



GLOBAL EDITION  
March 2023  
Number 117



Maldives  
**Fuvahmulah  
Sharks**

Tech  
**Trim**

Wrecks  
**Estonia**

Taiwan  
**Kenting**

Wrecks  
**Californian**

New Caledonia  
**Lifou**

UW Photo  
**Minimalist**

PORTUGAL  
**Sesimbra**

# DIRECTORY

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**COVER PHOTO:** *Squid on blackwater dive,*  
*Anilao, Philippines*  
 Photo by Mike Bartick

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Giant clam, Lifou, New Caledonia. Photo by Pierre Constant



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## Reopen Guadalupe Island!

editorial

As the attentive reader will know by now, the Mexican government has closed Isla Guadalupe indefinitely to all diving activities, and film and television productions—essentially eliminating one of the best places on the planet to cage-dive with great white sharks.

While the decision, I presume, has good and honourable intentions—the protection of the sharks, as they stated—I fear it will have the exact opposite effect of what is intended.

Sharks are primarily threatened not by tourists but by illegal fishing—i.e., for harvesting their fins, which is sadly still a sought-after, expensive delicacy in some Asian markets.

Sharks have a much larger value alive than dead, both in terms of the revenue that dive tourism can generate and certainly for their role in keeping the ecosystems healthy.

Tourists, such as whale watchers and divers, can also keep some of the illegal fishing at bay. At least, they have done so in other areas of the world, either by their mere

presence being a deterrent or by alerting authorities to illegal fishing activities that they come across.

Have the Mexican authorities instilled any monitoring of the island? To our knowledge, they have not, which leaves it wide open to illegal fishing.

In response, the Guadalupe Sky Watch Program is a citizen-led effort to task commercially available high-resolution satellites to observe Guadalupe Island for illegal fishing of great white sharks during the permanent closure of Isla Guadalupe to tourism. If you care about this matter, please follow and like this page: [facebook.com/Guadalupeskywatch](https://facebook.com/Guadalupeskywatch).

But why is it up to private citizens, non-governmental organisations (NGOs) or action groups to step up and fill the gap? The Mexican government made the decision, so do they not own the problem now?

Do the sharks really need protection from divers in the first place? Do cage diving and baiting sharks (to lure them in) alter their behaviour? It

might to some degree; it cannot be ruled out. Sharks might get bruised by ramming the cages. But sharks, as we have come to appreciate them in recent years, are quite smart and sentient. Surely, they are not in any way dependent on a morsel being handed out but are free-roaming animals, which travel huge distances.

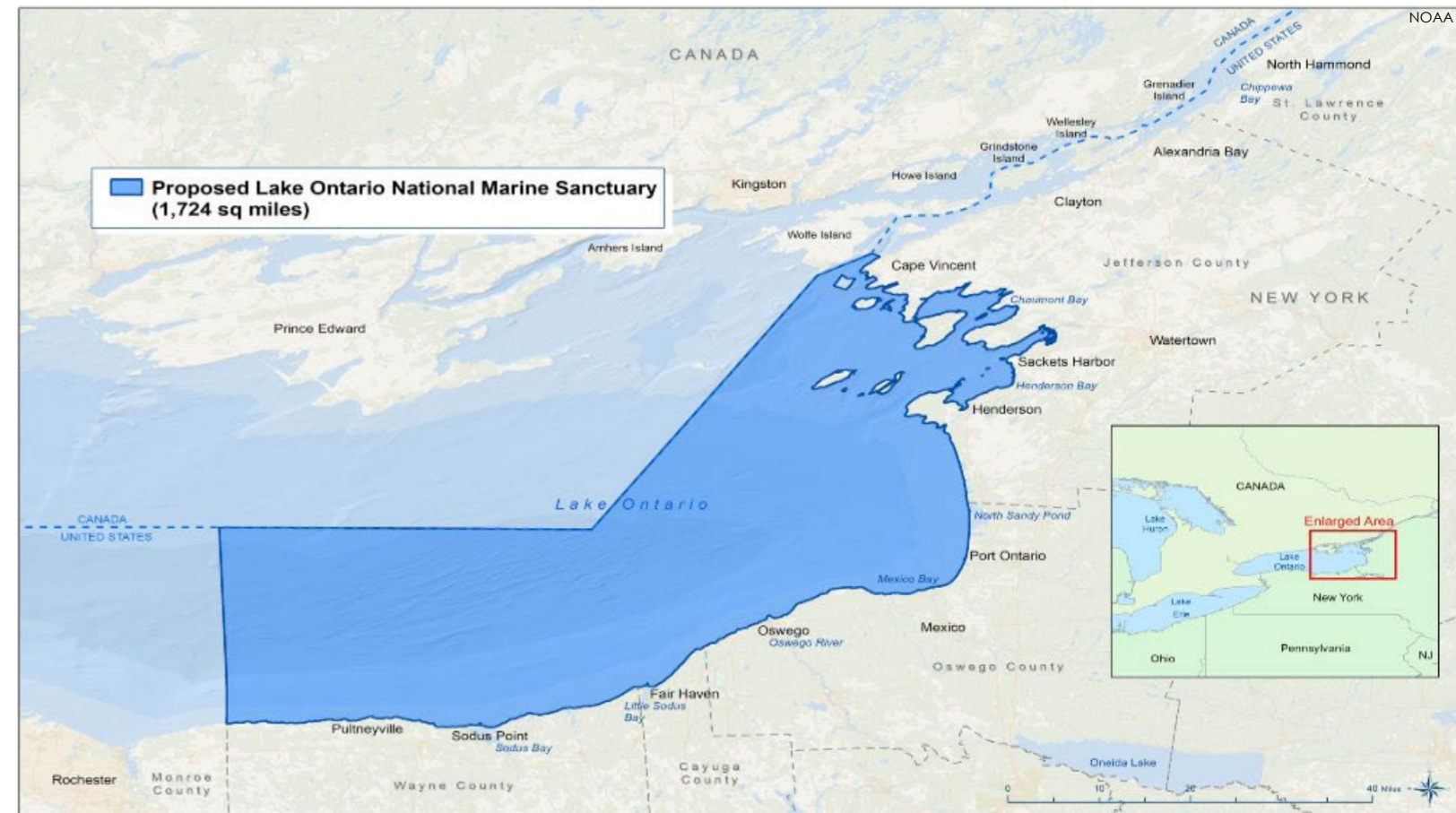
That said, when it comes to wildlife, some people can be ignorant and do stupid things—from the seemingly innocuous (such as feeding bread to ducks, which is bad for the birds and pollutes the waters) to ramming marine mammals with leisure boats, which can injure or even kill them.

But divers and other ecotourists, who pay a pretty penny for these close encounters, have a very different and profound appreciation for these animals. Their presence, as well as the photographs and stories they share of their encounters, are the best protection these sharks can get.

— Peter Symes  
Publisher & Editor-in-Chief

Edited by  
Peter Symes

Proposed Lake Ontario National Marine Sanctuary in eastern Lake Ontario



## Lake Ontario National Marine Sanctuary proposed

The US National Oceanic and Atmospheric Administration (NOAA) proposes to designate Lake Ontario National Marine Sanctuary in eastern Lake Ontario to recognize the national significance of the area's historical, archaeological and cultural resources and to manage this special place as part of the National Marine Sanctuary System.

NOAA invites the public to comment on this proposed rulemaking and will consider all submitted comments when preparing final regulations in the last phase of the sanctuary designation process.

The public comment period is open until 20 March 2023.

The national significance of the area within and around the proposed sanctuary will benefit from long-term protection, management and interpretation.

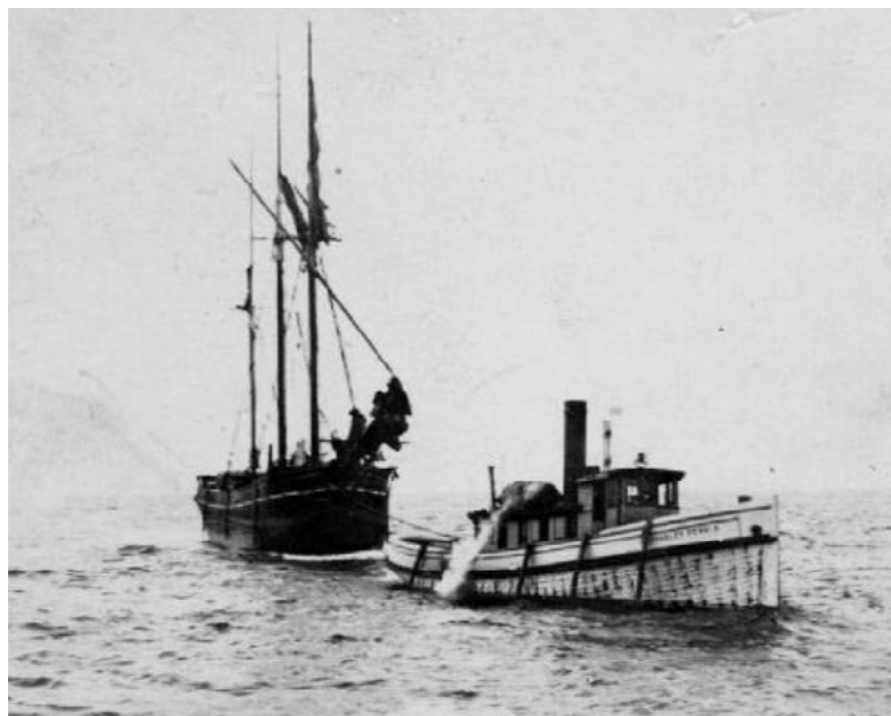
The proposed boundary is a 1,724 sq mi area containing 43 known shipwrecks, including the historic

schooner *St. Peter*, and one aircraft. Based on historical records, an additional 20 shipwrecks, three aircraft and several other underwater archaeological sites may be located there.

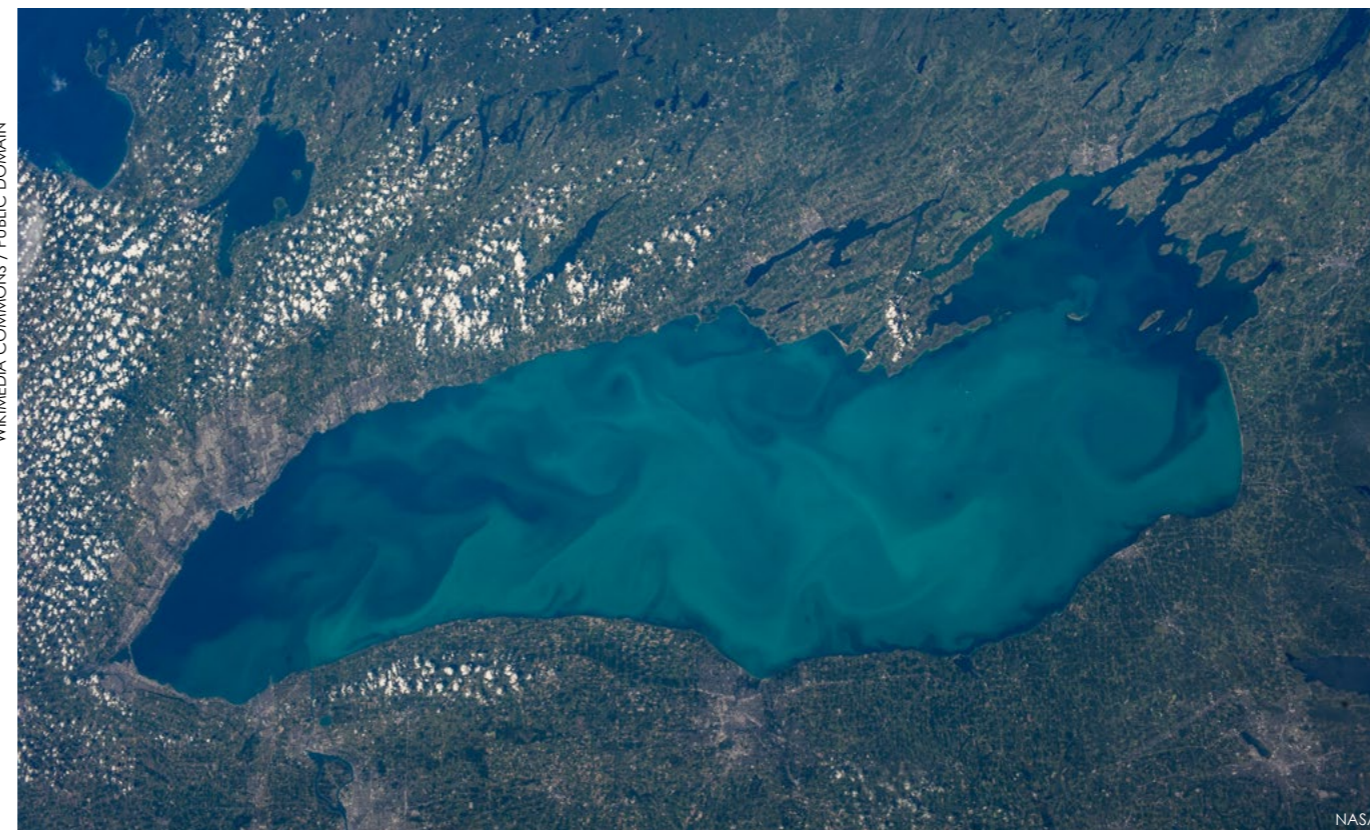
### Protection

NOAA proposes the following regulations to protect underwater cultural and historical resources in the proposed sanctuary:

- Prohibit moving, removing, recovering, altering, destroying, possessing or otherwise injuring a sanctuary resource;
- Prohibit possessing, selling, offering for sale, purchasing, importing, exporting, exchanging, delivering, carrying, transporting or shipping by any means any sanctuary resource within or outside of the sanctuary;
- Prohibit grappling or anchoring on shipwreck sites;
- Prohibit deploying tethered underwater mobile systems at shipwreck sites without a permit; and
- Prohibit interfering with an investigation. ■ SOURCE: NOAA



The schooner *St. Peter* underway. It foundered in a storm in 1898.



Satellite image of Lake Ontario

# Boot is back in business big-time

Text and photos by Peter Symes

**With almost 237,000 visitors from over 100 countries and more than 1,500 exhibitors from 68 nations on 220,000 square metres in 16 exhibition halls, boot Düsseldorf made an impressive comeback, the organisers write.**

After a corona-imposed two-year hiatus, the megashow was back on, and what a resur-

gence it was. After I landed on a morning flight, I jumped on the bus that went from the airport to the expo complex. The route went almost all around the complex in a clockwise fashion before we got to Eingang Nord, or the North entrance, which was my stop.

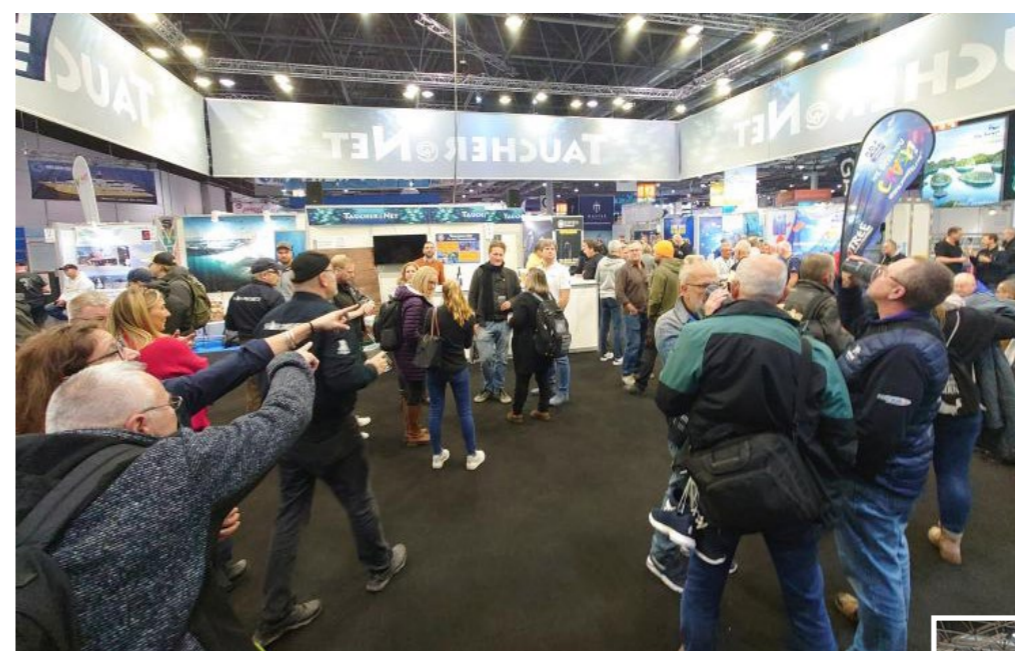
I have been attending some 16 Boot events and it never ceases to amaze me how ginormously huge this complex is. As the bus went around the perimeter, we were driving and

driving past one big expo hall after another, there are 17 of them and the whole complex made me think of NASA's or Boeing's assembly plants.

Once inside, it felt a bit slow as I went on a trek through halls 9, 10 and 11 to get to hall 12 where the diving section was located but initial impressions were deceiving. It was Tuesday morning after all and who goes to an expo at those hours if you have a day job to tend to? Unless, that is, part of your

started. I went from one talk to the next meeting without any breaks all day as people were quite eager to talk and get some business going again. Old acquaintances kept coming down the aisles too and it was nice to catch up on everything and everybody.

I was also pleased to see how many of our long-time business contacts and clients had set up a presence, and that many new entities were also touting their services or goods.



job is going to trade shows and conferences such as this one and meeting with the exhibitors and other industry professionals I came here to meet.

The show didn't give any impression of being much smaller following the pandemic. Still, I noted that the exhibits in the diving hall were a bit more compact than in the years before the pandemic but still big

and the hall was fully booked, with some latecomers spilling over into the adjacent hall 13.

The footfall was still quite limited as I began my meetings, which made it easier as I didn't have to wait but could commence talks right away. And so it





hard concrete floors all day, the lighting is harsh and the air is dry. Often, there is nowhere comfortable to retreat to and take a break during the long days at the expo.

Boot is no exception on this characterisation, but it has one huge redeeming factor. It lets loose in a major manner at the end of the day. The show technically closes at 1800 hrs (6 p.m.), yet it does not really.

Because that is when the exhibitors get out their drinks and snacks, and crank up the music. Beer, wine or punches are generously handed out and everybody chills and socialises in front of various booths. I never stayed on very late so I don't know how long the parties go on for, but the cloakroom stays open until 2300 hrs (11 p.m.).

**Intense event**

At a glance, or to the outsider, the show might not have appeared all that different from

previous years but I was busier than ever. It was a very productive show and one of the best in quite many years.

Did I spot any news in terms of new pieces of equipment or new destinations? Nothing much on either front, I am afraid, but a little here and there. Equipment manufacturers were still somewhat dogged by supply chain issues and derived knock-on effects and it appears likely that they were reducing R&D spending to save money while weathering out the pandemic.

"Despite the difficult general conditions, boot 2023 has written a success story. We would not have dreamt of this outcome. boot has finally reached calm waters and is once again firmly anchored in its Düsseldorf home port. The successful comeback has demonstrated that trade fairs 'made in Düsseldorf' have an international appeal," stated Wolfram Diener, President and CEO of Messe Düsseldorf. ■

# Appeals court clears diver of involuntary manslaughter of diving buddy

**Arthur Castillo had his conviction of involuntary manslaughter quashed after the appeals court ruled that he did everything he could have reasonably been expected to do under the circumstances.**

On Friday 25 November 2022, a lower court found diver Arthur Castillo, 60, guilty of the involuntary homicide of his long-time dive buddy Christine Gauci, who died following a dive in Mgarr ix-Xini, a bay on

the southern coast of Gozo in January 2020. Gauci was an Armed Forces of Malta member, diving instructor and technical diver.

In a ruling that caused outrage in the diving community, the lower court handed Castillo a two-year jail term suspended for four years, which was immediately appealed.

The appeal court cleared him of all criminal liability on Wednesday, after it came to a different interpretation of the "buddy system," which had been a crucial factor in his previous conviction,

stating that it did not mean that the two were responsible for each other.

Focusing on the notion of contributory negligence, the court said that although the victim's own negligence did not exonerate the accused, it was to be considered. The court believed that Castillo was not negligent and could not have prevented the incident from happening, Times of Malta reported.

Castillo thanks friends in Malta and abroad as well as his family for their support. ■

SOURCE: TIMES OF MALTA



MICHAEL COGHAN / CC BY-SA 2.0



MATTHEW MEIER

White shark at Guadalupe. Are they now going to be poached?

## Closure of Guadalupe Island to divers cause for great concern for the sharks

**This action expands on the 2022 closure of the Guadalupe Island Biosphere Reserve by the National Commission of Natural Protected Areas (CONANP), the federal agency tasked with managing Mexico's protected natural areas.**

They also closed the island to cage diving in 2021 and the pandemic closed down operations in 2020.

In a quote from their just released management program Article 65...Rule 65. "White shark observation may not be carried out in the Reserve for tourist

purposes, to avoid altering their habitat, behavior and feeding sites, and thereby preserve and conserve the species."

While this ruling is well-intentioned, the fear is that without cage diving operators monitoring the waters around Guadalupe island, the great white sharks are in danger from poaching and illegal fishing.

Several tour operators are negotiating with the Mexican Government to overturn this ruling but as things stand now, cage diving with Great White Sharks at Guadalupe Island is off-limits.

**Endangering rather than saving sharks?**  
Mike Lever of Nautilus Explorer,

one of the operators who organize tours to Guadalupe, states: "Unfortunately, we are facing another potential park closure. We believe this will be catastrophic for the future of these beautiful great white sharks. What worries the h\*ll out of me is that this shark population is going to be poached and fished out. I've been feeling sick about this ever since this first happened. If the government is successful with its current push, commercial fishing will be the only allowable activity at the island. The sharks need everyone's help. We'll continue fighting for them with everything we have. That's our top priority." ■

SOURCE: NATIONAL COMMISSION OF NATURAL PROTECTED AREAS MEXICO

## DIVING IN RED SEA PARADISE

SHIPWRECKS

SUNKEN TANKS

THE JAPANESE GARDENS

**aqaba**  
RED SEA WADI RUM-PETRA



### MSDA FOOD DRIVE

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Malaysia Scuba Diving Association (MSDA) has initiated a Food Drive Campaign to provide support to diver friends who have lost work, business or have no source of income. We are hoping to collect much-needed donations to help the struggling dive community.

