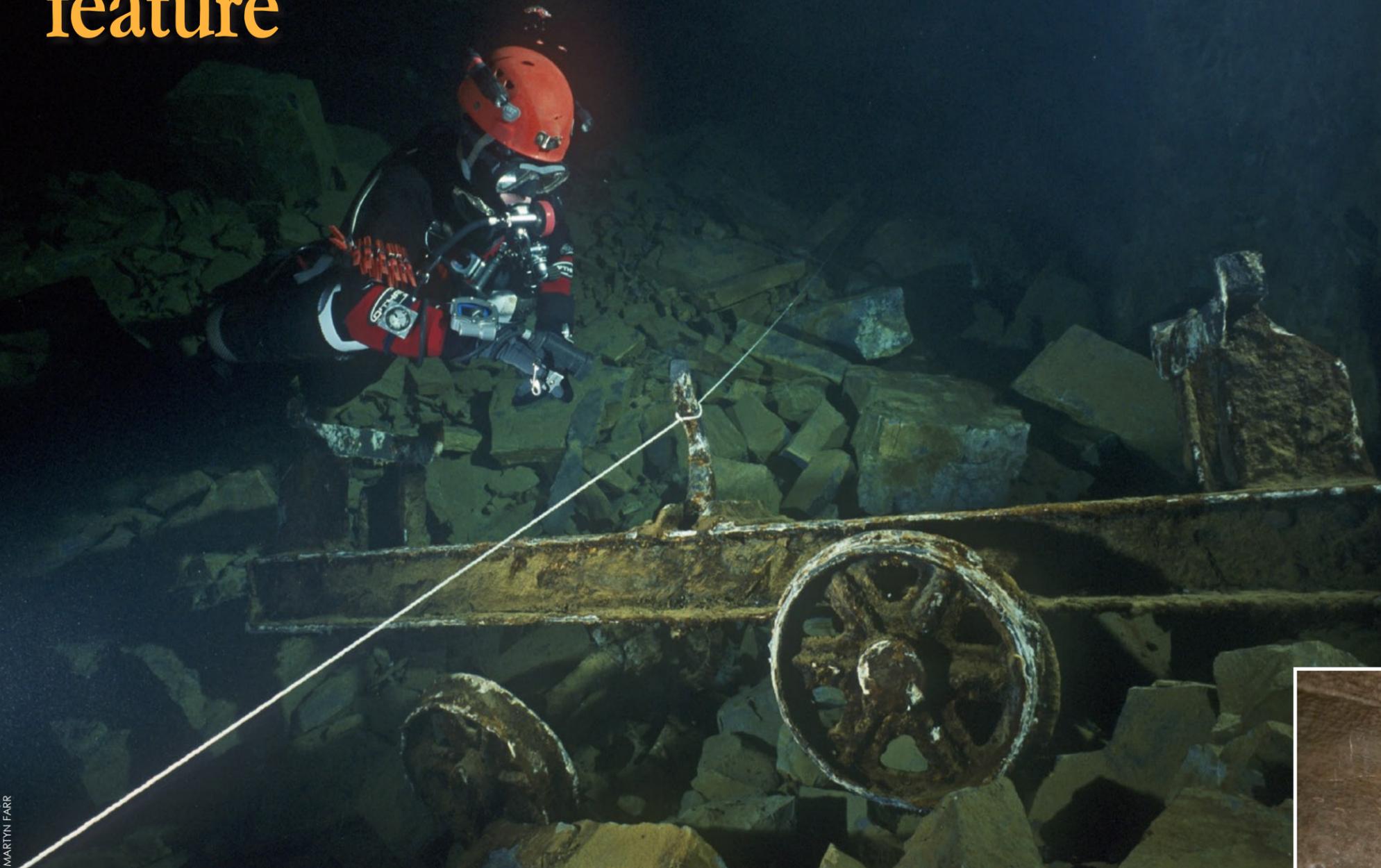
We carefully followed a thick green line that varied on its course from 3m depth to about 7m depth. After about 13 minutes, we turned around, and I led signalling "OK" to my buddy every now and then either by rotating my head mounted torch to shine a circle on the mine wall or just lighting up my hand, as

I would do in a normal night dive. Martyn was with us the whole time but kept back and let us take our own pace.

After going round a few more corners, Martyn came into site and signalled for us to turn our torches off. It was now time for the lights out drill and for us to execute our "bump and go" strategy of me following the line for a few metres and my buddy then following, squeezing my ankle three times to indicate he was okay before I set off again.

The actual experience of doing this in the dark was a huge mixture of emotions. Bear in mind that I was about 7m underwater, in complete darkness whilst overhead there was about 10m of solid rock. I did not feel panic, not a drop of fear—just incredibly calm. I could feel the line, I could breathe. All I needed to do was replicate what I had done in the pool the day before.

Touch became everything. I'd made some mental notes whilst following the line on our entry. This is



Diver inspects the tram in Silica Mine

## Caverns

was a BIG metal reel) laying line, all took a fair amount of practice. So, I made myself a little more negatively buoyant than usual, tying off the first belay around a nice big rock. Every ten metres or so, I made another belay, sometimes tying onto a rock, sometimes taking a “snoopy loop” (all hail the mighty snoopy loop) out of the “garter” on my leg, looping this onto the line and then wrapping it around a rock (making sure that the line was always available from the top—we might be relying on this before too long).