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Account No: 5144 4053 3032

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Email us at [info@msda.my](mailto:info@msda.my)

Whatever you can spare, will be greatly appreciated

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# wrecks

Hardware covered with corynactis, which decorates the entire wreck of the *Californian* (right); Bow of the wreck, with the starboard anchor lying on the sand (below)

Text and photos by Pascal Henaff  
Illustration by Hervé Marsaud  
Translated by Loïck Penhoat

**The *Californian* was an American steamship built in 1900, which sank in the Gulf of Biscay, off the coast of France, in 1918, during a WWI convoy. Pascal Henaff has the story.**



# Californian Wreck

— *Early 20th-Century Steamer in the Gulf of Biscay*

USS *Californian* was a steamer built by Union Iron Works in San Francisco and launched on 12 May 1900 for the American-Hawaiian Steamship Co. It measured 125.88m in length, 15.54m in width and had a draft of 6.71m,

with a tonnage of 5,658 tons, and a speed of 10 knots. Four boilers fed its triple-expansion engine.

The ship we are dealing with in this article is not the *Californian* that did not respond to the *Titanic's* distress calls in

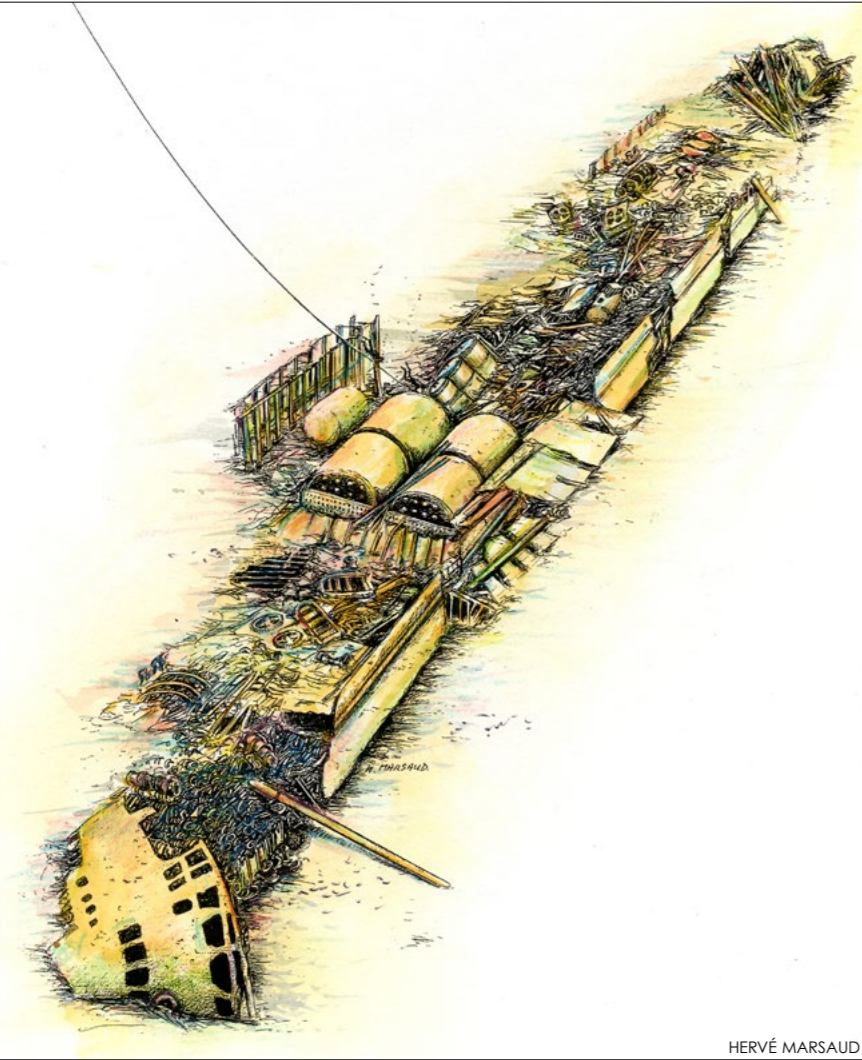
April 1912, but a different ship, which sank in the Gulf of Biscay in 1918.

On 13 May 1918, the *Californian* was requisitioned and placed under the control of the Naval Overseas Transportation Service (NOTS). She

was commanded by Captain D. Mulman. Loaded with coal, oil and military equipment (such as truck chassis and spare parts, wheels, radiators and a lot of ammunition) for American troops in France it joined an off-







HERVÉ MARSAUD

Sketch by Hervé Marsaud of the actual wreck as seen on a dive

Some of the numerous truck wheels found all over the wreck of the *Californian* (above); Diver on large section of the deck on the starboard side, close to the boilers, now resting in a vertical position (right); USS *Californian* sinking in the Gulf of Biscay on 22 June 1918 (lower right)

shore convoy departing from New York, which was about to cross the Atlantic that month.

On 22 June 1918 at 5:05 p.m., the “HB” convoy sailed southeast in the Gulf of Biscay, at a cruising speed of 9.5 knots. In four columns of two ships each, escorted by four American yachts and two gunboats, the convoy proceeded under a light northwestern breeze and clear skies. The captain of *La Belliqueuse* at the end of the convoy noticed that one of the carriers was nosing down. He ordered the lifeboats to be lowered. The whole crew was transferred aboard the *Corsair*, a 91m-long, 1,600-ton frigate fitted with four 75mm cannons. The commanding officer was Captain T.A. Kittinger.

At 5:32 a.m., a group of sailors returned on board for 23 minutes in an attempt to start the engine. Between 8:00 and 8:30 a.m., there was hope that the vessel could be towed, but this failed too. The *Californian* sank, prow first. At 9:03 a.m., its stern vanished and went down 46m below. The convoy then proceeded towards La Pallice.

*La Belliqueuse* tried, with no avail, to spot a possible submarine. So, it was thought that the *Californian* had hit a mine. But there had been no sign of an explosion—no sound was heard, nor was a plume of water seen.

The *Californian's* bearing is 46° 14' 112 N / 02° 12' 098 W, located 23.6 nautical miles southwest

of Les Sables-d'Olonne France, in the Gulf of Biscay. The average depth of the wreck is 44m.

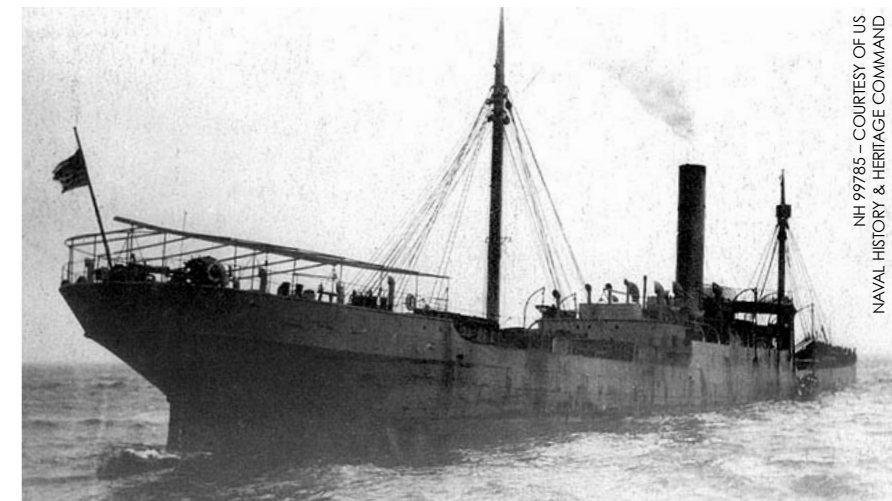
### Diving the wreck

This large wreck is spread over a large area, with lots of nooks, corners and a varied cargo to explore. It is impossible to go all around it in just one dive.

Let's now take a tour of the wreck from stern to bow. The poop deck on the port side, though destroyed, can be identified thanks to the quadrant,

rudder stock and tiller. The helm is buried in the sand, as is the propeller. A few metres away, the perfectly aligned blades of a safety propeller can be found.

In order not to get lost, let's swim along the hull on the port



NH 99785 - COURTESY OF US NAVAL HISTORY & HERITAGE COMMAND



A large gear wheel whose purpose remains unclear (right); Front mast lying on the port side of the wreck (far right); Wood deck of the bow of the wreck, lying on its port side (below)



side, which is nearly undamaged. At a height of 3m, it towers over the sandy bottom. Next to the poop deck, the blades of the safety propeller are arranged head to toe, parallel to each other, ready to be bolted, if needed.

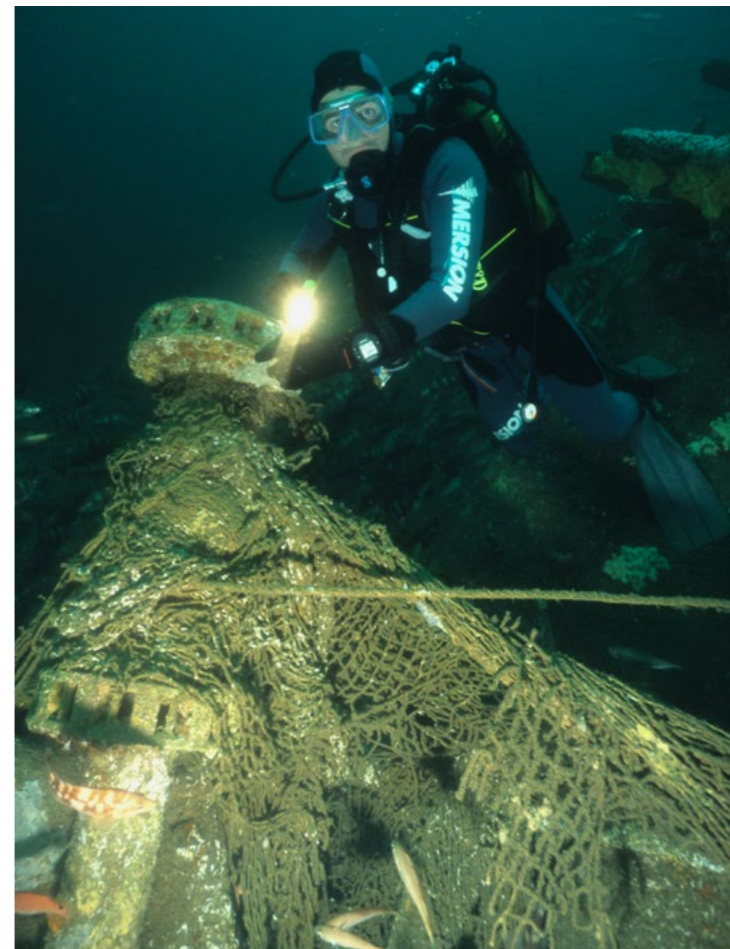
For adventurous divers, the cargo can be explored while heading for the engine. The propeller shaft hidden under a heap of supplies is hardly visible. There are davits, winches, three huge gear wheels, a condenser, and a thousand mortar shells. One should avoid disturbing these shells, as some may still contain "trinitrotoluol." The captain of *La Belliqueuse* warned us that it was probably TNT, explosives or even dangerous gas.

The engine lies on the starboard side, and the cylinder heads can easily be seen. On its base, slightly to port, rests a condenser showing its cooling tubes.

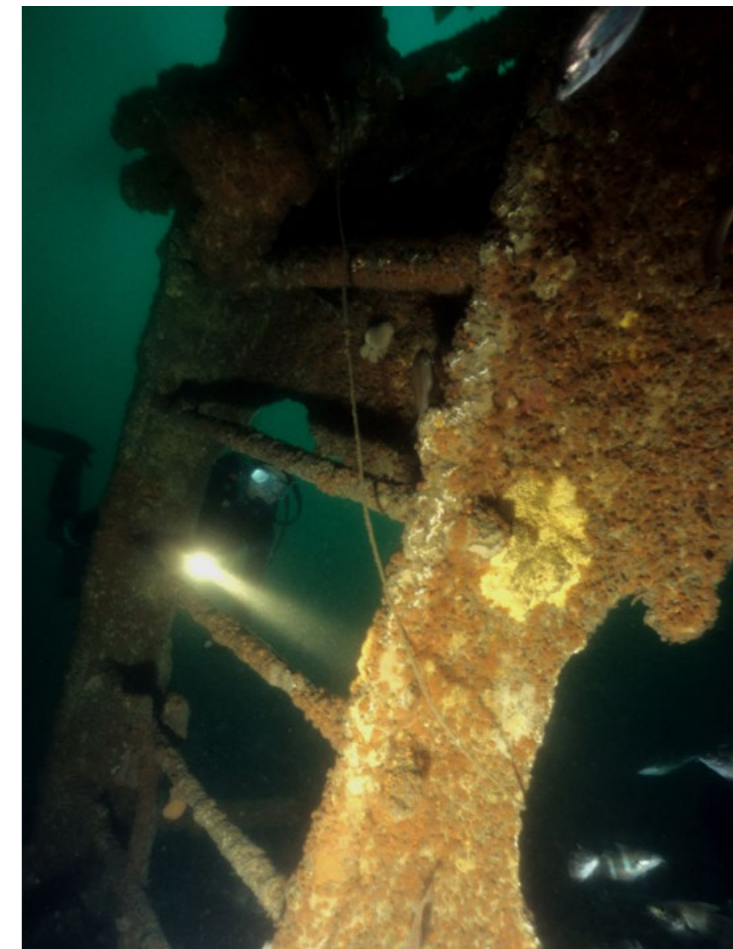
The four boilers, disposed in pairs, have their furnaces facing forward for the two at the front, and backward for the two at the back, but they are not easy to spot, being hindered by scrap. An auxiliary boiler, which is small in comparison, rests at the foot of an impressive piece of the ship's deck, standing upright on the bottom. The polychromatic whole of the ship is covered with *cliona* and *corynactis*.

As we proceed with our visit, we come across deck frames, hold entrances, gear wheels, davits on the starboard side, crates of shells, tyres and lorry radiators. Two huge winches break the monotony of that mess of metal scrap. This is where the steps to the cargo boom is. The seven- or eight-metre boom lies on the starboard side, away from the wreck.

From there, one can swim under the deck for 20m in the



Diver with the rudder stock, which is one of the only recognizable parts at the stern



Inside the bow where some internal parts are still visible

Top of the smaller cylinder of the engine, which is lying down on the starboard side (right); Top of the main cylinder of the triple expansion steam engine (below)



to discover heaps of small lead slugs, which have already been partly plundered.

We eventually get to the vessel's bow. That is the part not to be missed; it is nearly detached, and it has fallen portside. The whole section is no longer on the axis of the wreck. At the moment the *Californian* struck the bottom, under the strain, it probably was oriented portside. On the deck, anchor chains spill out of the hawseholes. Lots of light come through the gaping holes of the hull, making it easy to penetrate inside. To gain a

direction of the stern, among sea bass, *tacaud* (pouting) and pollock, and then get out before the boiler zone. Somewhere in that mess described above, it is still possible, in two specific places,

full picture of such a wreck, several dives are necessary. ■

See the video of the Gulf of Biscaye's wrecks off Les Sables-d'Olonne by Pascal Henaff

on YouTube, with video of the Californian at: [youtube.com/watch?v=YeOaakV5Ltl](https://www.youtube.com/watch?v=YeOaakV5Ltl).

Pascal Henaff has been a diver since 1975 and an underwater photographer since 1989. He has written articles for dive magazines since 1995. Today, he specialises more on wreck reportage. Visit his website at: [wildseapictures.com](http://wildseapictures.com).

Hervé Marsaud has been a diver since 1990. He is a retired professor of applied arts in a technical high school, as well as a maritime history buff. Visit his website at: [sites.google.com/site/hervemarsaudphoto](https://sites.google.com/site/hervemarsaudphoto).

Marsaud and Henaff's book, *60 épaves en Vendée et Charente-Maritime*, is still available on [Amazon.com](https://www.amazon.com).

Diver and wreck lover Loïck Penhoat, who translated the text, is a retired teacher who has worked abroad.



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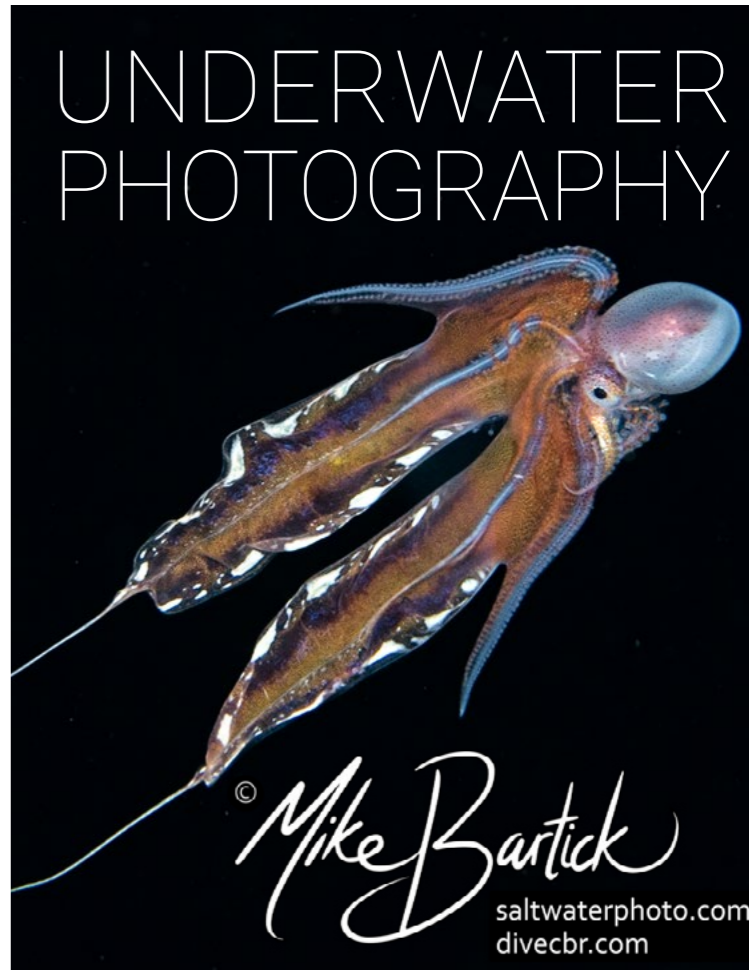
A row of vent holes along the top of the superstructure, and the absence of steel plates along the upper edge of the fairwater allowed NHHC's Underwater Archaeology Branch (UAB) to confirm the wreck site finding as *Albacore* (right); Historical photo of USS *Albacore* (below)



US NAVAL INSTITUTE PHOTO ARCHIVE / PUBLIC DOMAIN



NAVAL HISTORY AND HERITAGE COMMAND (NHHC) VIA PRESS RELEASE



## Wreck site identified as World War II submarine USS Albacore

**The long-lost wreckage of a US Navy submarine, credited with sinking nearly a dozen enemy ships during World War II before vanishing in late 1944, has been found off the coast of northern Japan, according to US Navy officials.**

The US Naval History and Heritage Command (NHHC) confirmed the identity of a wreck site off the coast of Hokkaido, Japan, as USS *Albacore* (SS 218). The NHHC made the announcement on Thursday, after several months of examining Japanese surveys conducted on the site in 2022.

The missing and presumed-lost sub was discovered off the coast of northern Japan by a team using autonomous underwater vehicles. The submarine disappeared in November 1944, on its 11th war patrol, likely after striking a mine.

Indications of documented modifications made to *Albacore* prior to its final patrol, such as the presence of an SJ Radar dish and mast, a row of vent holes along the top of the superstructure, and the absence of steel plates along the upper edge of the fairwater, allowed NHHC's Underwater Archaeology Branch (UAB) to confirm the wreck site finding as *Albacore*.

### Disproportionately significant role

During World War II, the United States first utilized submarine warfare to effectively cripple its enemy. Although they comprised less than a mere two percent of the US Fleet, submarines played a disproportionately significant role in the victory over Japan. At the outbreak of the war, American submarines were ineffective due primarily to lack of experience; however, from 1942, they began to play a major part in the war.

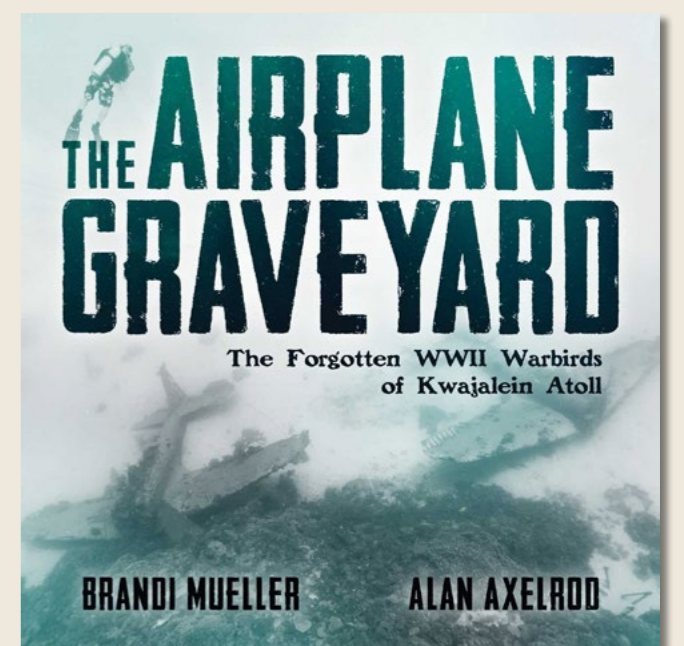
USS *Albacore* (SS-218) was only in service for just over two years when the vessel disappeared off one of Japan's northernmost islands. The last

time the crew of more than 80 was last heard from was reported to be in late October 1944, during stops at Pearl Harbor and the island of Midway. Just over a week later, a Japanese patrol boat reported seeing a great deal of oil amidst a debris field not far from Hokkaido, Japan.