A small bit of confusion followed. We were supposed to surface into a side passage and swap over duties, but my buddy obviously had his sights focused on laying some

line, and so I went with it and followed on just tweaking the line every now and then to make sure it wasn't too tight or, more dangerously, too slack.

We headed up to a small opening, and my buddy was a little confused trying to make his way through. I had remembered this “window” from the dive briefing the day before and knew that our corner lay a few metres further on, so indicated that to my buddy, and we headed off.

We then got to our designated “turn” point and indicated that it was time to “turn” the dive (this hand signal is similar to that of being marked). I was approaching the end of my third of air and so passed that onto my buddy, and off we went. I went ahead taking the loops off the rocks and keeping the line fairly taught to enable an easy reel in.

We swapped over half way through just as we were going down a small incline, and I went down the hill (holding the reel) a little faster than I would

worth doing as there were a few places where later on, Martyn explained, there were some deliberate pitfalls, a place where the line goes under a mine rail for a metre or so, and a place where a much thicker climbing rope is attached. These mental notes were invaluable, and the need for making good belays with line that you could actually feel continuously were all hammered home. If your visibility was to be restricted—this was your lifeline.

Every few metres I stopped to wait for my buddy. After about four or five “bumps”, I felt him approach behind

me, but no three squeezes—what was wrong? I felt around for where I imagined his wrist to be and squeezed it three times. Once would have been “I'm panicking” or “something is wrong, help”. He had simply forgot. He instantly squeezed three times back, and we carried on.

Eventually, I could make out a slightly lighter portion come into my vision. This was the torch that Martyn had placed near our entry/exit point and a mixture of “yes, we've made it” and “over so soon” came into mind.

We surfaced to congratulations from Martyn. He asked how we thought it had

gone. I had loved it, and thought it had gone okay. Martyn said it was one of the best practicals he'd seen (now, whether he says this to everyone or not I don't care—right then and there, I was on top of the moon!).

**Exercise 2.** After a few handshakes, it was back to business. I was to lead the next dive, this time laying our own line, my buddy to follow checking the line, etc, as we went along. We set off. Now, other than putting up a DSMB about 40 times, I've never had to carry anything, and the act of carrying a reel (and this



This is about 50 metres inside the White Lady Cave looking towards dive base

ALAN PURCELL





ALAN PURCELL

An elevated view of the White Lady Cave with dive base just around the corner

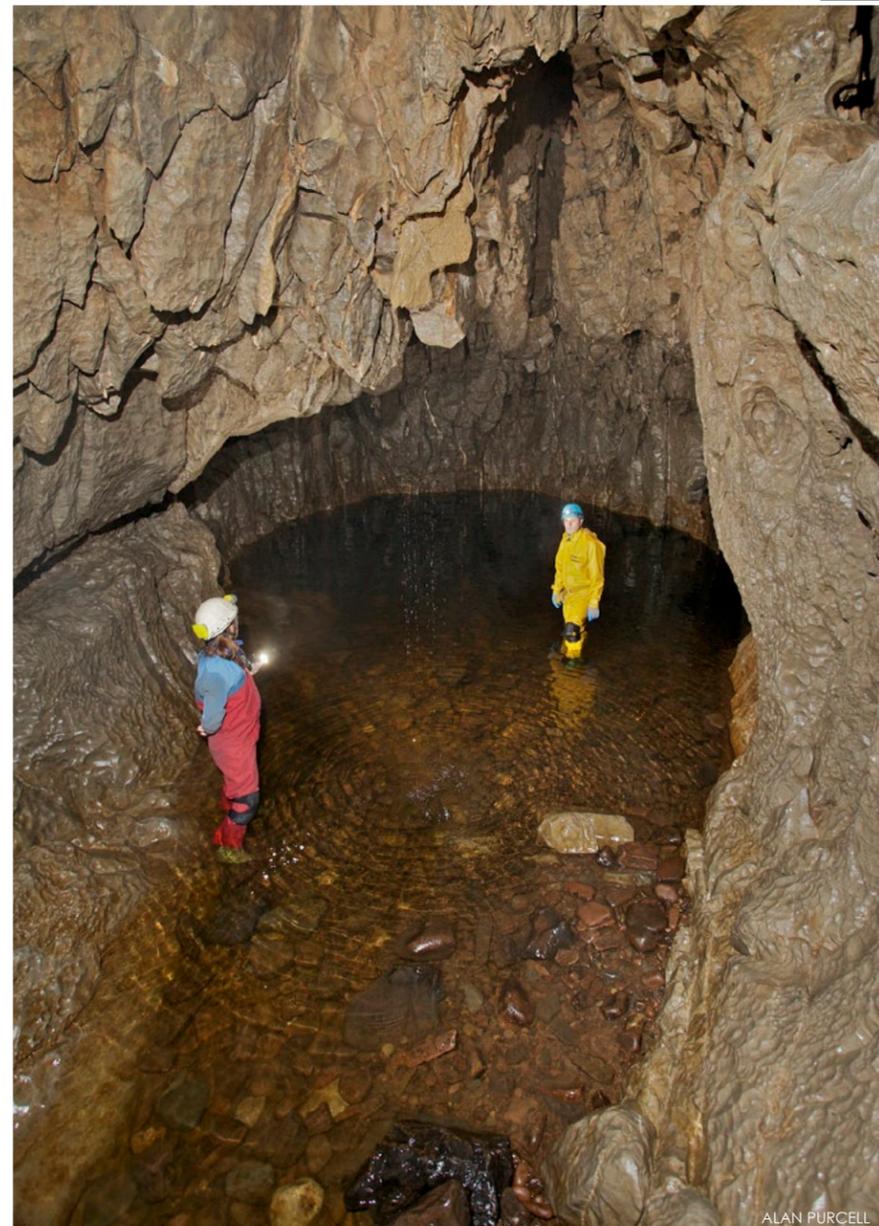
Silica Mine entrance (top and bottom right)