### War grave

While non-intrusive activities such as remote sensing documentation on US Navy sunken military craft are allowed, the wreck represents the final resting place of sailors who gave their lives in defence of the nation and should be respected by all parties as a war grave. ■ SOURCE: NAVAL HISTORY AND HERITAGE COMMAND

## UNDERWATER PHOTOGRAPHY



Never before published in book form, see extraordinary images of the forgotten American WWII airplanes resting on the bottom of the Kwajalein Atoll lagoon, from award-winning underwater photographer Brandi Mueller. Available on: **Amazon.com**

Edited by Peter Symes

"This is a pretty significant shipwreck ... considering its age, the fact that it is a barquentine and we can't overlook the vessel's checkered past. The wreck site is littered with shovels too ... and a few dinner plates, which speaks to their work and shipboard life."  
— Shipwreck Society Executive Director, Bruce Lynn



ARTWORK COURTESY BOB MCGREEVY VIA PRESS RELEASE

## “Bad Luck Barquentine” shipwreck from 1869 discovered in Lake Superior

The 144ft barquentine named *Nucleus*, which has been discovered 600ft below the surface of Lake Superior, more than 150 years after it sank, is one of the oldest ships to have been recovered from the lake.

The 144ft *Nucleus* had a “checkered past” after previously sinking twice, and once rammed and sank another boat on Lake Huron, the Great Lakes Shipwreck Museum said in a news release announcing the discovery.

A barquentine is a sailing vessel with three or more masts, with a square-rigged foremast and fore-and-aft rigged main, mizzen

and other masts that were common in the 19th century.

The wooden ship is well-preserved and in good condition, with an intact stern and port side. The wood is free of invasive zebra mussels, which have not been disbursed through the frigid depths of Lake Superior as they have in other lakes.

The *Nucleus* sank on 14 September 1869 when it was downbound from Marquette, carrying a load of iron ore. It got caught in a bad storm on Lake Superior and started to take on water. The leak became so bad that the crew had to abandon the ship and get into the lifeboat.

**Checkered history**  
The Great Lakes Shipwreck Historical Society dubbed the

*Nucleus* the “Bad Luck Barquentine” based on the vessel's checkered history of accidents and sinkings before its last one. During its life service, the *Nucleus* sank twice, ran aground twice and had its cargo damaged. In 1854, it rammed and sank the side-wheeler *SS Detroit* in Lake Huron.

Researchers first found the remains of the *Nucleus* in the summer of 2021, using the same type of surface-operated marine sonic equipment used by underwater surveyors and archaeologists. The wreck was positively identified as the *Nucleus* in 2022 when researchers examined it underwater with a remotely operated vehicle. ■

SOURCE: GREAT LAKES SHIPWRECK HISTORICAL SOCIETY

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Edited by Peter Symes

French destroyer *Dague* off the coast of Montenegro



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## Montenegro establishes maritime archaeology research unit

The Laboratory of Maritime Archaeology is the first maritime archaeology research unit in Montenegro tasked with illuminating and making the underwater cultural heritage of Montenegro accessible to the public.

The goal of the Laboratory of Maritime Archeology is to position Montenegro on the international scientific map of maritime and underwater archaeology and to investigate and document the shipwrecks, navigation routes, harbours, anchorages and other remnants of human activity along the Montenegrin coast.

Maritime archaeological finds within the Montenegrin basin, although insufficiently explored, are very diverse.

### Mission

The mission of the laboratory's project "Underwater cultural landscapes of Montenegro" is to illuminate the various cultural aspects of the underwater cultural heritage of Montenegro and make them accessible to the general public through a multidisciplinary approach using the newest available technology.

The primary objective of the project is to document and interpret sites using 2D and 3D digitalisation meth-



LABORATORY OF MARITIME ARCHAEOLOGY / INSTAGRAM

Underwater documentation of an archaeological site in Montenegro



A Merlin engine from a Supermarine Spitfire MK IX Trop, which crashed into the sea not far from Cape Kabala in Boka Kotorska Bay

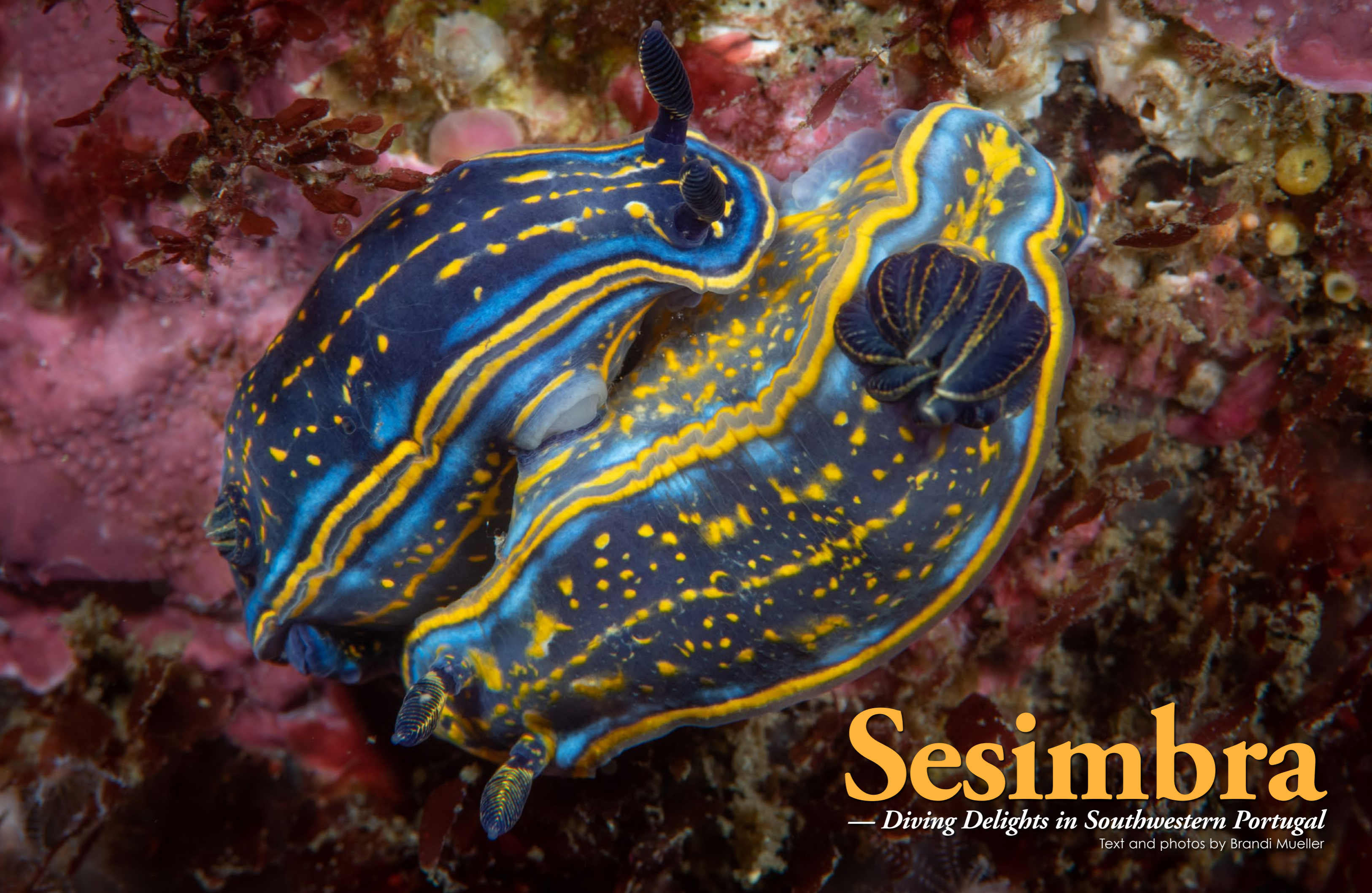
ods and create a database that would be publicly available through online geoportals, various platforms and

virtual museum websites.

The project will disseminate its cultural and historical messages through various media

channels, promoting underwater cultural assets and targeting tourism development. ■

SOURCE: UNIVERSITY OF MONTENEGRO



# Sesimbra

— *Diving Delights in Southwestern Portugal*

Text and photos by Brandi Mueller



Cliffs at Gruta do Arcanzil, located south of Sesimbra, near Cape Espichel



**Along the coast of Portugal, just south of Lisbon, is the Arrábida National Park, founded in 1976. It protects an area on the southern part of the Setúbal Peninsula that covers 175.41 sq km (68.11 sq mi) of land and sea. Brandi Mueller shares her adventure in Sesimbra, which borders the marine preserve that hosts a plethora of marine species.**

Home to over 1,400 species of marine life, the Professor Luiz Saldanha Marine Park was included in the

Arrábida National Park in 1998 and is completely protected from all human activities, allowing it to recover from previous degradation. No fishing, boating or even diving is allowed in this area.

Just next to this protected area is the village of Sesimbra. While fishing, boating and diving are allowed here, it reaps the benefits of being adjacent to such a successful marine reserve and where the diving is known to be excellent.

While preparing to attend and speak at Diving Talks 2022 on the Tróia Peninsula, I decided that if I was going all the way to Portugal, I might

as well dive there too. While the Azores and Madeira are better known for diving, Arlindo Serrão, of Portugal Dive and one of the founders and organizers of Diving Talks, suggested I check out some of what mainland Portugal has to offer. This sounded like a great idea, especially because I usually like visiting places that are not necessarily on everyone's radar.

Soon enough, my plane landed in Portugal, and I was immersed in a fantastic weekend of listening to some of diving's most influential speakers as well as interacting and chatting with them. Diving Talks, in its second edition, was a refreshing

Pouting fish (*Trisopterus luscus*) in arch at Pedra do Leão (above); Octopus at Ponta da Passagem (top right); Free-swimming *Polycera quadrilineata* nudibranch (top center); Goby (center); Mating *Felimare cantabrica* nudibranchs (previous page)





Sunset view from the balcony (left) of my room at Four Points by Sheraton Sesimbra (marriott.com); Four Points by Sheraton Sesimbra (below); View of the harbor at Sesimbra (bottom right)



Selfie, after my talk at the 2022 Diving Talks on Tróia Peninsula, located south of Lisbon in Portugal



event focusing on 20-minute talks by speakers and lots of conversation afterwards. Coffee breaks, lunches and dinners were my favorite moments, as the conversations continued sometimes late into the night. While I still feel the shadow of the pandemic on the dive industry, the weekend was a lovely bit of sunshine showcasing the inspiration and passion of divers and shone a bright light for the future.

**Sesimbra**

As the whirlwind of talks about diving concluded, I headed to Sesimbra, a short car ride north from Troja and only an hour's drive south of Lisbon, and absolutely melted into the comfort of the Four Points by Sheraton Sesimbra hotel. Sitting high above the village, my room had a gorgeous view of the pool and onwards to the ocean. I had a day of relaxing and recovering at the hotel and catching up on work.

It started with the elaborate breakfast buffet that came with the room; it had eggs, meats, cheeses, pastries, fresh juices and more. Later, after my work was done, I enjoyed a nice, quiet dinner at the same restaurant with a salad and burger and an extensive local-wine list. The next morning (after indulging again in the lovely Four Points breakfast), Maria from Anthia Diving Center picked me up and brought me to the dive shop. Close to the harbor,

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Beach in front of Sesimbra (above); Divers returning to *Jori IV* (top center); Welcome pastries at Four Points by Sheraton Sesimbra (left), including Portugal's famous *pastel de nata*, an egg custard tart (left side of image)

Anthia Diving Center's storefront (above); *Luisella babai* nudibranch on reef (right); *Cetus*, one of Anthia Diving Center's dive boats (left)

the shop has a storefront, classroom, full changing room with showers and a staging area to prepare dive gear. Due to airline luggage restrictions, I had left behind my wetsuit and fins, something I almost never do. I had seen online that they offered high-quality rental gear, including 7mm semi-dry wetsuits. Maria and dive guide Pedro helped to equip me with a wetsuit and fins, and I set up the rest of my gear and loaded it onto a trailer.

It was a weekday, so the shop was slower than it would

be on weekends, with only a few other divers present. After loading gear, we were told to climb on the trailer and hold on. A creative way to get to the dive boat, with the trailer carrying us, pulled by a 4x4 Mule utility vehicle. (One could easily walk the short distance to the boat if desired, or ride in a golf cart that followed, but I liked the small adventure of riding along with my gear.) A large inflatable dive boat, the *Jori IV*, was waiting for us and we passed gear that was secured in the center. The boat

departed, heading south out of the harbor.

### Jardim das Gorgónias (Garden of the Gorgonias)

Our first dive site was only a short ride from the harbor and, with the help of the crew, we geared up and backrolled into the water. I was thankful for the 7mm semi-dry suit as the 16°C (61°F) water surrounded me, and I felt a twinge of regret for not bringing my drysuit. But the cold was forgotten as we reached the sea floor and an octopus peeked out from a

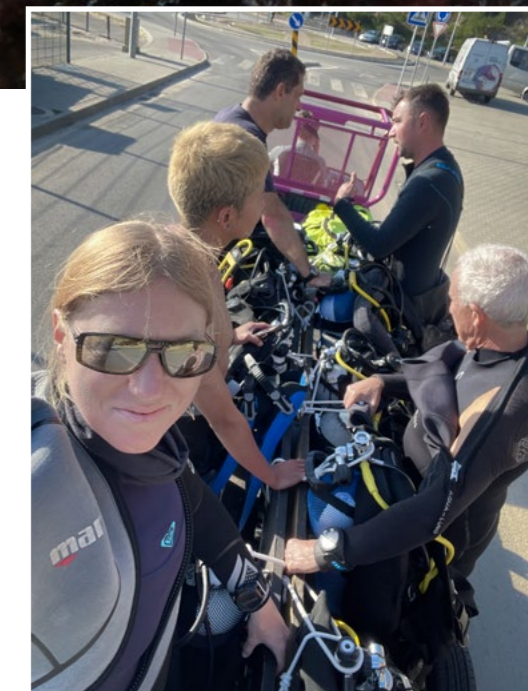
hole dug under the concrete block securing the mooring line. It had shells stacked outside its den from previous meals and its eyes peered up at us.

We continued along a reef area with kelp growing on all the rock surfaces, providing hiding places for fish within. Very quickly into the dive, the octopus count shot up to four, with two possibly courting each other. They were both fully out on the reef with tentacles curling and moving all around, in an elaborate octopus mating dance.

As the dive site name suggest, lots of colorful gorgonias dotted the area and gave bright hits of color against the green blades of kelp. When we returned to the mooring line, the octopus was no longer home; it probably got tired of divers observing it and so we headed up the line back to the boat.

### Pedra do Leão (Lion's Stone)

Back on the boat, we moved only a short way and dive guide Harriett tried to show



Riding in a trailer to the dive boat—be sure to hold on!



School of seabream in arch at Pedra do Leão (above); Pouting fish (*Trisopterus luscus*) with diver at Pedra do Leão (top right); Octopus at Jardim das Gorgonias (left)

arch that was almost blocked with schools of seabreams and pouting fish. As we swam through, the fish parted and moved out and around the arch

After changing out of my wet-suit into street clothes, I walked down to the center of Sesimbra. Cobblestone streets twisted and turned with small cafes spreading out onto both the sidewalk and streets with the beach directly in front. It was almost empty apart from a few sunbathers, but I had been told it would be packed in the summer. I enjoyed a leisurely dinner as the sun went down, ready for the next day of diving.

**River Popa (Stern of the River Gurara)**  
With another blue bird day, we headed north on the boat for

me the shape of a lion in the limestone cliffs in front of us. I am not quite sure I actually saw it, but I agreed, and under the lion-shaped stone was our next dive site. This site had more kelp than the last dive and we followed a path leading to a large

in flashes of silver. Back on the boat, we headed back to the harbor, but paused as a group of bottlenose dolphins went past us. Returning to land, the blue sky was still cloudless and the air temperature around 21°C (70°F).



Divers swimming through an arch at Pedra do Leão

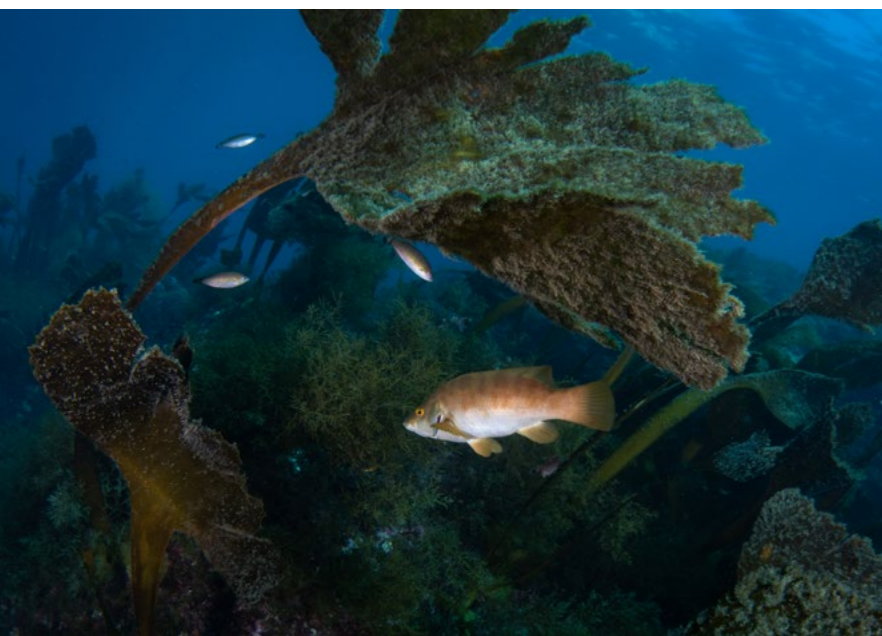




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Wrasse and kelp (above), school of pouting (top left), and European conger eel nestled cozily in a pipe (left) on the River Popa wreck. It seemed as if conger eels were living in any circular opening they could fit into (right). Ballan wrasse (*Labrus bergylta*) with kelp (far left)

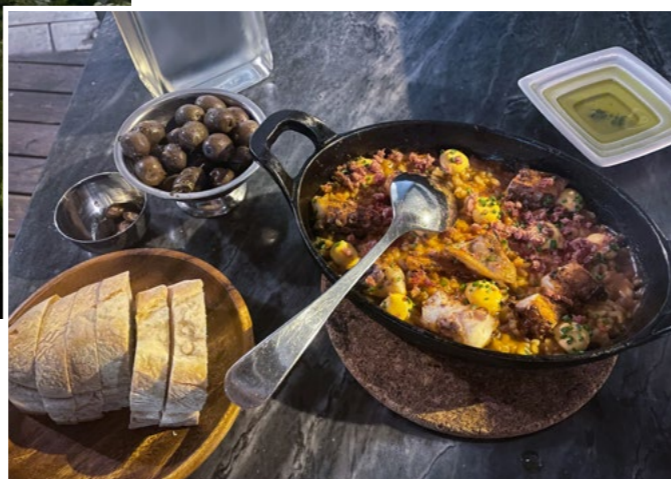
a wreck dive. The MV *River Gurara* was a Nigerian cargo ship headed to Britain that got caught in a storm and sank in 1989. It broke in two and the stern section sits at about 28m (91ft). The bow section can

also be dived but is several hundred meters away and a bit deeper. Upon descent, the water got a bit darker and a little colder, and my first view of the wreck was a debris field and a giant

grouper! It was too fast for me though; as I tried to get a shot, it disappeared under the wreckage. Kelp was growing on much of the ship and it slowly swayed back and forth with the water movement, almost

making it look like the ship was moving, like it would if it were still floating on the surface. Before the dive, guides Andrea and Harriet told me about a conger eel that lived in a pipe just inside one section

of the wreck. That sounded like a great photo op, but I did not know if it was something that was always there, or just if one got lucky. At a break in the wreck, they led me inside and there it was—its body



View of Sesimbra from Castelo de Sesimbra (above); Delicious blackened swordfish and potatoes at the fish market (top right); Scrumptious octopus rice dish served with bread, olives and olive oil, at Restaurant O Batel in Sesimbra (right)

concealed by the pipe, with just the face sticking out. Later, they found another one in a port-hole. I guess if you are a conger eel, you would find any circular object to live in.

For our second dive, we went back to Lion's Stone and found more octopus, a large stingray and tons of nudibranchs. There were so many I decided that I would shoot macro the next day and try to get some images of them. Of course, when chatting with the dive guides, they told me how the next day would also have lots of rock formations and arches that were great for wide-angle as well. Alas, the decisions of a photographer are never easy.

**Fish market**

Back at the dive center, Alain so kindly invited me for lunch with some of the staff. Close by was the local commercial fishing market, an area not open to tourists. A restaurant inside the market area served the freshest of fish. While I am not usually a fish-eater (they are my photo subjects, not my dinner), I will eat it on occasion. Sesimbra was traditionally a fishing village and is still very much one today. The spot was known for its seafood. With the commercial market right there, the fish we were eating were likely caught in the area that day.

You can usually assume a restaurant is good if it is busy, and here, at almost 4 p.m., it was

still packed with locals having lunch. The meal started, as most in Portugal do, with olives and bread, and later, blackened swordfish with potatoes and salad arrived. Nothing fancy, but delicious, and the company was great. Anthia Diving Center is a family-run business, and I could tell that all the crew and staff felt like family. I felt honored to be invited into that family for a little while during my visit.

**Gruta do Arcanzil (Cave of Arcanzil)**

The next morning, with macro lens ready, I immediately reconsidered my choice in lenses as we descended in the best visibility I had seen so far (over least

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CLOCKWISE: Scorpionfish; *Felimida purpurea* nudibranch; Colorful marine plants covering rocky surfaces; Divers at Gruta do Arcanzil; Forkbeard; An octopus looks out of its home, surrounded by discarded shells from previous meals, as fish swim by overhead unaware.

15m/50ft), and below us was a forest of kelp and other marine vegetation. We followed Pedro, our dive guide, into a canyon-like rock formation, which was an eroded crack in the cliffs of the shoreline.

But not even a minute into the dive,

I saw mating nudibranchs on the wall. It was the right lens after all! Searching the wall for macro critters reminded me of being in a dense forest with rocks covered in moss, but here the rocks were covered in algae, sponges, seaweed and other marine plant life—with

nudibranchs just waiting for you to spot.