We packed up our kit, trekked back over the hills and made our way back to Martyn's—talking through all aspects of the dive, areas where we could improve, things we did well, etc. Martyn gave a more formal debrief once we were back at his house and said that, overall, we had done well. He issued an exam paper to be completed in our own time and went through some of the things we could expect to do should we decide we move onto doing the "Intro Cave" course. Wow, bar the exam paper, looks like I actually did okay.

I was a bit sad to be saying goodbye, but I know that I will be back (probably next year) to follow on. Who knows if I'll ever go diving in a Mexican Cenote or Floridian cave (I hope I will) but some more training with Martyn is a definite. ■



MARTYN FARR



ALAN PURCELL



MARTYN FARR

have liked. Line was going everywhere—not good. I sort of crouched/wedged myself to the side of "The Mine Cart" (everyone whose done the course will know where this is) and slowly got myself back on track. My buddy came to the rescue by gathering up the slack, and after a spot of team-work, we were off again.

Before we knew it, we were back at the surface for a debriefing from Martyn. I hadn't done quite as well this time around, but Martyn said that our communication was good and that at no point did he feel like he needed to step in and sort things out.

This (I think) is the mark of a good instructor. We were at no point in any danger, but when things got a little difficult, he let us work it out for ourselves. Focusing on our communication and methodical approach, we learned a great deal purely by doing, rather than being nannied.

All too soon the dive was over, and I had loved every minute of it.

LEFT: The underwater tunnel is located to the right of this pool and exits at the Abyss



*It's raining sharks in*  
**French Polynesia**

Text and photos by Andy Murch



## French Polynesia

Napoleon wrasse (left); Diver and silvertip shark (above)

**Imagine if you had the opportunity to explore a tropical island nation split into five diverse archipelagos, collectively containing 118 exotic islands and atolls. Each one has its own unique underwater flavor and a traditional culture as complex and fascinating as any indigenous people's of the world. So far so good, but now imagine that out of those 118 fantastic destinations, you can only visit one.**

For many divers, French Polynesia (FP) presents an impossible dilemma. Names like Tahiti, Rangiroa, Moorea and Bora Bora immediately spring to mind as must-dive destinations, but

for the discerning big game hunter, it all comes down to the mega fauna. If you stick your head underwater virtually anywhere in FP, you're likely to see sharks swimming around, but there is an atoll in the Tuamotu Archipelago where the sharks are so thick that they practically block out the sun—Fakarava. In our shark-free brave new world, that is a very rare sight indeed.

Fakarava is a mere one-hour puddle-jump from the capital city of Papeete on the big island of Tahiti. In turn, Papeete is a mere eight-hour flight with Air Tahiti Nui from Los Angeles, making it one of the easiest South Pacific destinations for North Americans to get to.

Exceeded in size only by Rangiroa, Fakarava is the second largest atoll in French Polynesia. Roughly rectangular

in shape, it is a pancake flat, coral encrusted donut that is as underdeveloped and picturesque as one could possibly hope for in a tropical paradise.

Fakarava's entire infrastructure consists of a few small villages, a handful of guest houses and restaurants, one beautifully rustic luxury hotel (the White Sand Beach Resort) and a pearl farm or two jutting into the inner lagoon.

Although well known among savvy European divers, there are so few tourists for much of the year that the island feels as though it has been deserted.

In stark contrast to Fakarava's peaceful terrestrial ambience, below the surface is a bustling metropolis of hard coral structures that form a continuous ring of healthy reef around the island.

*In Fakarava, its all about the sharks.*



The Coral Garden; Grey reef sharks and school of sabre squirrelfish; Day octopus (inset)

Paris to dive this protected atoll, and its not why I am here either. In Fakarava, its all about the sharks.

**Diving with the sharks**

There are two channels that allow tidal water to flow in and out of

Fakarava's 1,000sqkm inner lagoon: Passe Garue in the north and Passe Tamakohua in the south. I was told that the 800m-wide Passe Garue would make an ideal introduction to the marine wonders of French Polynesia, so I signed up with Top Dive Fakarava (FP's premier dive company with locations on many diver friendly islands). My only stipulation was that I wanted them to find me lots of sharks.

Barely ten minutes from the White Sand Resort Jetty, we stalled on a stretch of unbroken blue so wide and deep that it didn't really look like we were in the entrance of a pass at all.

Dropping into clear blue bottomless water, we kicked lazily and waited for the current to pull us into the channel. As the sea floor crept into focus, I could see dozens of shadows obscuring the coral heads below us. When



Grey reef sharks



All that pristine real estate supports a food chain as complex and abundant as the reef itself. From tiny threadfin butterflyfish to cow-sized Napoleon wrasse, Fakarava's fish species are diverse and extremely prolific. Schools of bright orange sabre squirrelfish hover under every available coral overhang and day octopuses ooze from one coral head to the next

in search of anything slower than they are. The reefs are in such good shape that in 2006 the entire island was listed as a UNESCO Marine Biosphere Reserve. That in itself is reason enough to visit Fakarava, but it is not why plane loads of French plongeurs fly all the way from



Diver watches a large gathering of grey reef sharks; Purple crown jelly (top right); More grey reef sharks patrolling the reef (right)

the gap closed, the shadows transformed into scores of grey reef sharks holding position with imperceptible effort against the rushing water that was quickly dragging us into the shallow lagoon.

Once the sea floor was within reach of our nitrox mix (nitrox is free and encouraged on all dives with Top Dive), we descended into the next available dip in the coral and held on. Countless grey reef sharks drifted past as though the current was a figment of our imagination. For the most part, the 1-2m long sharks kept their distance, but occasionally one would swim right up to our hiding spot and eyeball us closely before peeling off down stream again.

With a memory card full of grey reef shark portraits, we rose up into the full force of the flow and let it sweep us into the shallows where the current finally abated, and I was able to start exploring the reef itself. Above 15m, whitetip reef sharks lorded over a food chain mostly composed of bannerfish, various squirrelfish species and some enormous schools of bright yellow goatfishes. That was more than enough to keep me entertained until my safety stop where I bumped into some bright purple crown jellies (*Netrostoma setouchina*) lit up by the midday sun.

**Coral Garden.** In the afternoon we visited the Coral Garden—an immaculate

stretch of reef on the outer wall just beyond the north entrance. There were sharks there, too, but not in the impressive numbers that inhabit the pass itself. Visibility outside the lagoon was exceptional, so I panned as wide as my lens was capable and tried to capture the sheer magnitude of the reef.

For an hour we slipped over seamless fields of coral. There were no snagged hooks or discarded nets, no broken coral heads from boat anchors or clumsy divers and no sign of coral bleaching even in the shallowest spots. It was like being transported back in time to that golden age before we lost our way.

That evening I snorkeled around the house reef at White Sand and watched



CLOCKWISE FROM LEFT: White Sand Beach Resort; Blacktip reef shark; Threadfin butterflyfish; Whitetip reef shark; Bicolor parrotfish

After an hour of dodging rain squalls, we descended onto a reef so clogged with sharks that I could not have counted them if I had tried.

Thirty meters below the surface, hun-

dreds of sharks held their ground against the gentle current. The majority were grey reef sharks, but I could also see at least 20 silvertip sharks and a handful of large ocean going blacktip sharks (*Carcharhinus limbatus*) keeping to themselves on the far side of the pass.

We settled onto a small sand patch (disturbing a few whitetip reef sharks in the process) and then watched the slow progress of the parade. The sharks worked their way through the narrow channel until there was no more pass for them to navigate through, then they allowed the current to drag them to the back of the group and began the oxygen replenishing journey all over again.

We stopped and marvelled wherever the sky was so thick with bodies that it appeared to be raining sharks. I tried to estimate the size of the school by splitting it into sections, but by the time we had drifted out of the pass, I had reached a number that I found unbelievable even though I had

just witnessed it with my own eyes. For the record, I am going to run with a very conservative 500 sharks, but I am sure there were more in the shadows and further out in deeper water.

The reefs of Fakarava are very well stocked, but how that many sharks can survive in such a small area without decimating the resident fish populations is beyond me. The sharks do not look undernourished. In fact, they appear to be relaxed and content, but I wouldn't want to be a wounded fish in Passe