I soon fell behind the group and ran into a diver duo that were also diving with a camera and going slow. We grouped up, pointing out nudibranchs and other critters to each other. (It is so nice to find like-minded

divers). They were both dive instructors from Portugal, and whenever I pointed out a nudibranch, I was nervous I was showing them species that was super common to them (but new to me). Back on the boat, they said there was at least one that was an

exciting find, even to the locals.

There were also scorpionfish, gobies, blennies and a forkbeard, which was entirely new to me. With a barbel on the chin, it kind of looked like an evil sock puppet. I snapped a few photos and moved on.





Morning sunbeams shine through the kelp at Ponta da Passagem (above, left and right); Lobster on reef at Ponta da Passagem (top right)

**Tasca do Isaías**

At the same time as I was in Sesimbra, there was a TDI Instructor Trainer Workshop taking place with some of the people I had met the week before, at Diving Talks. They graciously invited me to dinner, and we met at Tasca do Isaías, a local spot the crew at Anthia Diving Center had also recommended.

On offer was fish. That was your option, just fish. There was no menu, only a board with several fish choices. I was told it was best to just order what they recommended. So, letting the group dynamics take over, I just sat back and tried whatever arrived. Similar to my lunch the day before, it was the freshest fish pos-

sible, cooked over charcoal to best release the flavors.

To be honest, I often do not even like fish, the rare times I have eaten it. And when one considers the process of fish being caught and sent around the world before being consumed, it is easy to see where it does not make sense (nor does it make for the best dinner). To that end, I find that eating "local" is the best way to go, and this was as local as it gets. It was a fantastic evening of food, drinks and conversation.

**Ponta da Passagem**

The next morning was a Saturday, and I had been warned that weekends were busier, but there was

something great about a bunch of divers getting ready to do what they love. The excitement and anticipation spread through the air.

Returning to my wide-angle lens with promises of more geological structures under the cliffs to pho-

tograph, we backrolled off *Cetus*, Anthia Diving Center's larger boat, in a postcard-perfect scene of calm, blue water and sun-soaked yellow cliffs rising out of the sea. The underwater scene was just as pretty, and this site had the most abundant kelp





Sesimbra

School of salemas porgy on man-made concrete breakers (above), and wrasse and anemones on a small wreck (top right), at the Batelão dive site



John Dory fish

forest I had ever seen. The water was still very clear, and the morning sun shone its rays off the cliffs, into the water, and through the kelp.

Very early into the dive, I noticed a tiny yellow and white nudibranch on a blade of kelp (of course, just to remind me that I could have been shooting macro) and then I noticed them all over. I tried to get a shot, but using a fisheye lens to photograph nudibranchs generally just does not work. Harriet caught my attention and pointed under the swaying kelp, down at their holdfasts attached to the rocks. There was an octopus out of its hole and swimming along the bottom.

**Batelão (Barge)**

The boat moved back near the harbor for our next dive, and the site was just outside the man-made concrete

breaker jetty or sea wall. We followed the line down to the small wreck from which the dive site gets its name, and I loved the way the small ship had been covered with marine growth. Small fish darted around anemones and algae.

We moved away from the wreck and over to some concrete structures, which reminded me of giant jacks from a children's game. The structures were used as a break wall to keep the harbor calm. These structures were covered in marine growth and teeming with life.

At no deeper than 6m (20ft), I was snapping photos left and right, as there was an octopus and then a cuttlefish and then... a John Dory! Flat and circular, this fish had long dorsal fins that looked like a bright yellow mohawk gone wrong. I spent a lot of time photographing this strange-look-



ing fish, which I have only seen once or twice before.

Back on land, it was time to rinse the dive gear and pack up. Many businesses claim to treat you like family, but Anthia Diving Center certainly lived up to that standard. Friendly faces and genuine inquiries into how things were going were carried out



Comber fish (*Serranus cabrilla*) with isopod fish parasites; Cuttlefish (left)







by the whole staff. Plus, on some days, there was Mel, an adorable furbaby scuba mascot more than willing to accept belly rubs and petting. I left feeling like I had made new friends.

**Castelo**

On my last morning in Sesimbra, I got up with the sun to climb the stairs to Castelo de Sesimbra, a medieval stone castle high above the village and port. As I made my way, I had only seen one other person (and his dog) walking along the path, and when I reached the top, I was able to

wander around the grounds by myself and take in the views of the lovely city below.

Returning to the Four Points hotel, I indulged in one more breakfast, taking my time, as I had no dive boat to catch. I leisurely packed and made my way to Lisbon via an inexpensive Bolt (Europe's version of Uber or Lyft), which took about an hour.

After checking into my Lisbon hotel, I set out with no destination and wandered the cobblestone streets that ascended and descended as much as they twisted and turned



Stairs descending from Castelo de Sesimbra (top left); Castelo de São Jorge with Lisbon in the back (top right); View from Castelo de São Jorge (center inset); Afternoon bite with *porto tonico*, a common drink to see people sipping in the afternoon at cafés and restaurants before dinner (above left).

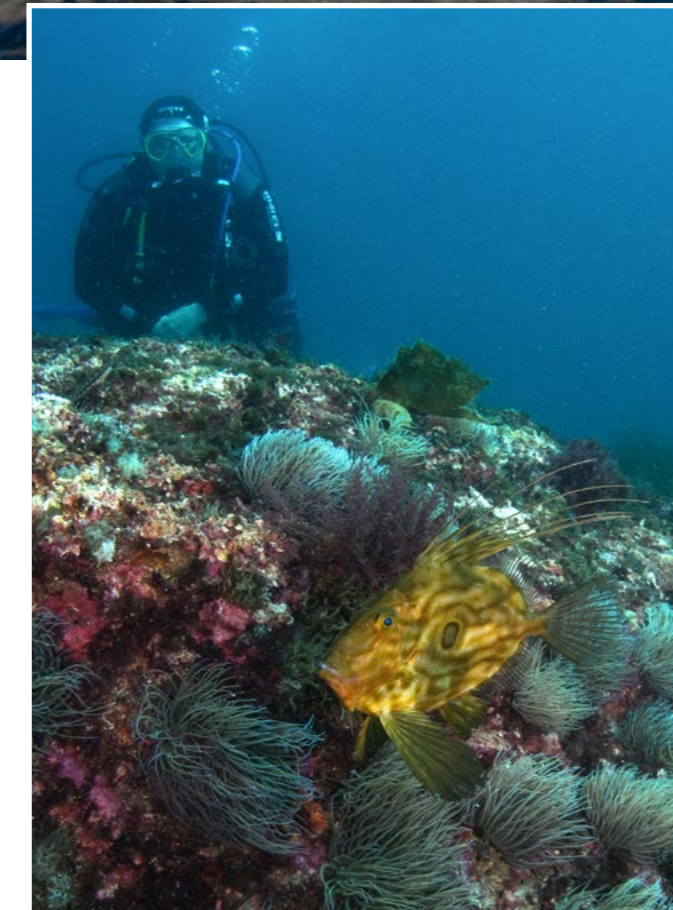


Dining al fresco at Tasca do Isaias (above) What is on the menu? Fish (left)



Anthia Diving Center, with the cute French bulldog Mel (below) ready to welcome divers (or sleep though the welcoming).

## Sesimbra



Divers returning to Anthia Diving Center's boat, *Cetus* (above); Ballan wrasse (*Labrus bergylta*), with a Mediterranean rainbow wrasse above it (top center); Dive guide Harriet with a John Dory fish (left); Location of Parque Natural da Arrábida and Sesimbra in Portugal (right)

with tourists. It sunk in then how lucky I had been to explore the Sesimbra castle all on my own that morning. Seeing the lovely sweeping views of Lisbon from the perch of Castelo de São Jorge showed me the layout of the city and the density of buildings and colorful red roofs.

Continuing to wander, I stopped by one of the many pastry shops for a coffee and Portugal's famous *pastel de nata*. These delicious egg custard tarts brought back memories for me of Macau, where I first sampled them. Remnants of colonial Portugal live on through the food still popularly served in those places.

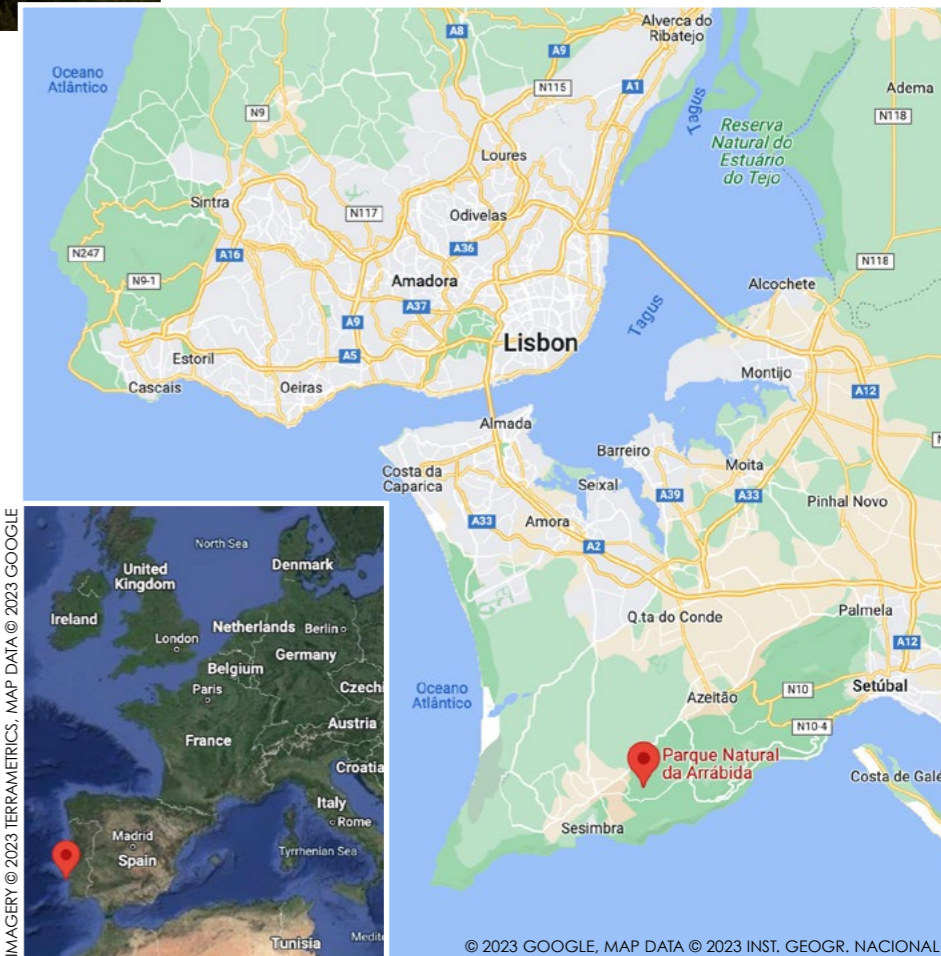
Walking through the Alfama neighborhood, I saw familiar sights of restaurants and cafes spilling out the doors into the streets. People were sitting at tables in the shade of umbrellas, looking completely relaxed with

various glasses of wine, beer or Aperol spritz. I stopped for a sandwich and a *porto tonico*, which came in a giant glass with whole slices of lemons and a cinnamon stick. This refreshing drink used white port mixed with tonic water, and was great to cool down with, in the afternoon sun.

As my trip was coming to an end, I reminisced about how nice it had been. Good diving, food, drinks, lovely sights, and absolutely fantastic people. Portugal seems to value the importance of every moment and how you spend it. I look forward to the next Diving Talks, and hopefully, a bit more diving around this beautiful country. ■

Special thanks go to Anthia Diving Center and their staff ([anthiadiving.com](http://anthiadiving.com)), Four Points by Sheraton Sesimbra ([marriott.com](http://marriott.com)), and Arlindo Serrão of *Portugal Dive* and *Diving Talks*.

American underwater photographer, dive writer and regular contributor Brandi Mueller is a PADI IDC Staff Instructor and boat captain living in Micronesia. When she is not teaching scuba or driving boats, she is most happy traveling and being underwater with a camera. Mueller's book, *The Airplane Graveyard*, featuring her underwater photos of forgotten American WWII airplanes at the bottom of the Kwajalein Atoll lagoon, is available at



[Amazon.com](http://Amazon.com). For more information, visit: [brandiunderwater.com](http://brandiunderwater.com).

*A Fossil Atoll*

# Lifou

Text and photos by  
Pierre Constant

*in New Caledonia*





Lifou's Kiki Beach, as seen from the cliffs (above); Coral islet at Luengoni (top right); Frangipani flowers (centre inset); Carved tide pools at Cap des Pins (right); Crown of gorgonians under the sun at l'Arche dive site (previous page)

**Stretching over 500km, the Loyalty Islands of New Caledonia in Melanesia are a tropical oasis in the Pacific. It is here that one can experience the beautiful underwater world of Lifou, home to a diverse array of marine life. Pierre Constant shares his adventure there.**

It was an early morning departure for the *Betico 2*, bound for Lifou Island. Check-in was at 6 a.m. at the ferry terminal in Noumea, the main port of New Caledonia. With the maxi-

mum luggage allowance at 15kg, plus a 6kg carry-on, I had to come one day early to bring my 42kg of excess luggage as cargo (comprising dive gear and underwater photography equipment). As a diver, there is no other option! Flying also limits you to 15kg max. Depending on sea conditions, the long ocean crossing to reach Lifou, in the Loyalty Islands, takes seven hours, as the ferry sails to Mare Island first. Finally, the *Betico 2* docked at Wé, on the eastern coast of Lifou Island, shortly before 2 p.m.

After an initial visit in March 2022 (see **issue #112**), this was my second time in New Caledonia. Back then,

I missed out on the Loyalty Islands, due to a lack of time. A tall and slim, long-haired Frenchman from Brittany, Pascal of Wé Plongée dive centre, was waiting for me. The transfer to his country home was in an old grey Dacia Logan car, with dents all over it, looking very local, indeed. In this remote land, most cars seem to have suffered some kind of damage. Lifou was to be my home for more than two weeks.

Located between 19°81'66" South Latitude 165°58'33" East Longitude (Astrolabe Reef) and 22°36' S 168°57' E (Walpole Island), the Loyalty Islands stretch over a distance of 500km from

the northwest to the southeast. They are separated from the mainland by the Coral Sea, which is 100km wide and 2,000m deep. In order, from the southeast to the northwest, are the Walpole Islands, Mare (820 sq m and 130m high), Lifou (1,115 sq km), Ouvéa (160 sq km), Beautemps-

Beaupré Island and Astrolabe Reef, which is underwater.

**Geology**

The Loyalty Islands are an ancient intra-oceanic volcanic arc of the Eocene age, resulting from the subduction of the Australian Plate under the Pacific





Luengoni cave (above); Stencilled hands, dated to ca. 3,000 years ago, in Fetra He cave on Lifou Island (right)

Plate. It became a hot spot during the Oligocene and Pliocene periods. The construction of the atolls, between the Pliocene and the Pleistocene, was made at various times by repetitive subsidence.

Ultimately, the collision of the Loyalty Ridge with the New Hebrides (Vanuatu) arc during the Pleistocene created a tectonic uplift with the emergence of the atolls. This was due to the convex rise of the oceanic crust of the Australian Plate.

Twenty-five million years ago, Lifou was a volcanic island with a fringing reef. Five million years ago, despite new eruptions, the volcano was eroded. Three hundred thousand years ago,

the sea level was 120m above actual level and the atoll had an inner lagoon. Then the ocean receded. The Riss-Würm ice age 15,000 years ago, with the sea level 100m below, saw the formation of caves and underground rivers. Most of these are flooded today, but still active.

Made of compact limestone, the barrier reef is 3km offshore. The centre of the island is flat, and the old lagoon is filled up with crystallised limestone, sand and conglomerates. In the north, the plateau is 25m high and the

reef crown rises up to 90m. In the south, the plateau is 40m high and the crown rises up to 110m. The limestone formations have a “dip” of 5 to 10 degrees to the northwest. The Loyalty Islands are consequently tilted.

The biggest and oldest caves in Lifou—Hnanawei, Wanaham and Inegoj—would have been formed between 190,000 to 130,000 years ago. The most



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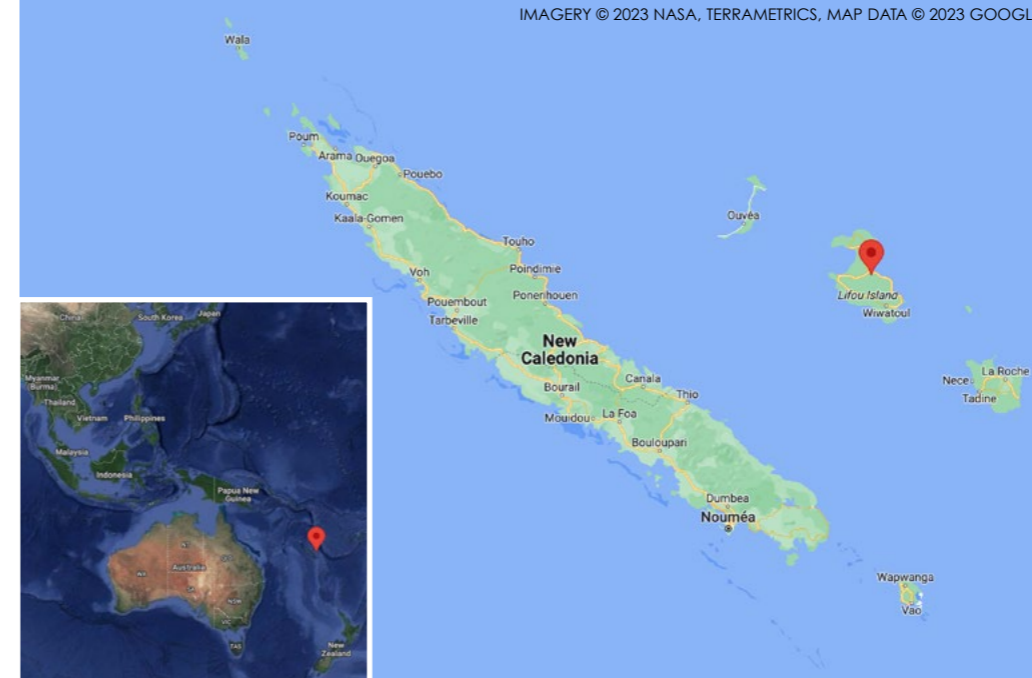
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Wé marina (left); Young boy jumping into the heart of Lifou at Peng Beach (above); Traditional Kanak "case," or hut, at Luengoni (centre); Caved wooden totem at Easo (right); Location of Wé in Lifou island on map of New Caledonia and regional satellite map (top right)

**History**

As for the human history, Austro-nesians came to Melanesia in 3000 BC, from Southeast Asia. The first migration of humans from north Melanesia (Admiralty Island) to New Caledonia took place ca. 1700 BC. Lapita pottery found in Koné (on New Caledonia's western coast) was dated to 1400 BC.

From the 16th to early 19th century, Tongan and Samoan migrations to Lifou occurred, possibly from Vanuatu too. If Captain James Cook discovered New Caledonia on 4 September 1774, it was only

in the late 18th century that two British ships landed at Lifou Island. The Loyalty Islands were named after one of the ships. In 1829, French navigator and explorer Dumont d'Urville rediscovered the Loyalty Islands and drew a definitive marine chart. Whalers had already been visiting the place since 1810.

**Dive operator**

Based at Wé marina (near the port where the *Betico 2* arrived), Wé Plongée has been in operation since 2018. Its founder, Pascal, set up the dive centre in a container, which

also acted as a bakery since he was baking bread every day!

He is a French FFESSM instructor, as well as PADI and SSI instructor, and he conducts "baptêmes" (i.e. Discover Scuba) experiences for beginners, and also dive training at different levels. An inflatable zodiac is used for outings in Chateaubriand Bay. Most of the dive sites are conveniently five minutes away. Permission to dive a specific area is granted by

intense karstification occurred during the Riss-Würm glaciations 100,000 to 150,000 years ago. No surface rivers exist, as everything flows underground.

Since heavy rains take place in February to March, during the rainy season, part of the rainfall gets stocked in the underground nappe.

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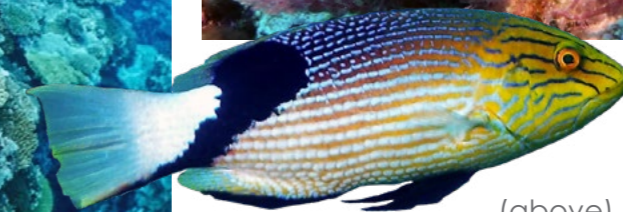
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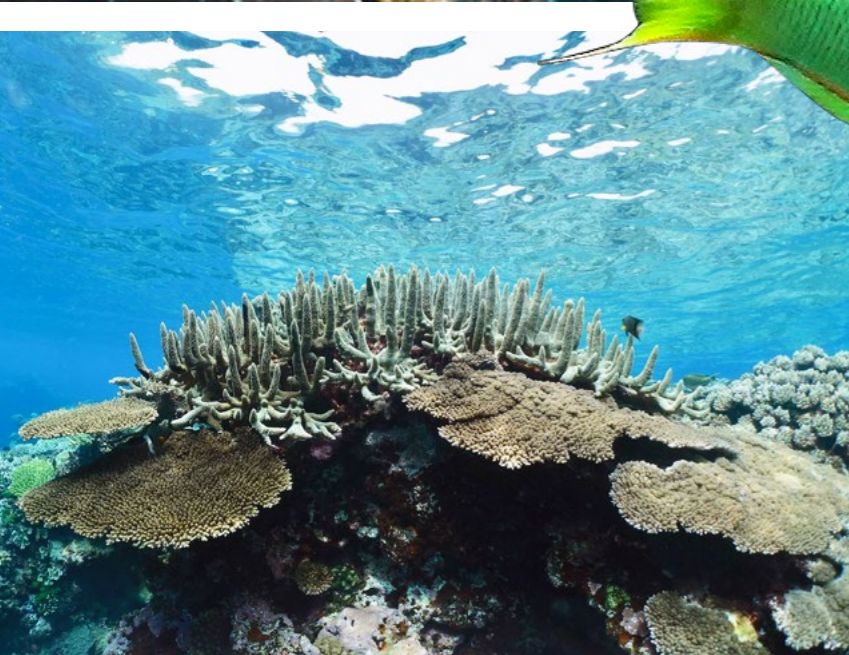
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Blackfin hogfish (left); Pink soft coral (above) and diver with mound of table coral (top centre) at Province Good



Star puffer at Province Good (above left); Eclipse butterflyfish and chevron butterflyfish (above right); Acropora table coral and other coral species at Province Good dive site (right)



the tribal custom authorities, a must for any activity in Lifou. The area outside the bay is reserved for traditional clans. Certified divers go for two dives in the morning, while Discover Scuba and dive training takes place in the afternoon.

**Dive sites**

**Province Good and Canyons.** On the first day, the plan was visiting Province Good and Canyons—pretty similar dive sites. The reef was mas-

sive, cut with numerous canyons, swim-throughs and tunnels, with white sandy patches around them. It was an atmospheric experience, since the fish life was so inconspicuous, i.e. there were no “big” things, no large schools of fish, and only the usual small reef fish such as butterflyfish, parrotfish, surgeonfish, the occasional angelfish, as well as the odd school of goldspot seabream (*Gnathodentex aureolin-eatus*). Colonies of orange-fin anem-

onefish (*Amphiprion chrysopterus*) with a white tail fin were rather common—as were Clark’s anemonefish (*A. clarkii*). The blackfin hogfish (*Bodianus loxozonus*) was a frequent sight. The pineapple sea cucumber (*Thelenotia ananas*) and giant clams (*Tridacna squamosa*) were seen on the sandy bottom as well.

**Tombant de la Marina.** On day two, Pascal took me to one of his favour-



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Staghorn and table corals at Canyons (above); Leaf coral stack at Province Good (top left); Sunset wrasse at Canyons (upper right)

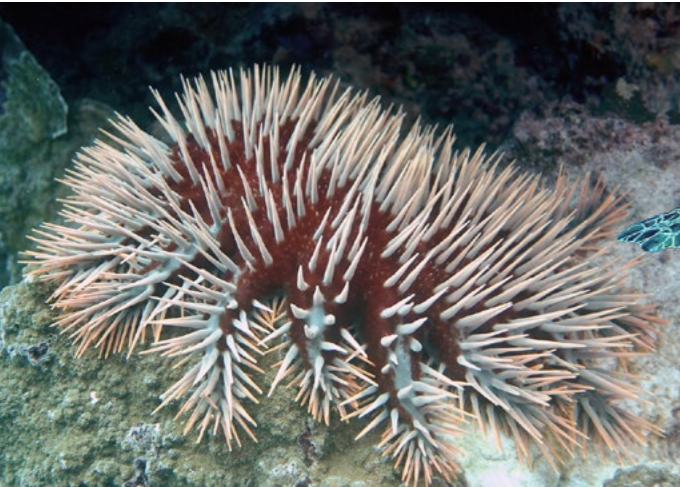


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Green sea turtle (above), lemonpeel angelfish (centre), crown-of-thorns starfish (left), and orange side parrotfish (lower right) at Tombant de la Marina; Mound of leaf coral (top left and right), Clark's anemonefish in anemone (top centre), Papuan scorpionfish (far right) and teardrop butterflyfish (bottom right) at Patates de Hnassé



Orangespotted filefish

ite sites, popular with beginners for being a training site. Tombant de la Marina was a small drop-off, with a maximum depth of 13m, onto white sand and scattered coral bommies. Marine life tended to be more conspicuous and included green sea turtles, whitetip reef sharks, Napoleon wrasse, bluefin jacks, coral grouper (*Cephalopholis miniata*), peacock

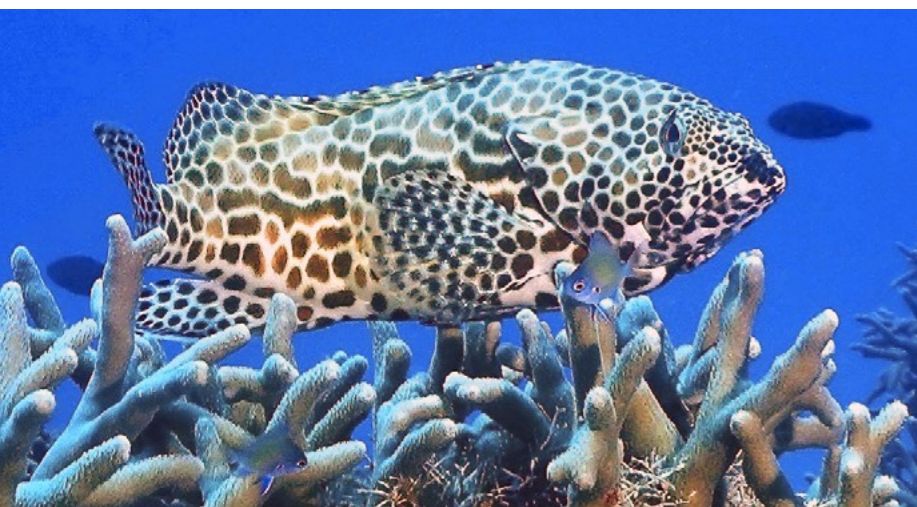
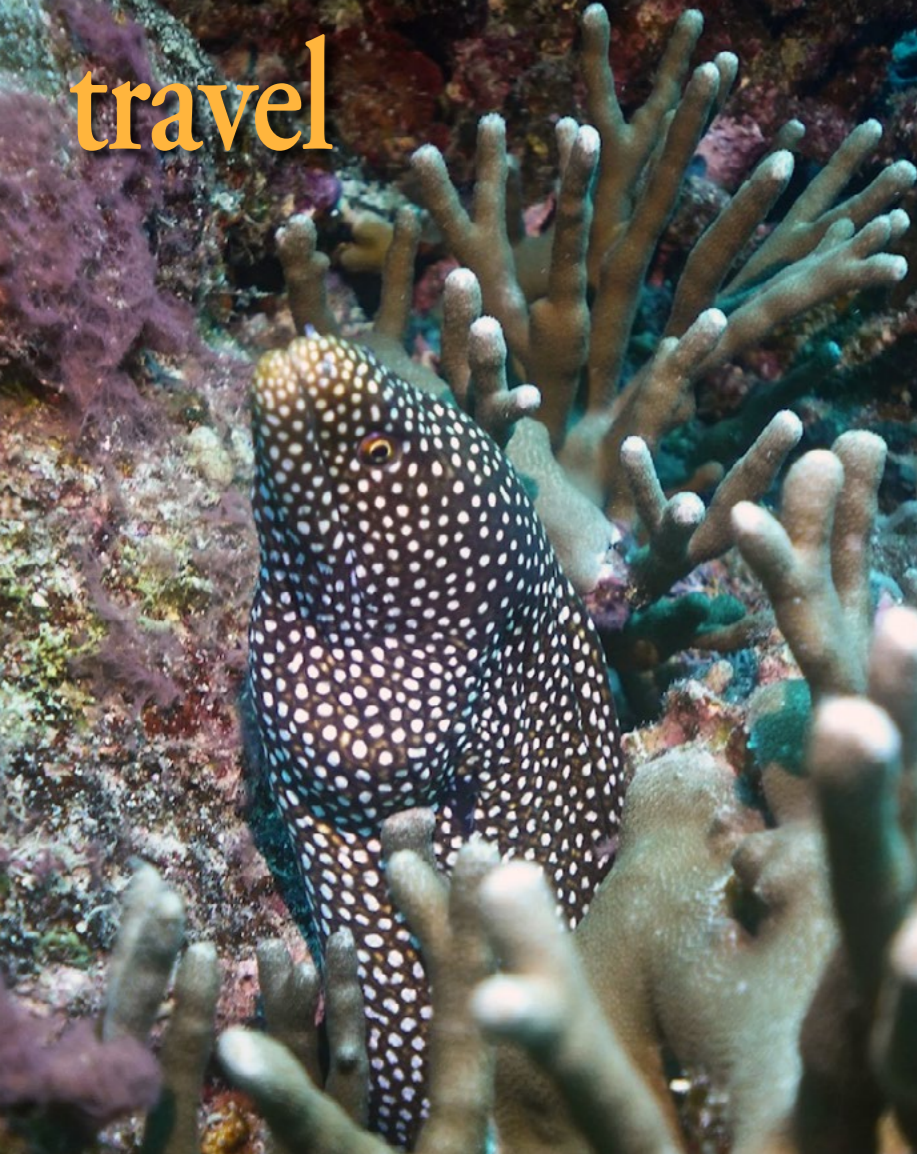
grouper (*Cephalopholis argus*), porcupinefish and guineafowl puffer. I came across a number of red and black anemonefish (*Amphiprion melanopus*), the devil scorpionfish (*Scorpaenopsis diabolus*) with yellow and red pectoral fins, the oval-spot butterflyfish (*Chaetodon speculum*), the yellow bar or yellowband parrotfish (*Scarus schelgeli*) and the lemonpeel angelfish (*Centropyge*

*flavissimus*), which was yellow with a blue ring around its eye. "The other day, during training, we saw a manta ray and even a hammerhead shark once," said Pascal enthusiastically.

**Patates de Hnassé** turned out to be rather pleasant. It was a collection of large coral bommies scattered







Whitemouth moray (top left) and semicircle angelfish (top right) at Bouée Verte; Blacktip grouper (above) and honeycomb grouper (left) at Patates de Hnassé

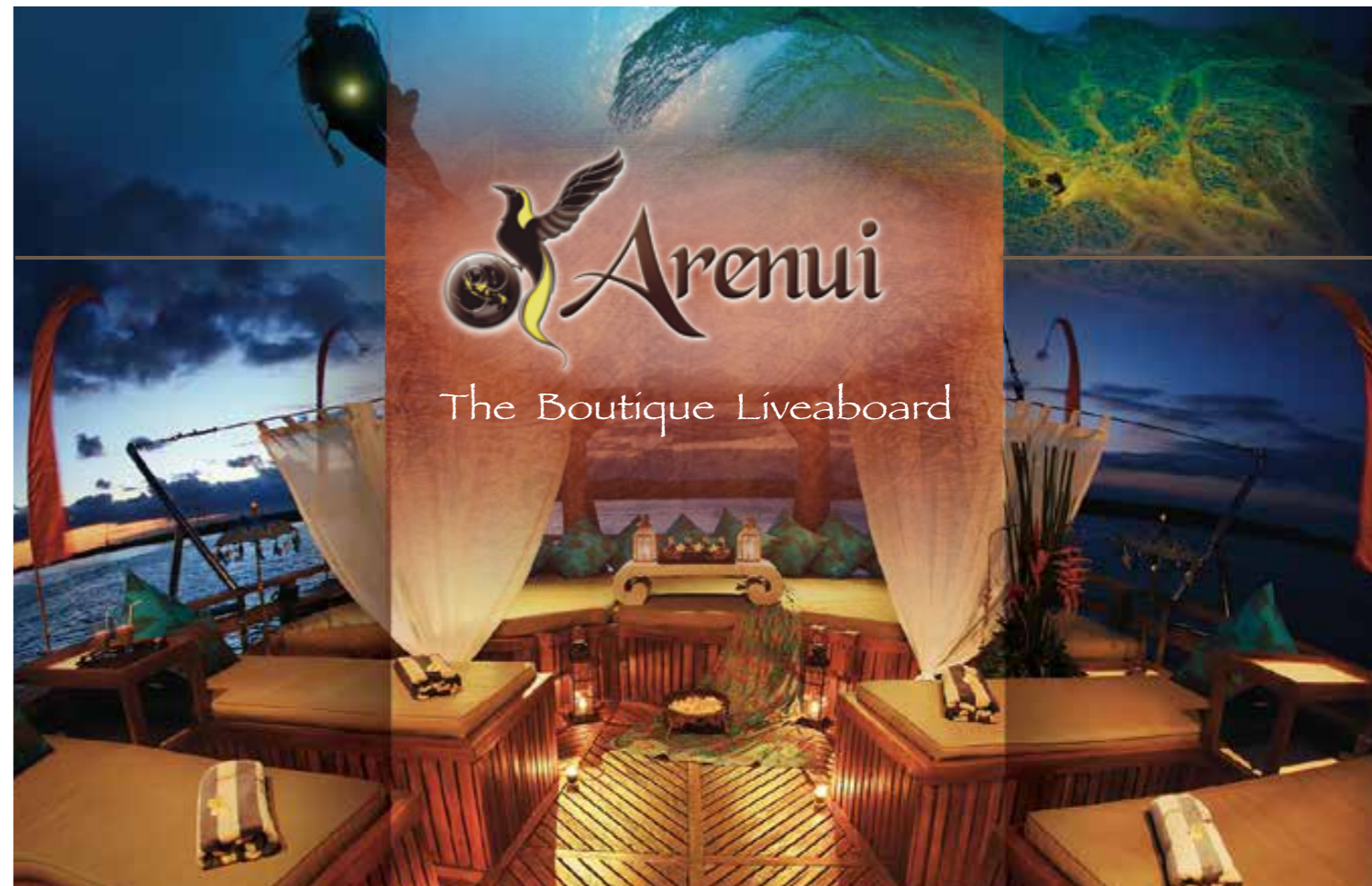
(*Chaetodon plebeius*). Twin-spot or spotted garden eels (*Heteroconger*

over sandy flats, with an outer slope open to the blue. Among other species, there was the tear-drop butterflyfish (*Chaetodon unimaculatus*), Papuan scorpionfish (*Scorpaenopsis papuensis*), chevron butterflyfish (*Chaetodon trifascialis*) and bluedash butterflyfish

*hassi*) adorned the sandy bottom in places. Of the grouper family, several were present, including the honeycomb grouper (*Epinephelus merra*), the blacktip grouper (*Epinephelus marginalis*), which was red with white blotches, and the lunar tail cod

or lyretail grouper (*Variola louti*). A wide patch of *Alveopora* coral, with little daisy-like polyps, was worth a look. Blue-spotted stingrays (*Neotrygon kuhlii*), clown triggerfish and the sling-jaw wrasse (*Epibulus insidiator*) appeared once in a while.

**Bouée Verte** was near the entrance channel, between red and green buoys. There were four aligned bommies, with a deep slope to the left, descending to 25m and beyond. Both



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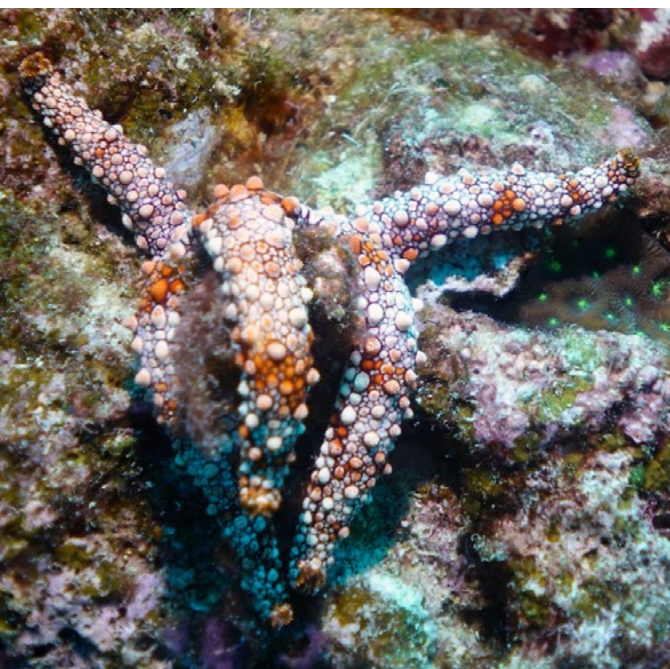
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Blue-dash butterflyfish (left) and Egyptian seastar (bottom left) at Patates de Hnassé; Entrance (below) to Luengoni cave (right and bottom centre); Inside the cave of the cannibals (far right) and skull (bottom right) inside Grotte du Diable



green and hawksbill sea turtles were seen, as well as whitemouth morays (*Gymnothorax meleagris*), which were pale brown with white dots, semicircle angelfish (*Pomacanthus semicirculatus*) and bigeyes (*Priacanthus hamrur*), which were crimson red in colour and had black eyes. The Egyptian seastar (*Gomophia egyptiaca*) caught my eye here.



**Caves**

Taking advantage of a day off, I decided to tour the northern end of Lifou and hired a car to do so, as visiting the whole island was an absolute must for me. The tar road first led me to Hnathalo. From then on, the road to Tingeting became quite challenging. It seemed to me that a pastime of some of the Kanak youth was to destroy the existing signboards—whenever there was one, that is! So, I found myself asking for directions all the time.



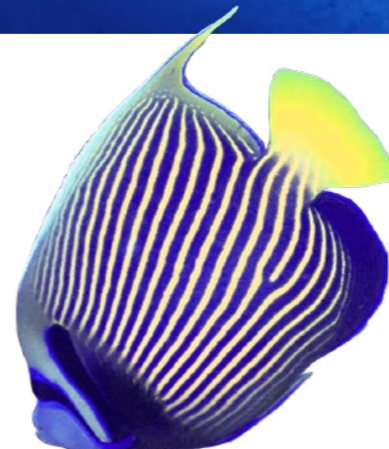
**La Grotte du Diable.** Finally, I found La Grotte du Diable (Devil's cave). The landowners, an elderly couple, asked for an entry fee of XPF2,000. A 10-minute trail through the forest led to the base of a cliff, the outer limestone crown of the atoll. After a bit of a climb up and down, I found myself in a heavily fractured cave with an open roof. A bunch of human bones lay in a cavity on the left, and a couple of human skulls grinned stoically on a rock shelf above. These were remains from cannibal times and

macabre rituals, I was told.

The number of caves in Lifou was impressive, some reaching over a kilometre in length, with the longest up to 8km. Having read about the presence of water in some of these caves, I decided to give diving in Grotte de Luengoni (Luengoni Cave) a try, which was located on the southeastern coast.

**Grotte de Luengoni.** As was appropriate, permission needed to be requested from the landowner. The





Red gorgonian (top left), bluefin jacks (top centre), emperor angelfish (centre); anthias and red gorgonian (top right), yelloweye leatherjacket (right), pyramid butterflyfish (far right), school of black snapper (left), and peacock grouper (bottom left) at Gorgones Reef

athletic-looking, self-proclaimed Kanak independentist Pascal Qazing ran tours to the cave and agreed to take me along one morning. For the benefit of tourists, Pascal had lit small candles inside the cave and partly around the inner lake where day visitors could

delight themselves with a dip in the cool waters.

With tank on my back, I submerged into the apparently

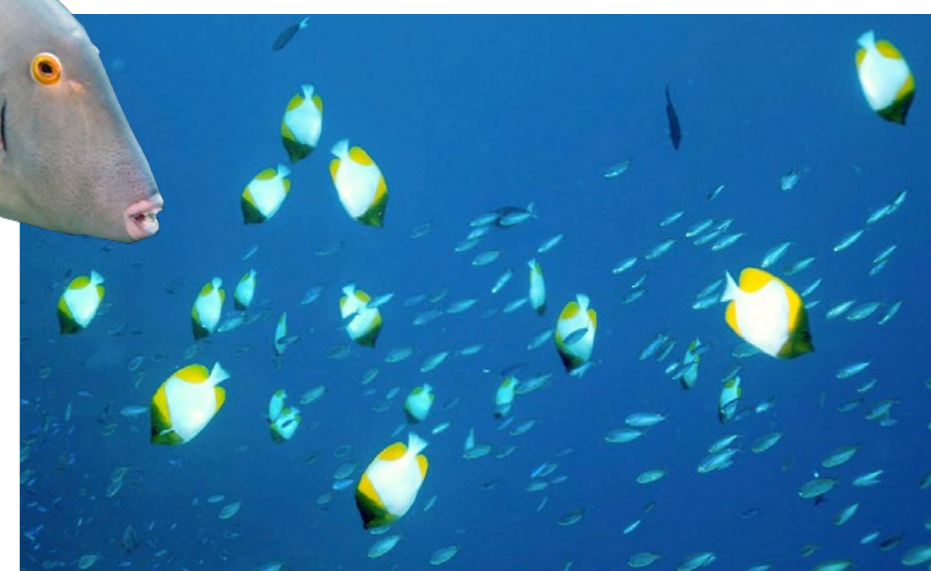
clear pool. The water temperature was 21°C. I followed a narrow tunnel up and down, with some stalactites and stalagmites—nothing really fancy, until I reached the halocline at a depth of 10m. Then, my camera's dome lens suddenly got foggy, which was condensation due to the higher temperature of the saltwater. So, I could no longer take photos. Annoyed, I turned around, with a gnawing dread that I may have flooded my camera.

**Inegoj Cave.** When inquiring about Inegoj Cave, I found the landowner sitting behind his table listening to the radio. The 78-year-old Cefo referred me to a man managing the area in town. I succeeded in getting an authorisation to visit the cave in a couple of days.

Unfortunately, it would turn into a “no go,” because the only guide to the cave was working in the yam fields and was not available! In Inegoj Cave, a 500m-long tunnel led to an underground lake that could have been promising, but hard to get to.