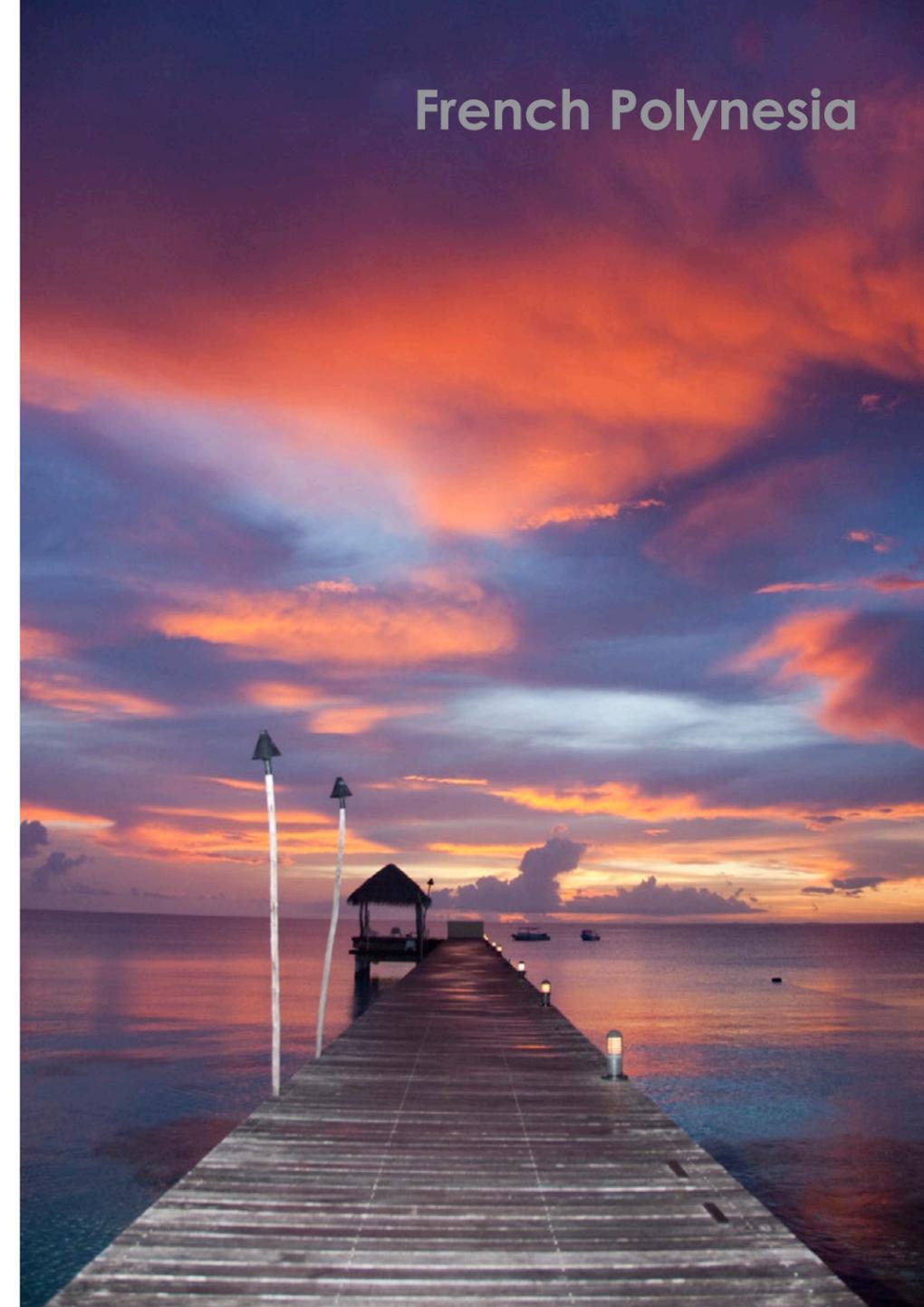
Tamakohua.

At the end of the dive, we surfaced in an area known as the swimming pool; a protected sandy spot where IndoPacific blacktip reef sharks (*Carcharhinus melanopterus*) and some even more enormous than usual Napoleon wrasse congregate in the hopes of scoring scraps from moored fishing boats. While the crew laid out a lunch of tropical fruits, pastries and delicious savory dishes (ah, the French!) I snorkeled with tiny blacktips; one eye firmly fixed on the intimidating mega-

the sky catch fire as the sun plunged into the lagoon. Not a bad introduction to French Polynesia, but the next day promised to be even better and possibly trump every day of shark diving I have ever had.

**Passe Tamakohua.** Top Dive provisioned one of their larger vessels, and we headed towards the much more remote Passe Tamakohua at the south end of the atoll.





wrasse.

Later, we visited a gorgeous pink sand islet where no footprints or other signs of humanity could be found. It should have been a dreamy way to wile away the afternoon, but the shark parade in Passe Tamakohua was so entrenched in my mind that I had trouble appreciating anything less intense.

The next day, we repeated the experience, but after three days of diving in the most shark-infested water I've ever had the pleasure of submerging into, I was forced to move on—curse inflexible itineraries! Fortunately, Fakarava is not the only French Polynesian destination with world-class mega fauna; 1500km away in mysterious Nuku Hiva, it's all about the whales! ■

*Andy Murch is an underwater photographer and shark expert based in Victoria, British Columbia, Canada. Visit: [www.elasmodiver.com](http://www.elasmodiver.com)*



CLOCKWISE FROM ABOVE: Diver at the Coral Garden; A pristine pink sand island at Fakarava; The Swimming Pool near Tumakohua Pass; Sunset at White Sand Beach Resort; School of crescent-tail bigeyes

# fact file



## French Polynesia



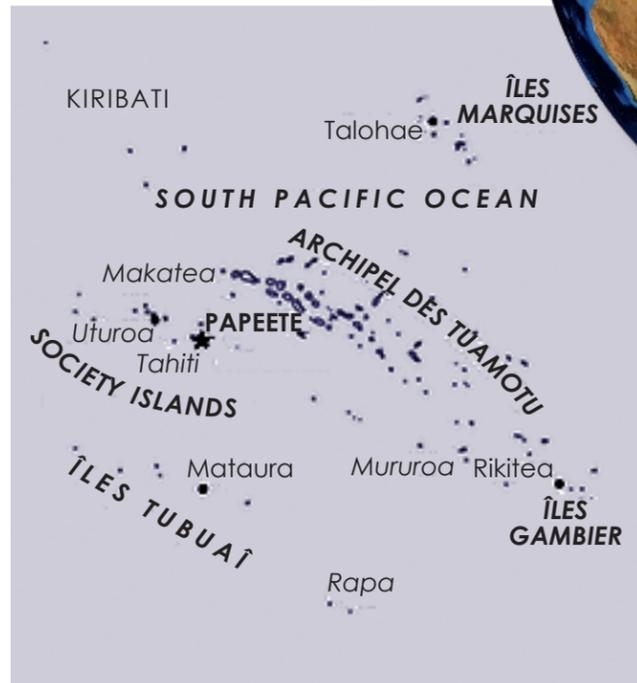
SOURCES: US CIA WORLD FACT BOOK, SCUBADOC.COM, E-MED.CO.UK

**History** During the 19th century, France annexed various Polynesian island groups. The French resumed nuclear testing on the Mururoa atoll in September 1995 after a three-year moratorium. Widespread protests followed. In January