**More diving**

Following Pascal's recommendation, I made contact with a dive centre located in Easo, on the northwestern coast of Lifou. Run by friendly Bastien, a tough-looking bald-headed fellow, Lagoon Safaris had been in operation since 2013. The 7.5m fiberglass

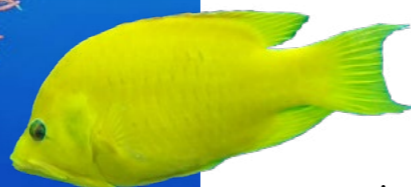
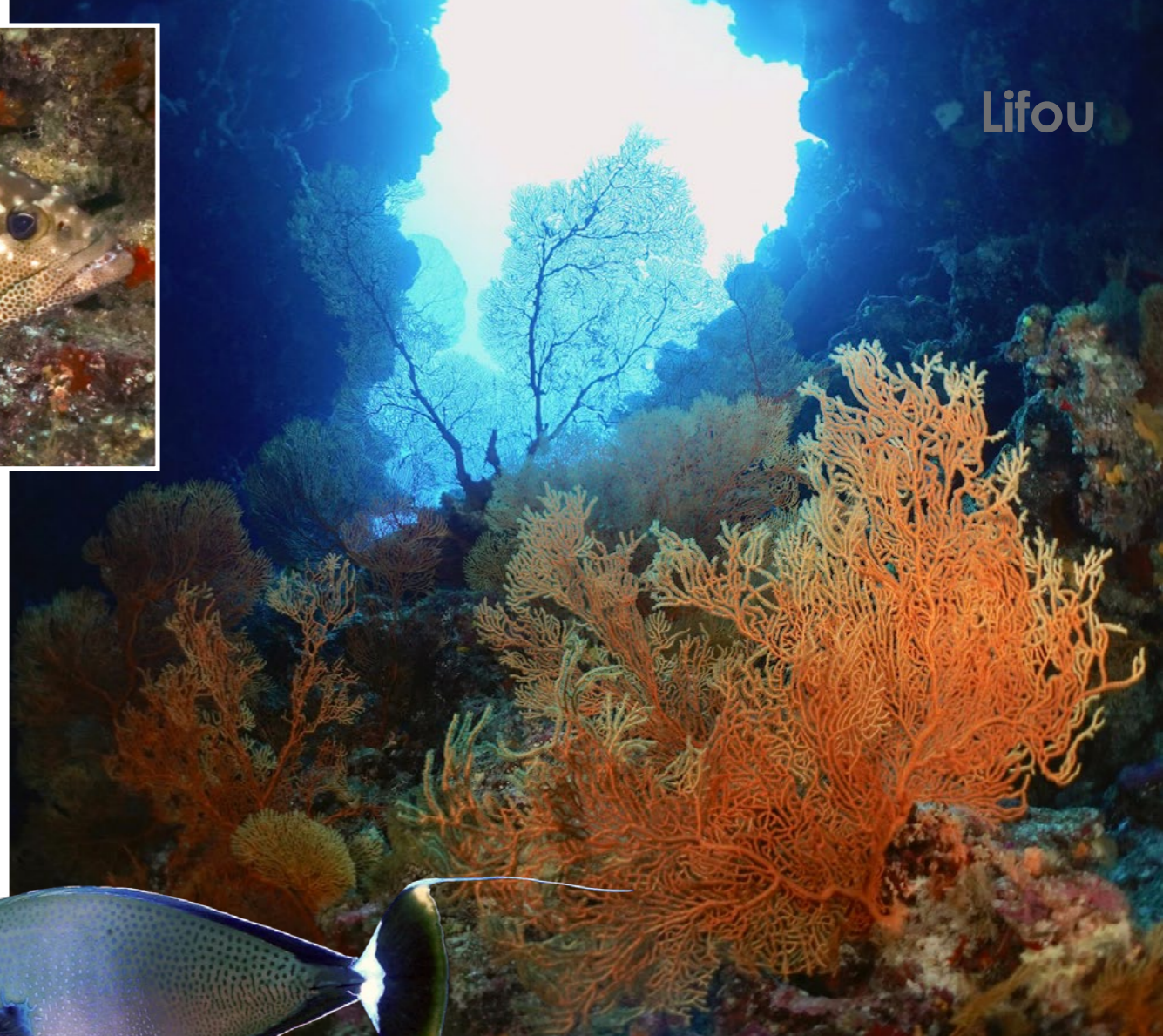


boat with a 175 HP outboard motor had room for eight divers. “We have about 25 dive sites to the north of Baie de Jinek, towards Cap Martin,” said Bastien.

**Gorgones Reef.** The diving here was strikingly different to that of the confined waters of Baie de Chateaubriand. Cobalt blue waters,



Gorgonians (left), juvenile and adult sling-jaw wrasse (below), and pineapple sea cucumber (bottom left) at Gorgones Reef; Camouflage grouper (above) gorgonians in an archway (right), bignose unicorn (lower right), and barred thicklip (bottom right) at L'Arche



dogtooth tunas (*Gymnosarda unicolor*) cruised by in the deep. The

occasional whitetip sharks were spotted resting on the sandy floor.



On the top of the pinnacle, I approached very closely to some sling-jaw wrasse (*Epibulus insidiator*), in both yellow phase and brown phase.

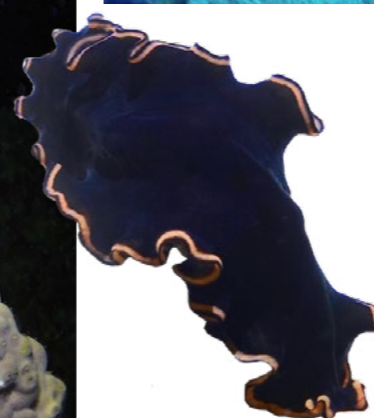
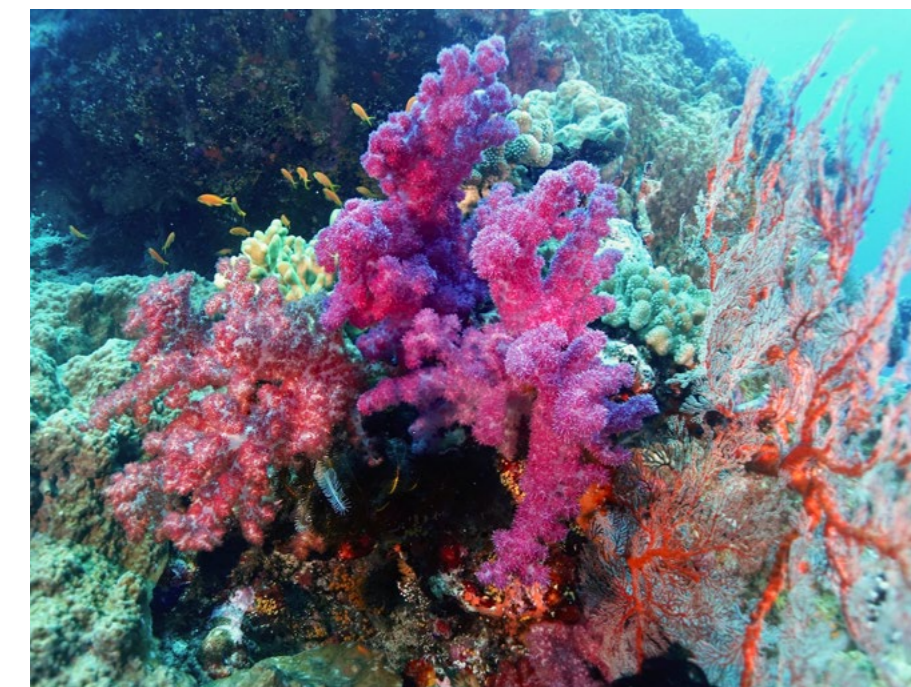
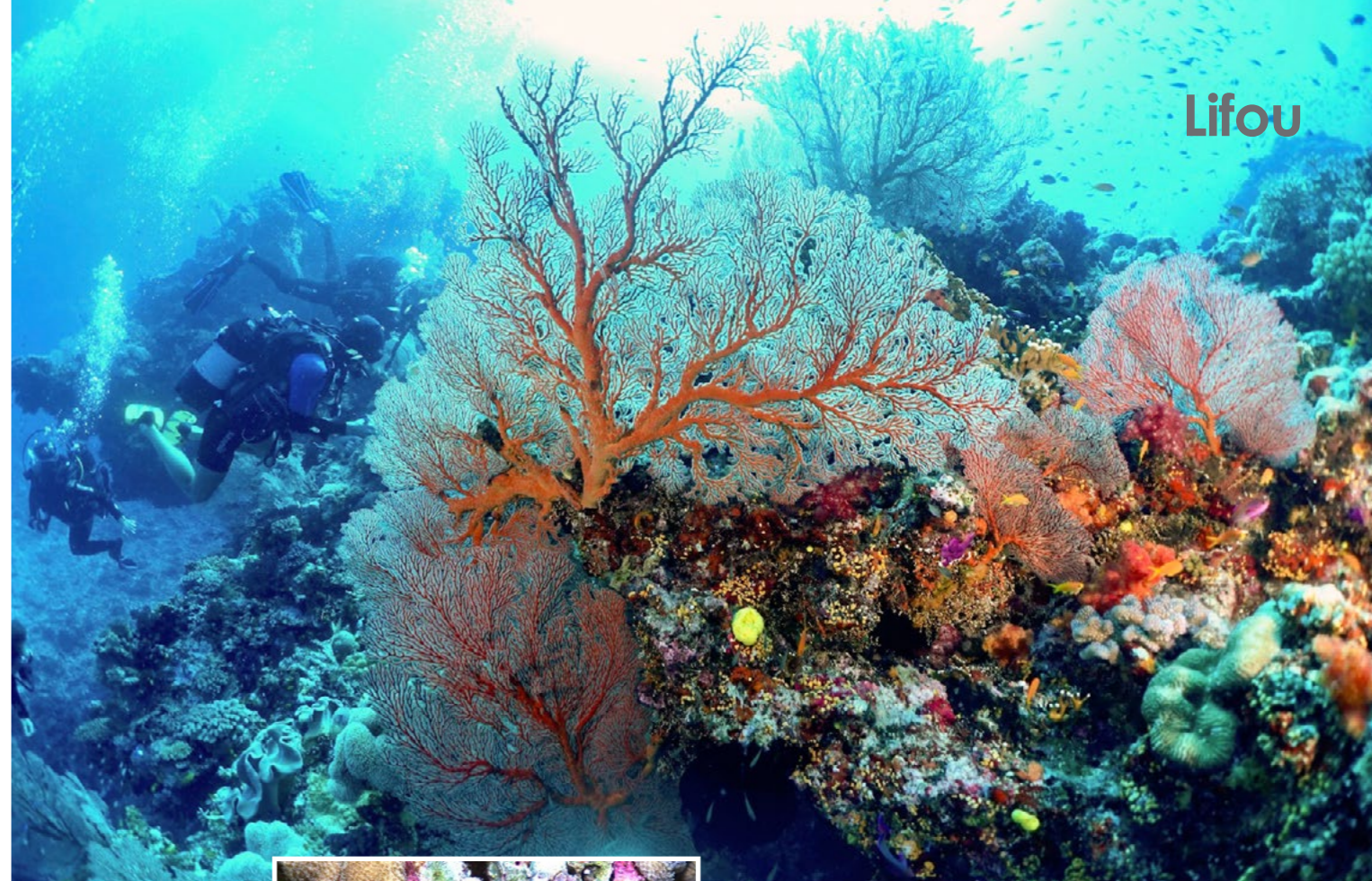


gin-clear visibility and plenty of fish welcomed me at Gorgones Reef. Open to the ocean and bathed with a regular south-to-north-flowing current, the site appeared to be very alive and exciting. Add to that a bonanza of gorgonians and soft corals, the health of the reef was vibrant. Two pinnacles rose from a depth of 30m-plus, on white sand. The water temperature was 27,5°C.

Bluefin jack paired with barcheek trevally or jack (*Carangoides plagiotaenia*), which were distinguished by the chevrons on their silver sides as well as a black dash on the gill cover. Red snapper (*Lutjanus bohar*) mixed with a large school of black snapper (*Macolor niger*), revolving close to the surface between the pinnacles. Some large

**L'Arche.** A stone's throw away, L'Arche was a gigantic archway decorated with enchanting red and gold gorgonians. Towards the top of the mound, three snubnose pompinos (*Trachinotus blochii*), which were silver with yellow fins, teamed up with a school of bigeye jacks, which were rather shy. A yelloweye leatherjacket or whitespotted filefish (*Cantherhines dumerilii*) showed up inquisitively. Peacock grouper (*Cephalopholis argus*) and coral grouper (*Cephalopholis miniata*) roamed everywhere. A camouflage grouper (*Epinephelus polyphekadion*) hid under an overhang, gazing at me placidly. A 2m-long grey reef shark swam leisurely by, at depth.





Divers in tunnel with gorgonians (top left) and pronghorn spiny lobster (top centre) at Tomoko; Saddled butterflyfish (centre), box crab (above left), Hancock's flatworm (above centre) and pink velutinid (above right)—a new species, perhaps—on night dive at Easo; Soft corals (far left) and divers with gorgonians at Cap Martin (top right)

Snubnose or bignose unicornfish (*Naso vlamingii*) were a visual delight, with their blue filaments streaming behind them, off their tail fins.

**Cap Martin**, farther north, offered the attraction of a big coral bommie a short distance away from its wall. The spot was full of gorgonians and soft

corals. As I explored the strong current, Bastien frantically pointed out something behind me. I turned around just in time to gaze in amazement at a beige-to-light-brown hammerhead shark curving gracefully around behind me. It was such a surprise that I did not even have time to take a photo!

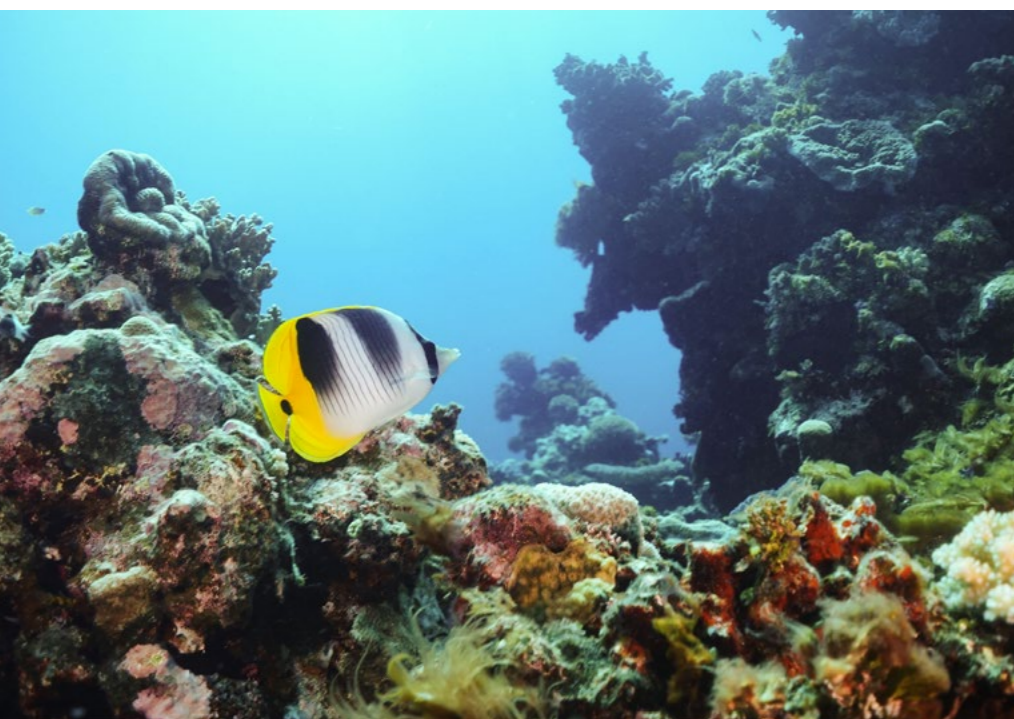
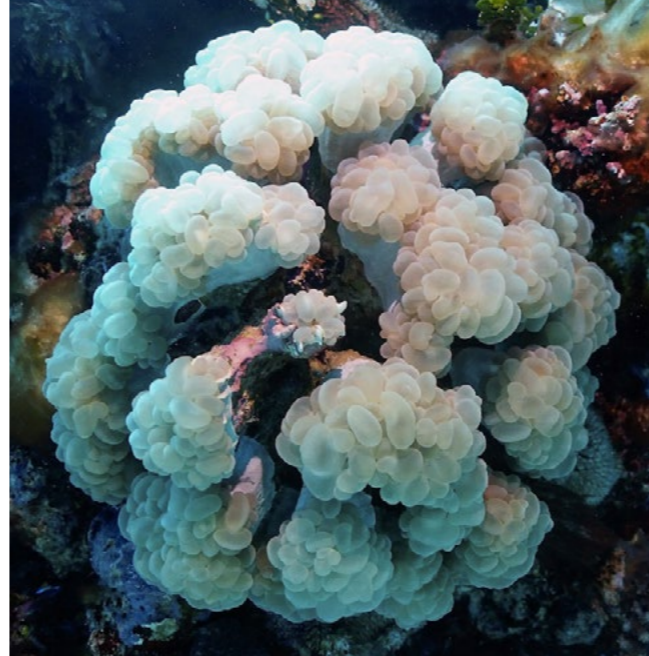
**Tomoko.** At Tomoko, the coastline was carved with sea caves. One of the tunnels was a true lobster lair of the pronghorn spiny lobster (*Panulirus penicillatus*).

**Night dive.** Bastien convinced me to join him for a night dive. "A good chance to meet the nautilus!" he exclaimed, smiling. The offer was too tempting to refuse. Starting from the beach in Easo after dark, we swam

with snorkels for about 10 minutes, before we submerged. Soon, I was in sight of a festival of basket stars (*Astroboa nuda*), fully deployed in a feeding position.

Bastien found a black Hancock's flatworm (*Pseudobiceros hancockanus*) with an orange and white girdle. I marvelled at a pink velutinid (*Coriocella* sp.) with black lines, which I had never seen before—neither in any book, nor on

Giant basket star on night dive at Easo



Black butterflyfish (top left), bubble coral (top centre), harlequin tuskfish (above right), and Pacific double-saddle butterflyfish (left) at Labyrinthe; Soft corals at Soji (above left)



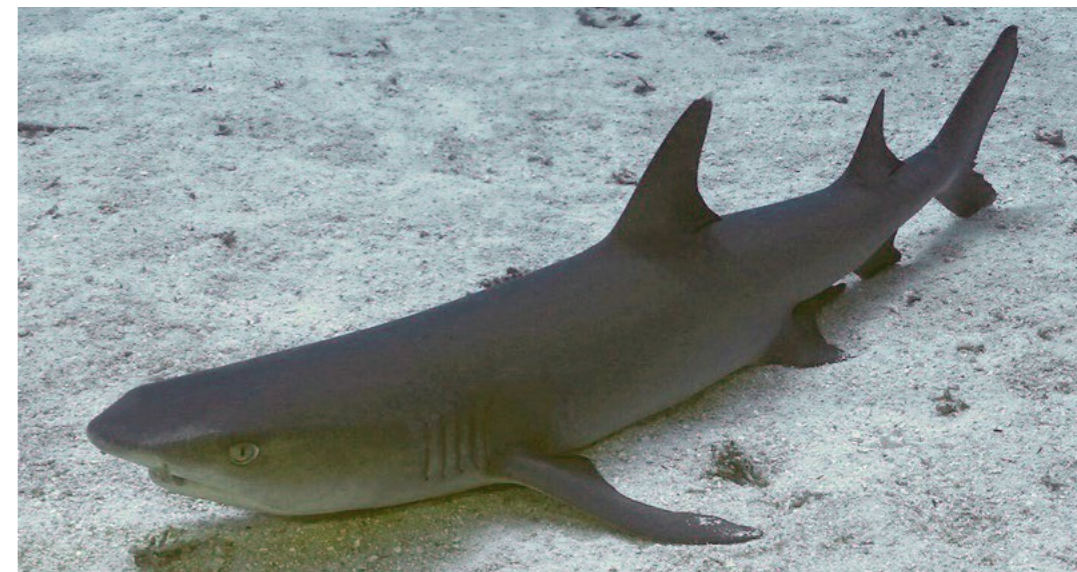
the internet; I suspected it was a new species. An orange-spotted common box crab (*Calappa lophos*) posed on a rock. A yellow-margin moray (*Gymnothorax flavimarginatus*) was on display under a staghorn coral. To add a little spice, a large-banded sea krait (*Laticauda saintgironsi*) foraged in the open, above the sandy flats, oblivious of my presence.

**Labyrinthe.** Before my departure, Pascal insisted on taking me to the Labyrinthe, one of his favourite sites. It was a true

maze of canyons, swim-throughs and tunnels, where one had to squeeze through like a rat. This was my chance to meet the elusive, colourful harlequin tuskfish (*Choerodon fasciatus*), which was red with white and grey bands, hiding in the darkness.

**Onward**

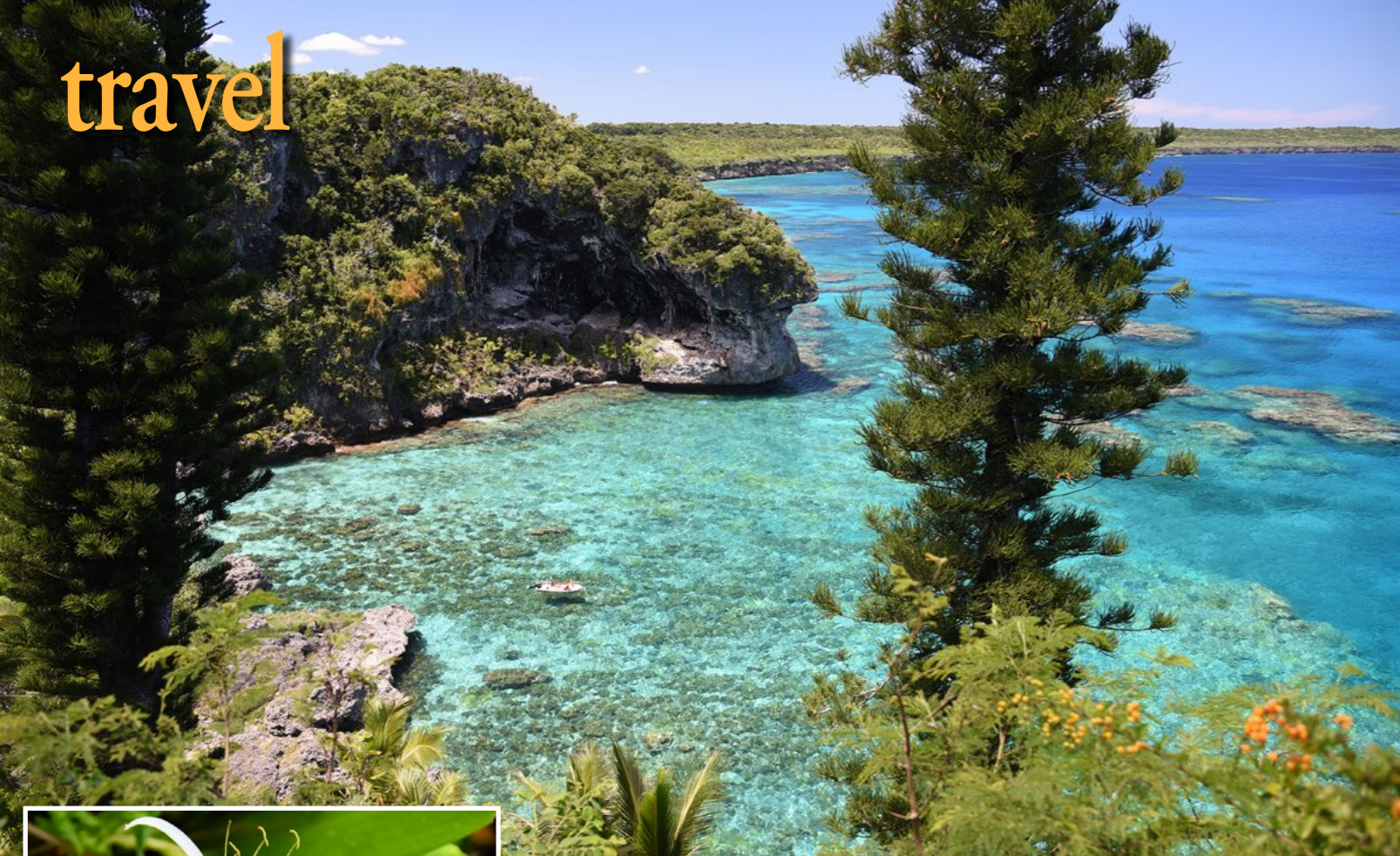
A loop road went around the northern end of the island to Hnathalo, Wanaham Airport, Jokin and Xepenehe. Another loop skirted around the coasts along the west (Drehu), south (Mu) and east



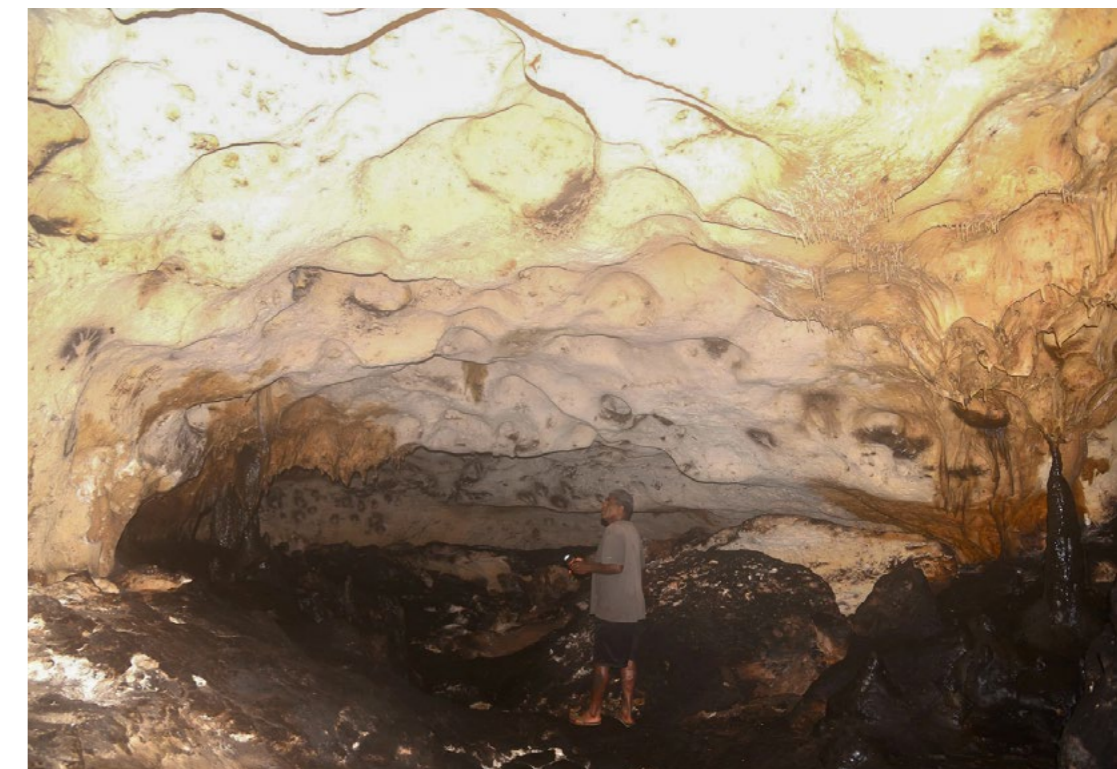
TOP TO BOTTOM: Red and black anemonefish at Labyrinthe (top right); Tiger cowrie and bridled monocle bream on night dive at Easo (second row); Whitetip shark resting on the sand at Gorgones Reef (above)

Yellow-margin moray on night dive at Easo





Lifou



Spider lilies (left); View from the cliffs of Jokin (above); Nautilus shell (right); Stencilled hands in Fetra He cave (far right and top right); Cave paintings of a turtle and megapode bird in Fetra He (top centre)

Should you fancy idyllic beaches, you had the choice between Chateaubriand Beach, Luengoni Beach or Peng Beach. Beyond a green patch of indigenous forest, the secluded Kiki Beach was a jewel for nature lovers, located at the base of a line of cliffs, south of Xepenehe. North of Easo, the Baie de Jinek had an attractive underwater trail for snorkellers, who may swim on their own. Little buoys with flags marked the way on the surface.

For the optimal diving experience, I would recommend one week on Lifou, shared between Wé Plongée on the eastern coast first, followed by Lagoon Safaris, on the north-western coast. Only then may you fancy other Loyalty Islands,

such as Maré or Ouvéa,—if you have time, of course.

### Fetra He

A 6 a.m. appointment with Haman brought me to a hidden place behind Wanaham Airport, on my last day. My intention was to visit the little-known cave of Fetra He. "I am not working the yam fields on Sunday; it is the day of the Lord," confided Haman. We sat and chatted for a while in his garden, as the custom required, so he knew about my purpose.

We entered the forest behind his house. Hidden in the vegetation, the small porch of a cave appeared. We had to squat to go in. Cave swiftlets flew about, bumping randomly into my face. "Here

is the guardian of the cave," he whispered, pointing to the right. My eyes fell upon a skull in a hole. We ended up crawling on all fours—as I wore my headlamp—to penetrate tight and dark passages soiled with bat guano. Some crushed human bones lay about. After a hundred metres of dirty progression, my hands and knees were sooty black.

We reached a spacious chamber with dark stalagmites and stalactites. To my absolute bewilderment, the walls were covered with stencils of hands in black, sometimes red. "Archaeologists came here over 30 years ago and dated these with Carbon-14," said Haman. "They are 3,000 years old and belong to the Lapita people."

These early navigators from Southeast Asia left traces of their migration with renowned pottery, all across the Pacific. Lifou's ancestors had come from northern Melanesia, from the Admiralty Islands where I had lived before, in Papua New Guinea. Everything fell into place. Somehow, my feeling was that I had been on the path of the Lapita people for a number of years—as if, in a former life, I had been one of them. Beyond the screen of certitudes, life works in mysterious ways... ■

Thanks go to Pascal of Wé Plongée, Wé marina, Lifou ([lifouplongee.com](http://lifouplongee.com)); Bastien of Lagoon Safaris, Easo ([lagoon-safaris.nc](http://lagoon-safaris.nc)); and Pascal Qazing of Les Joyaux de Luengoni (Luengoni cave) at Facebook @Pascal Neyhrtg or email [mariapoedi@gmail.com](mailto:mariapoedi@gmail.com) or [elkyhrtg@gmail.com](mailto:elkyhrtg@gmail.com).

With a background in biology and geology, French author, cave diver, naturalist guide and tour operator Pierre Constant is a widely published photojournalist and underwater photographer. Visit: [calaolifestyle.com](http://calaolifestyle.com)



(Traput) of Lifou.

Lifou offered plenty of possible excursions and guided hikes, to either caves or scenic viewpoints, such as the Jokin Cliffs or Marmites du Cap des Pins, where huge tidepools are found on elevated reef terraces. It was an invitation to take a bath with a view.



*Dive into Taiwan*

# Kenting

*Part 4: The Deep South*

Text by Simon Pridmore  
Photos by Kyo Liu







**In the southernmost district of Taiwan lies the Taiwanese Riviera, located in Hengchun Township (also known as Kenting), where divers enjoy the warm waters and plentiful marine life of the sheltered bay of Nan Wan, with its coral cliffs, reefs and pinnacles. Simon Pridmore has the story.**

Taiwan is a group of Pacific islands surrounded by warm tropical seas. It is easy to get to and get around and it is a first-world society with outgoing, friendly, laid-back people. Taiwan has some very good scuba diving and a network of dive centres and resorts with first-class professional staff, equipment and services. They offer scuba experiences, basic training courses and fun diving for a

young, enthusiastic first generation of Taiwanese divers.

Yet, when divers elsewhere in the world think about diving destinations, Taiwan is unlikely even to be a blip on their radar screen. Very few people outside Taiwan have ever thought to enquire about the diving there, and very few people inside Taiwan have ever thought to tell anyone about it. Until a couple of years ago, that is, when some far-sighted folks asked me and Taiwanese underwater photographer Kyo Liu to write a book.

The book is called *Dive into Taiwan*, and this is the fourth in a series of six articles, each covering one of Taiwan's diving regions, designed to give you a flavour of what to expect from a Taiwan dive trip. The book covers much more than diving. It talks about the people, countryside, cities, food and lifestyle to give readers a fully immersive experience—



SOFIE HOSTYN

diving into Taiwan in every way. But in this series, I will just focus on the underwater attractions, with the help of Kyo's amazing photographs.

Juvenile batfish (above); Pygmy seahorse (top left); Clown frogfish (previous page)



Kenting



Independent Reef (above); Dive boat at Houbihu (left); School of batfish on reef (top left)

operators offer year-round diving. Boats heading for the sites in Nan Wan leave from Houbihu port. Probably the best dive in Nan Wan is the enormous pinnacle they call Independent Reef, although it is hardly independent. It is just the biggest of a whole bunch of pinnacles rising from the seabed at 36m (120ft). (The site's English name is just a direct translation of the Chinese term for "pinnacle.")

The topography here is glorious, as are the water clarity and visibility. To really appreciate this site to the fullest, swim out a little distance into the blue, away from pinnacles, then turn to look back and gaze at the "mountain view." It is quite spectacular. Glance down at the seabed below and you will notice some extremely long sea whips stretching out

ern section of the peninsula and all its coastal waters comprise the Kenting National Park. This is the ancestral land of the indigenous Paiwan people. Today, they number 100,000 and are the second largest indigenous group, after the Amis in the eastern coast.

**Key dive sites**

**Independent Reef.** It never gets really cold in tropical Taiwan and

**Hengchun**

The southernmost district in Taiwan is Hengchun Township in Pingtung County. This is the Taiwanese Riviera, a land of long white beaches, rolling green hills and summer vacations. The Pacific coastline to the east, with its wide, wild empty strands, belongs to surfers, while the central coast around the town of Kenting, with its beach umbrellas, water sports and weekend night markets, is for holiday-making families and honeymooning couples.

But the waters around the small western peninsula in the south-

west, with its coral cliffs, and the reefs and pinnacles in the large, sheltered bay known as Nan Wan, are for divers and snorkelers. Nan Wan gives on to the Luzon Strait, the body of water that separates Taiwan from northern Philippines. During the summer months, a branch of the Kuroshio Current passes through the strait, bringing warm water and plenty of marine life to this part of the island.

Hengchun is often referred to as Kenting, because the entire south-



Map of Hengchun in Taiwan

SOFIE HOSTYN



School of goatfish (left) and barracuda (above); Nembrotha nudibranch (right); Schooling baitfish (bottom left)



many metres into the ocean.

With clear water like this, you may think that there is no reason to go deep, as everything is visible from the shallows, but there are some cool critters down in the depths. At around 27m (90ft), Bargibanti pygmy seahorses can be found on purple gorgonian fans and sharp-eyed divers may be able to spot green giant frogfish. Other common sightings here are big sweetlips, taking advantage of the many cleaning stations around the pinnacles, schools of red-tailed humpback snappers, trevally and fusiliers and the occasional big, curious barracuda.

A typical two-tank boat dive out of Houbihu will take you first to either Independent Reef or one of several other deeper dives in the middle of the bay, and then to a shallower site in the coral gardens closer to shore.

**Xiao Lao Gu.** Another excellent deep dive is Xiao (Mandarin word for "small") Lao Gu. Lao Gu is Taiwanese Hokkien (rather than Mandarin) for "coral." The highlights here are gorgonian fans with multiple pygmy seahorses and a series of large bommies completely covered in soft and hard corals. There are enormous fields of leather coral and a profusion of tubastraea everywhere.

Get down in among the gullies between the boulders and you will find yourself surrounded by fish. As well as substantial schools of yellow goatfish, you will come upon blue-striped snapper, sweetlips, rabbitfish, trevalies, glassfish, bigeyes, squirrelfish and emperor angelfish, among others.

**Nan Hai Dong.** When the sea conditions are right, boats will head off

to the southern tip of the Houbihu peninsula and dive Nan Hai Dong (South Sea Cave), where the fractured reefscape offers divers a maze of holes, caverns and canyons to explore. Stalactite-like coral formations hang from overhead and it is a lot of fun. There are plenty of fish around, including a large school of bumphead parrotfish. Big gorgonian fans and long sea whips sprout from the reef as evidence of the kind of current action you can get here.



Kenting

**Wei Yu Qu.** Hengchun is a very popular place for people to try scuba diving and take a beginner's course and Wei Yu Qu, south of Houbihu Harbour, is the most popular shore dive site. You might expect not to find much here at all, beyond the clouds of sergeant majors and small wrasse, which are fed by divemasters as an easy way to impress their customers. However, there is quite a lot to see once you swim out beyond the shallows. Expect to see big-eyes, parrotfish, squirrelfish, blue-striped snappers and yellow goatfish. The centrepiece of a dive here is an impressively large stand of potato coral. Spend some time around here to look for scorpionfish, moray eels and nudibranchs.

**He Jie.** On the other side of the Houbihu peninsula, the side that faces west across the Taiwan Strait, there is also plenty of very good shore diving.

The site they call He Jie is a 15-minute drive from Houbihu, then a stroll down a narrow track and a short rocky stagger to the water's edge. Or you can get there in 40 minutes by boat from Houbihu. The dive operators will usually come round to this side of the peninsula in winter and spring, when the northeastern wind can make Nan Wan too rough for diving. This is when conditions at He Jie and neighbouring sites are at their best.

Most of these western coast dives feature overhangs and swim-throughs, a profusion of hard corals, plenty of colourful soft corals, schools of blue-lined snappers and blue-spotted rays. At He Jie, scattered boat wreckage on the seabed at 20m (66ft) beyond the reef provides something of an oasis for marine life, with many chromis, anthias and ring-tailed cardinalfish, plus a nice big school of 20 to 30 silver sweetlips usually in attendance.

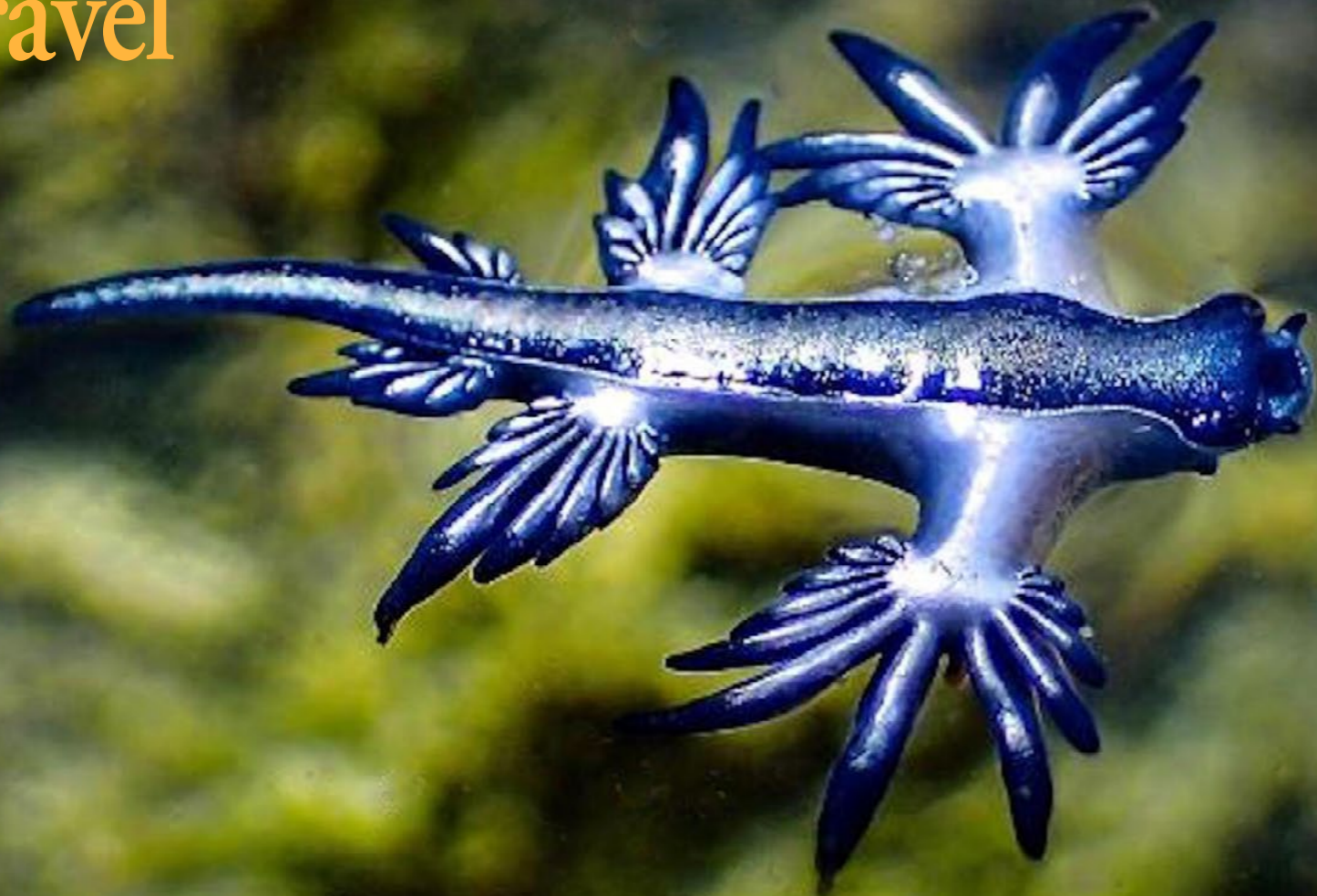


There is plenty to find on the sand and among the debris: nudibranchs (including the famous Pikachu or *Thecacera pacifica*), frogfish, sea-horses, leaf scorpionfish and juvenile emperor angelfish. On the reef itself, look for semicircle angelfish, banded sea kraits, octopus and green turtles.



Semi-circle angelfish (above); Divers in the deep blue waters of Kenting (top right); Diver in canyons at He Jie (top left); Shaun the sheep sap-sucking slug (centre)





He Jie is said to have the best hard corals of any site along this coast but, for marine life, Yan Guang Jiao and Shan Hai, both north of He Jie, are equally good. The photograph of the sargassum frogfish (*Histrio histrio*) was taken at Yan Guang Jiao.

**A rare visitor**

On 20 April 2017, after a late morning flood tide, over one hundred *Glaucus marginatus* (ed. —commonly known as a blue slug or blue dragon), pelagic nudibranchs that float upside down on the surface of the ocean, were left behind by the retreating sea in tide pools on the shore at He Jie, along with dozens of blue buttons (*Porpita pacifica*), jellyfish-like marine organisms that *Glaucus marginatus* love to feed on. The next day, they were all gone, washed back out into the ocean at high tide.

This was enough time, however, for the Hengchun diving community and their cameras and mobile phones to make this beautiful, rarely-seen nudibranch famous. It is now a Hengchun icon and its image adorns tourist brochures and advertising billboards. It is tiny, only 3 to 8mm long, and very cute, which is, of course, why it has been adopted as a symbol to attract snorkelers and divers to the area.

Appearances can be deceptive, however, and, in this case, they certainly are. The *Glaucus marginatus* may look sweet and innocent but it is a vicious predator. It has an effective defence system too so, if you see one, no matter how tempted you may be, never fiddle with it or pick it up. It ingests the poison from its toxic jellyfish prey and transmits it in a sting that is even more powerful and concentrated than the sting the jellyfish delivers.

**Dive operators**

Taiwan Dive Center (TDC) is the original dive operator in the area. It is a father-and-son business that began in 1980 as a commercial diving company. The father now drives the TDC dive boat and the son, Platinum Course Director Dylan Chen, has developed a dive resort that sets the standard for others to follow, with a large team of experienced, multilingual instructors, low staff-to-guest ratios and a passionate commitment to the environment. TDC also has smaller dive operations in Taipei and Green Island. Find out more at taiwan-diving.com.

Other dive operators in the area include CT Diver, a smaller dive resort with a focus on conservation and quality education (en.ctdiver.com), and DivePro, a dive centre with its own boat and a boat diving schedule (en.divepro.tw). ■

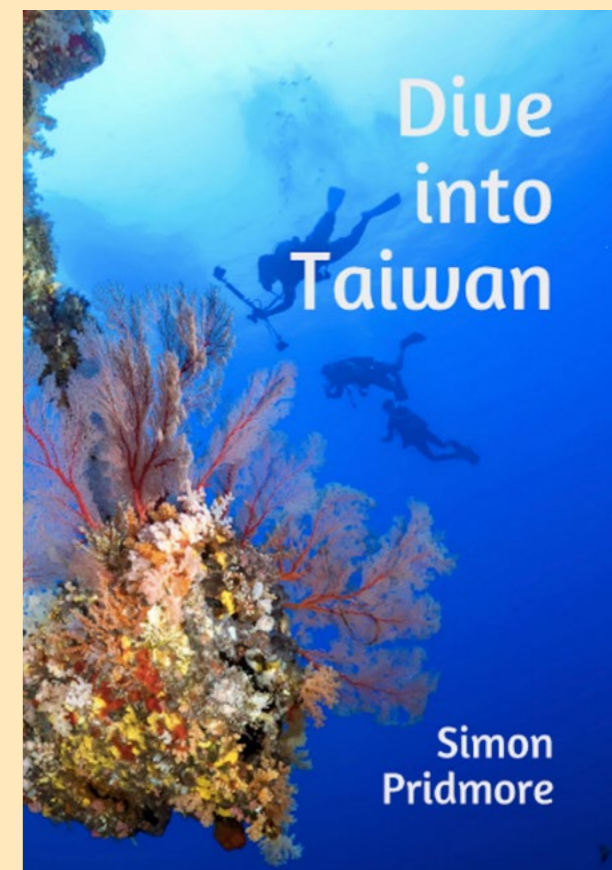
*Dive into Taiwan*  
by Simon Pridmore

“In this book, Simon Pridmore takes the reader beyond the beaches and into the waters of six regions of excellent and exciting diving and snorkelling that the Taiwanese have enjoyed for some time—while the rest of the world has not had much of a clue. The beauty of this book is that the author intends it to be an immersive experience in more ways than one. He really wants you to dive not only into the waters, but the people, the food, the lifestyle... the entire Taiwan experience.”