1996, the tests were suspended. French Polynesia's autonomy has been significantly expanded in recent years. Government: autonomous overseas collectivity of France since 2003, employing French law. Capital of Indonesia: Papeete, Tahiti

### Geography

French Polynesia consists of five archipelagoes (four volcanic, one coral) of Oceania, a region in the tropical Pacific Ocean. These archipelagoes include Archipel Des Tuamotu, Iles Gambier, Iles Marquises, Iles Tubuai and Society Islands. They are located about mid-way between Australia and South America, in the South Pacific Ocean. The terrain of the area is a combination of low lands with reefs and rugged high islands. Coastline: 2,525km. Lowest point: Pacific Ocean 0m. Highest point: Mont Orohena 2,241m.

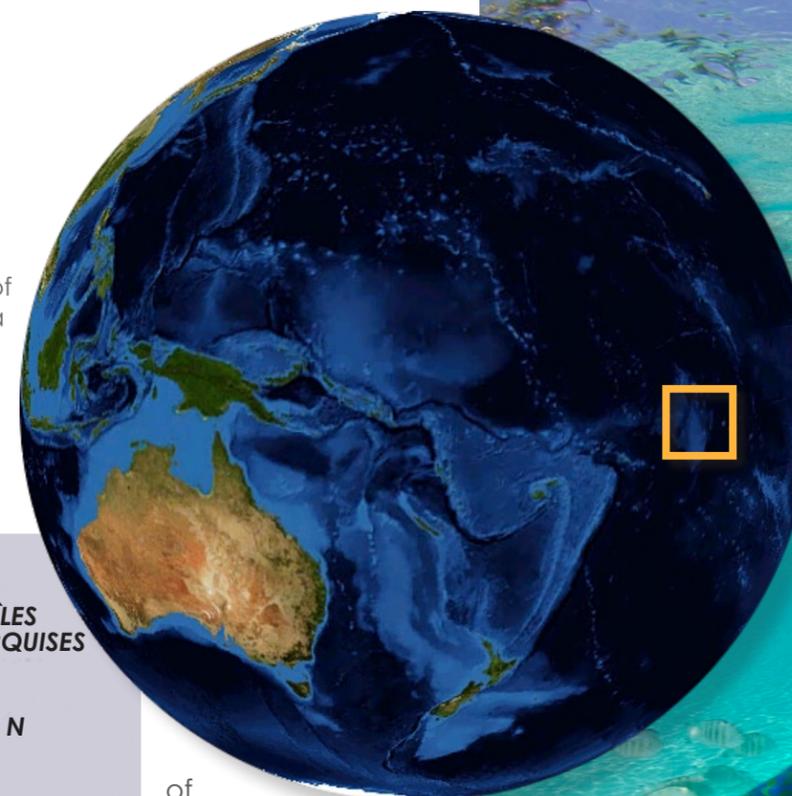


**Climate** Tropical, yet moderate. Natural hazards: a few cyclonic storms in January

**Economy** Since France stationed military personnel in the region in 1962, French Polynesia has shifted from a subsistence farming to an economy in which a large part of the work force either works for the military or in the tourism industry. But the military contribution to the economy fell sharply with the halt of nuclear testing by the French in 1996. Tourism leads the economy with about one-fourth

Development agreements with France focused primarily on creating new businesses and strengthening social services have benefited the territory. Natural resources include timber, hydropower, fish and cobalt. Agricultural production includes coffee, coconuts, vanilla, fruits and vegetables; fish, beef, poultry and dairy products.

**Population** 274,512 (July 2012 est.) Ethnic groups: Polynesian 78%, Chinese 12%, local French 6%, metropolitan French 4%. Religions: Protestant 54%, Roman

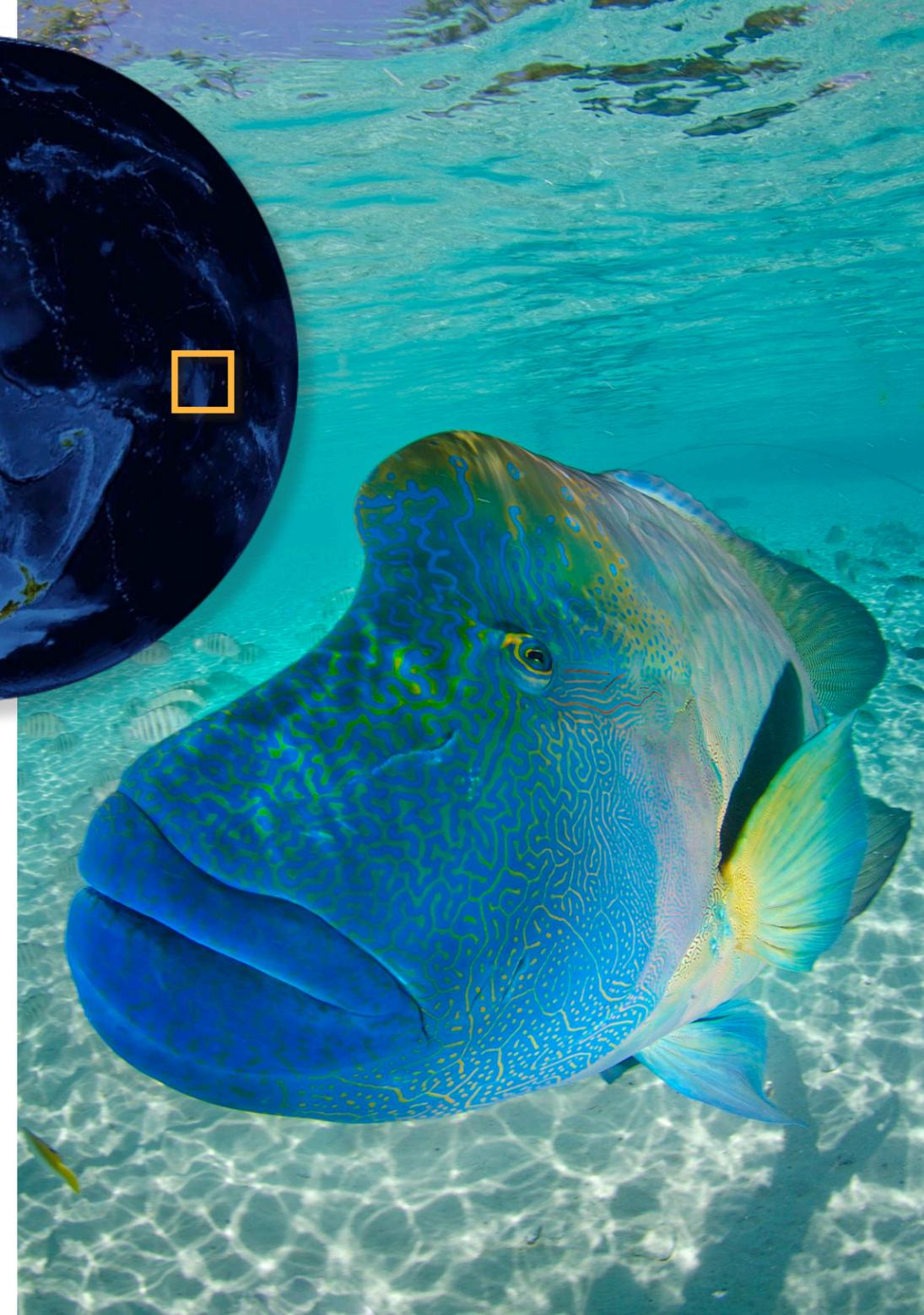


RIGHT: Location of French Polynesia on global map

BELOW: Location of Papeete, Tahiti, on msp of French Polynesia

FAR RIGHT: Napoleon wrasse

of GDP and is a major source of hard currency income. Deep-sea commercial fishing and pearl farming are other sources of income. Agricultural products are processed primarily by a small manufacturing sector.



Catholic 30%, other religions 10%

**Languages** French (official) 61.1%, Polynesian (official) 31.4%, Asian languages 1.2%, other languages 0.3% (2002 census) Internet users: 120,000 (2009)

**Currency** Comptoirs Francais

du Pacifique francs (XPF). Exchange rates: 1EUR=119.33XPF; 1USD=90.05XPF; 1QBP= 146.36XPF; 1AUD=94.18XPF; 1SGD=72.77XPF

### Web Sites

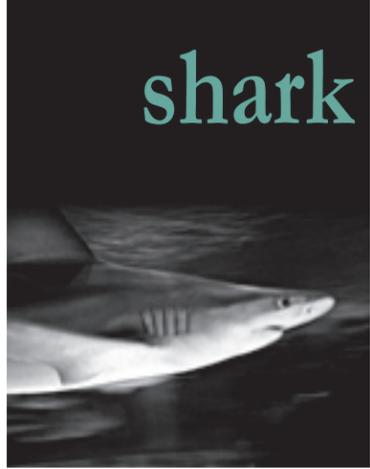
Tahiti Tourism [www.tahiti-tourisme.com](http://www.tahiti-tourisme.com)



Tropical rain shower at White Sand Beach Resort



# shark tales



Filmed at Belize's Glover's Reef Marine Reserve, which is a coral atoll, this footage shows a juvenile nurse shark (*Ginglymostoma cirratum*) (left) and Caribbean reef shark (*Carcharhinus perezii*) (right) competing for access to the bait cage of one of the baited remote underwater video (BRUV) cameras used in the stud



INSTITUTE FOR OCEAN CONSERVATION SCIENCE

## More Sharks In Protected Areas

Caribbean reef sharks are more abundant in marine reserves than in areas where fishing is allowed.

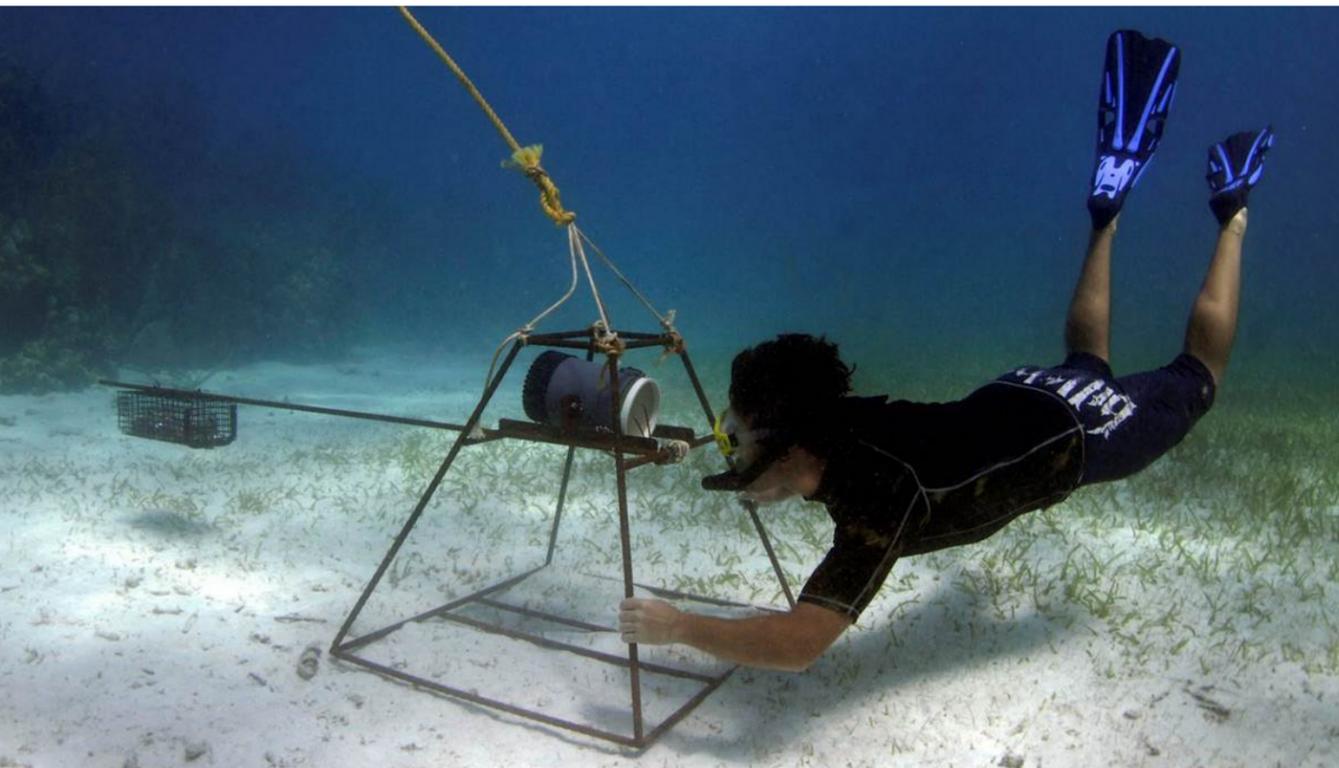
Researchers from the Stony Brook University Institute for Ocean Conservation Science compared the relative abundance of reef

sharks in two marine reserves with those in two areas where fishing is allowed and demonstrated that the sharks were more abun-

dant in the reserves. Data was collected from over 200 baited remote underwater video (BRUV) cameras, which were placed both inside and outside aquatic reserve areas on the Mesoamerican Barrier Reef in the Caribbean.

The video cameras were enclosed in protective housing and placed on the sea floor with small bait-filled cages positioned in front of them. Sharks, attracted by the smell of the bait, swam to the cameras, which allowed the research team to record, count and compare shark populations in the marine reserves to those in the areas where fishing is permitted, at no stress to the sharks. In addition to the BRUV surveys, the scientists fitted 34 reef sharks with acoustic transmitters and tracked their movements, using moored underwater listening stations. They found that the sharks, both juveniles and adults, live year-round within the reserves. ■

THE RESEARCH FINDINGS APPEAR IN THE PAPER, REEF SHARKS EXHIBIT SITE-FIDELITY AND HIGHER RELATIVE ABUNDANCE IN MARINE RESERVES ON THE MESOAMERICAN BARRIER REEF, PUBLISHED ONLINE IN THE JOURNAL PLOS ONE.



Lead author of the study, Mark Bond of the Institute for Ocean Conservation Science, positions one of the baited remote underwater video (BRUV) cameras, nicknamed "chum cams", down current at Glover's Reef Marine Reserve



HAMMERHEADS - TIGER BEACH - SPERM WHALES  
HUMBOLDT SQUIDS - SAILFISH BAITBALLS - MANTAS  
WHALE SHARKS - HUMPBACK WHALES - SANDTIGERS  
DOLPHINS - SOUTH AFRICA - CROCODILE ENCOUNTERS

*Scientists who study tigers or jaguars in the wild use camera traps to count them. It is just as difficult to count sharks in the ocean, so we took a page from the big cat researchers' playbook and deployed baited video cameras to count the sharks. It's only fitting since these large apex predators are the 'big cats' of the sea, and like their feline counterparts, their continued existence on Earth is threatened.*

—Dr Demian Chapman, assistant professor in the School of Marine and Atmospheric Science at Stony Brook and leader of the research team