— Lonely Planet author Tim Rock

“This is the first comprehensive guide to scuba diving in Taiwan ever published, and it has the feel of an instant classic. Huge praise goes to photographer Kyo Liu. Almost all the underwater photos are his, and they’re invariably superb.”

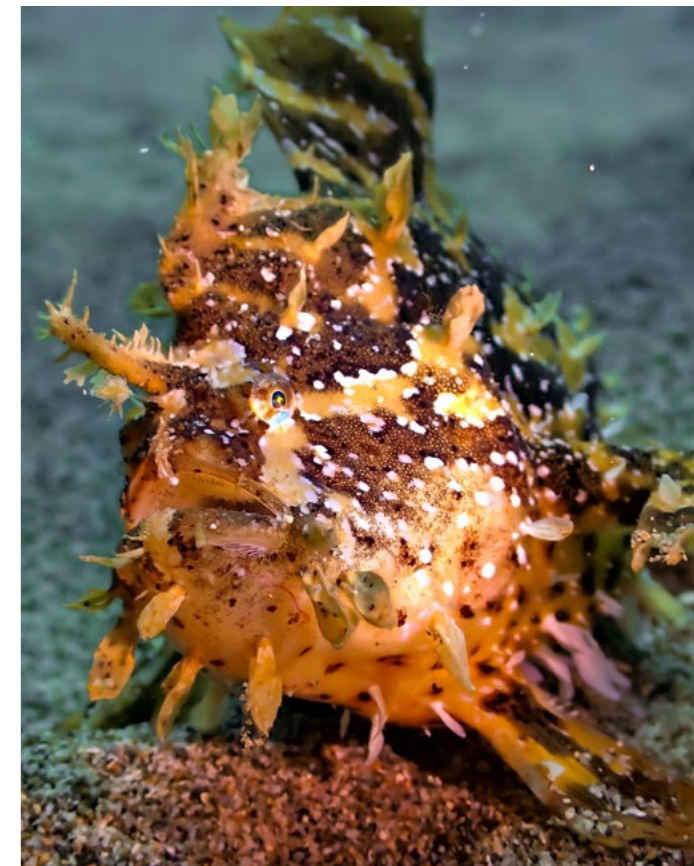
— Taipei Times



*Dive into Taiwan* is available via Amazon, Apple, Kobo and other online bookshops worldwide.

*Glaucus marginatus*, or blue dragon (left)

Simon Pridmore is the author of the international bestsellers *Scuba Fundamental: Start Diving the Right Way*, *Scuba Confidential: An Insider's Guide to Becoming a Better Diver*, *Scuba Exceptional: Become the Best Diver You Can Be*, and *Scuba Professional: Insights into Sport Diver Training & Operations*, which are now available in a compendium. He is also the co-author of the *Diving & Snorkeling Guide to Bali* and the *Diving & Snorkeling Guide to Raja Ampat & Northeast Indonesia*. His recent published books include *The Diver Who Fell From The Sky*, *Dive into Taiwan*, *Scuba Physiological: Think You Know All About Scuba Medicine? Think Again!* and the *Dining with Divers* series of cookbooks. For more information, please see his website at: **SimonPridmore.com**.



Sargassum frogfish (*Histrio histrio*) at Yan Guang Jiao



Well-preserved details on the submarine *Akula*

Text by Susanne Lundvall  
Photos by Will Appleyard, Susanne Lundvall and Jessika Olofsson  
Translation edited by G. Symes

**A flooded prison, a Russian submarine, and a wreck with a two-million-dollar cargo are some of what diving in Estonia has to offer. Susanne Lundvall visited these sites on the last of three weekends she had spent on the dive team with Project BALTACAR, Baltic History Beneath the Surface—an EU initiative developing dive tourism in the Baltic region. Here, she shares her report.**



JESSIKA OLOFSSON

Author coming up from the chimney, part of the flooded prison Rummu



# Estonia

— *Captivating in More Ways than One*

WILL APPEYARD

It was a Wednesday afternoon and the destination for the day was Tallinn. The flight left from Landvetter via Arlanda, where I met fellow divers Jessika and Micke, and then together we flew on to Tallinn.

At Arlanda, I had to change terminals via bus. After missing the bus by about a minute, I was left alone at

the pick-up point and had to call a new bus. After a while, a bus arrived and it turned out that I was the only one going, since the driver had not received any further calls. We talked a bit and agreed that it was not necessary to go the whole way around when it was just me on the bus. The driver made a U-turn and then headed

towards the normal route, giggling happily: "I've never done this before... wonder if I'll get scolded." But we agree that it was better for the environment than driving the entire long loop, so he probably will not get a talking-to.

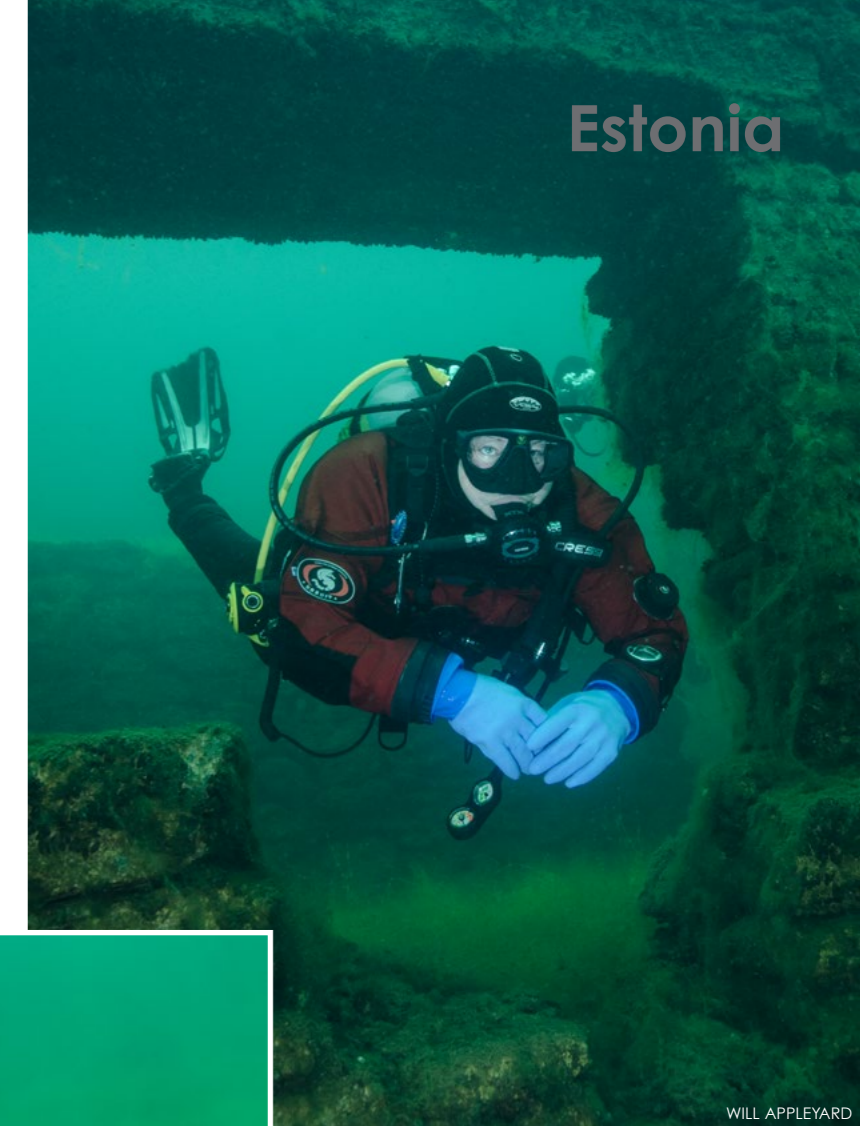
Arriving in Tallinn, my fellow divers and I took a taxi to Hotel Viru, which was located near the main

entrance to Gamlestan. We were upgraded to rooms with a fantastic view and sauna. I took a walk to see what the neighbourhood around the hotel looked like and to find a store that was open so I could buy water. There were slightly different opinions as to whether it was possible to drink the tap water or not, and I did not



# feature

Murru prison cell (right and bottom left); Underwater forest (top centre); The author in one of the buildings in Rummu (far right); The strange gas pond (bottom right); Prison bars are still in some of the buildings (bottom centre)



want to take a chance and risk ruining the dive weekend. But I should not have worried. Drinking the tap water in Estonia was no problem at all.

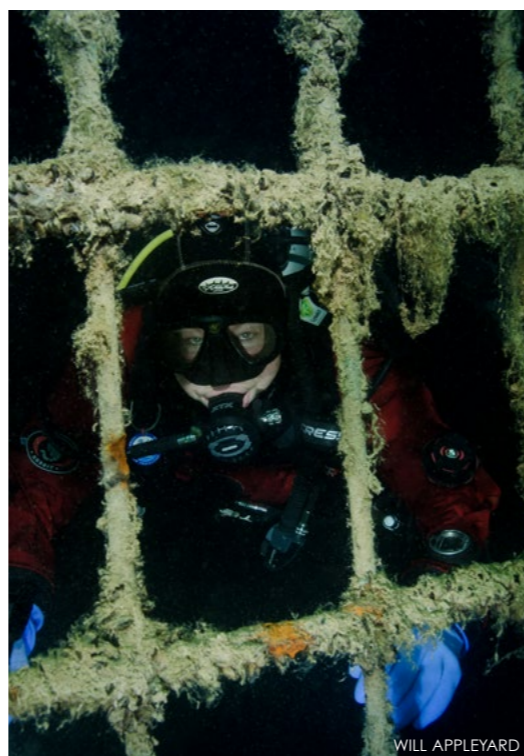
## Rummu, a flooded prison

On Thursday morning, after a lovely hotel breakfast and a morning walk in Gamlestan, we were picked up by car at the hotel. The old quarters were great, and I would love to return to Tallinn and spend some more time there.

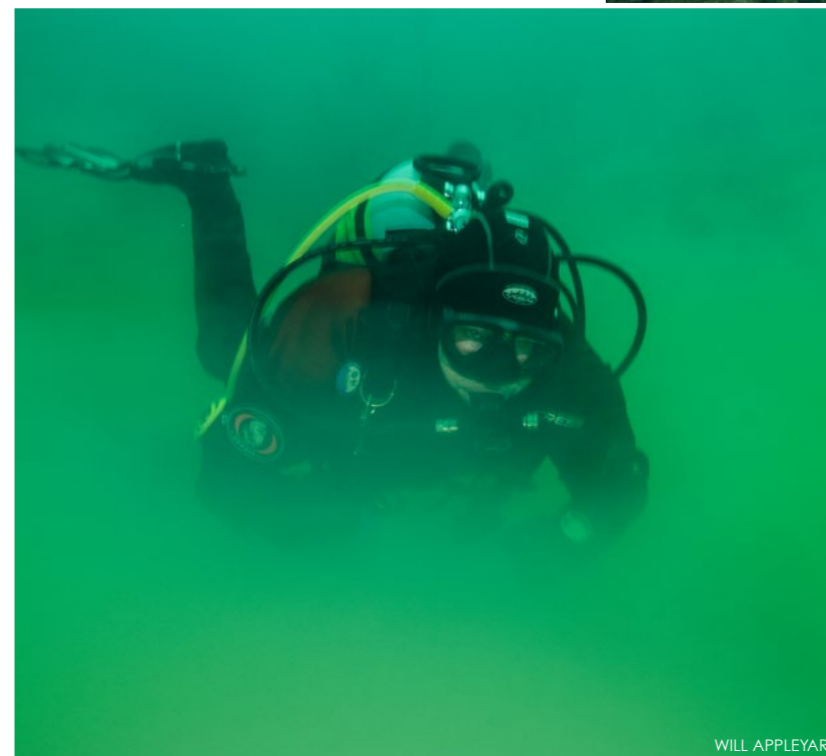
The approximately one-hour drive headed towards the southwest and the Rummu prison, which was in use until 2012. The prisoners worked in the now-flooded limestone quarry. As the limestone was fractured, the fracture filled with water. Pumps ensured that the breach did not fill with water as long as it was in use. When the prison was closed and the inmates were moved, the pumps were also turned off, so that part of the prison filled with water. It was now a completely unique place to dive.



The guide gave a briefing about the dive site, and we were divided into two groups. The water in the breach was clear and maintained a temperature of around 18°C, which was significantly warmer than the sea. So, I left my thick



undergarment behind on land. Diving here was a completely new and literally captivating experience for me. The underwater landscape was completely different from what I had seen before. At a depth of five metres there were still trees



to be seen. It felt as if I was diving into a forest, and one could still see the paths. I even saw something that looked like a pond. There was a thin layer of white fog, and it seemed as if it was a land of fairies in a forest grove on an autumn morning.

We swam over the prison wall, where the barbed wire still remained at the top of the wall, and on towards buildings with bars for the windows. We did not know for sure what they were used for, but they were large surfaces, good

visibility and easy to swim in. Clothes, tools and other equipment, such as a wheelbarrow, remained next to the buildings. We also swam past the occasional perch and pike.

After we paused and watched for a while, and our fellow diver Will Appleyard managed to take some pictures, we noticed that the dive guide was gone. When diving with a photographer, it tends to take some time, which I do not mind at all. But the guide apparently thought we were too slow.

On the way to the next building, the guide reappeared and showed us a chimney adjacent to the house. He had previously said that it was fine to swim, or rather climb, through it, as the cast steps were still there.





The Kopu lighthouse dates to the 16th century (left); Viinaköök distillery offered dining and lodging (above)

SUSANNE LUNDVALL



Viru Gate in the historic quarter, Gamle Stan

We were in the water for a full 90 minutes, during this very fascinating dive. Rummu had something for every kind of diver. It was shallow (the maximum depth in the limestone quarry was 12m), with good visibility and warm water most of the year. If one wanted to stay at the surface, there were also snorkel trails and the possibility to rent kayaks and stand-up paddleboards (SUPs).

After packing the equipment into the car, we got a guided tour of Murru—the part of the prison that was not underwater. The cells were dark and cramped. There were a few personal belongings left here, as well as posters on the walls. To think that people had been locked up in here recently, just over a decade ago... It felt like we had travelled at least 100 years back in time.

### Hiiumaa

After just over an hour's boat ride from Rohuküla on the mainland, we arrived at the island

of Hiiumaa, which in Swedish is called "Dagö." We stayed together in the old Viinaköök distillery, which was about 40 minutes by car from the Heltermaa ferry stop. It was windy, which it apparently often is on Hiiumaa, so our first boat dives were blown out, unfortunately. So, we decided instead to do some sightseeing on the island.

We visited a military museum and two lighthouses. The Tahkuna lighthouse was located as far north as one could get, and the Kopu lighthouse, which dated to the 16th century, was one of the world's oldest lighthouses. It was located on the western tip of the island.

The next day, it was finally time to dive in the Baltic Sea again. It was still windy, so I came prepared with motion sickness tablets. We headed to the port, where the old military 200 boat was waiting for us. The *Deep Explorer* dive boat was rebuilt and well-adapted for divers. Among other things, it was

*Local Dive Shops are the backbone of our sport. They are the gateway to training, the place where you meet dive buddies, get your tanks filled, book dive vacations, and of course purchase new dive gear. Being a small family run business ourselves, we understand that dive shops need your support now more than ever. We encourage you to support them any way you can to help keep our beloved sport growing.*

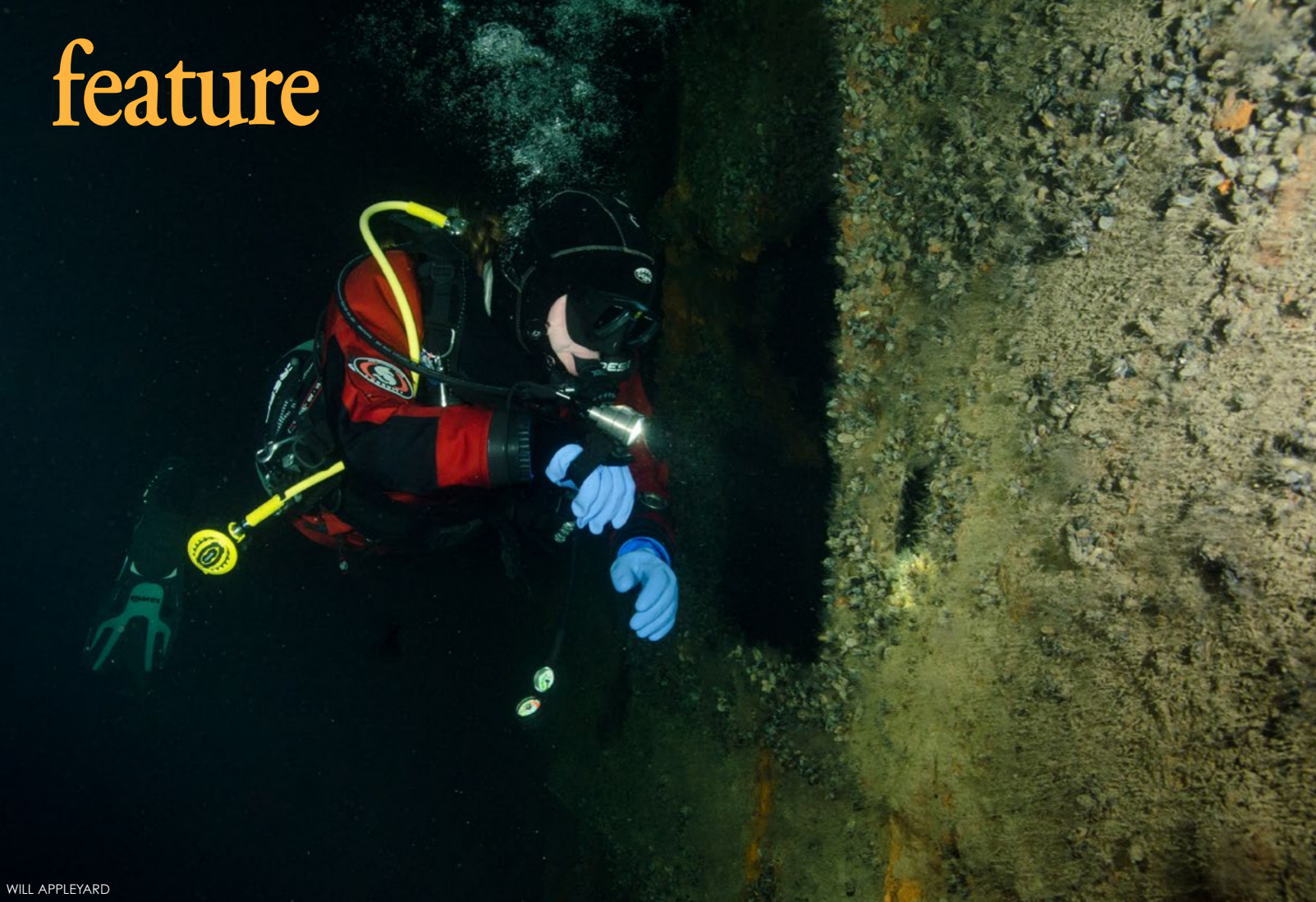
# SUPPORT YOUR LOCAL DIVE SHOPS



*Safe Diving,  
Team Dive Rite*







WILL APPELYARD

Wreck of the *E. Russ*, a 94m-long steam freighter from 1919 (above); Mines on the bottom next to the Russian submarine *Akula* (top right and centre); The diving boat *Deep Explorer*, a converted military boat. (far right); The dive boat's lift makes entering and exiting the water very easy (right).

equipped with a lifting device at the stern, so when you had to get onto the boat, you swam into the “elevator” and then easily winched up. So luxurious! No climbing a dive ladder in high seas here! We assembled our kit and donned our drysuits, to get ourselves as ready as possible while still in port.

## E. Russ

The first dive was on *E. Russ*, which was an English steam freighter built in Germany in 1909. On 15 September 1919, it was en route from Bordeaux to Tallinn, but struck a floating mine north of Hiiumaa. After 15 minutes, it sank, but all 27

crewmen and eight passengers survived. The wreck was 94m long and 14m wide and rested at a depth of 24 to 36m.

On the way out to the wreck, the waves really rocked the boat, but I thought that once I was in the water, I would feel much better. We submerged, and for the first few meters there was—just as the dive guide and captain had prepared us for—very poor visibility. But once down on the wreck, the visibility was fantastic. We could see at least 25 metres of the 94m-long wreck.

We made our way aft, to get an overview of the wreck and the cargo. *E. Russ* had, when it

left Bordeaux, a cargo valued at two million dollars. The ship was full of food, cigarettes and alcohol, and also around 50 cars, motorcycles and spare parts. About half of the cargo was salvaged. However, we did see some car parts, shoes and tools. The wreck had a lot to offer and actually requires two to three dives, preferably on nitrox, in order to have enough time to see everything.

## Akula

When it came time to plan for dive number two, we considered whether we should do a second dive on *E. Russ* or sail about an hour west to another



JESSIKA OLOFSSON



Estonia

WILL APPELYARD



JESSIKA OLOFSSON



SUSANNE LUNDVALL

wreck. Since the wind had started to break up and the sea had calmed down, and we needed a surface interval, we made the decision to go to the Russian submarine *Akula*.

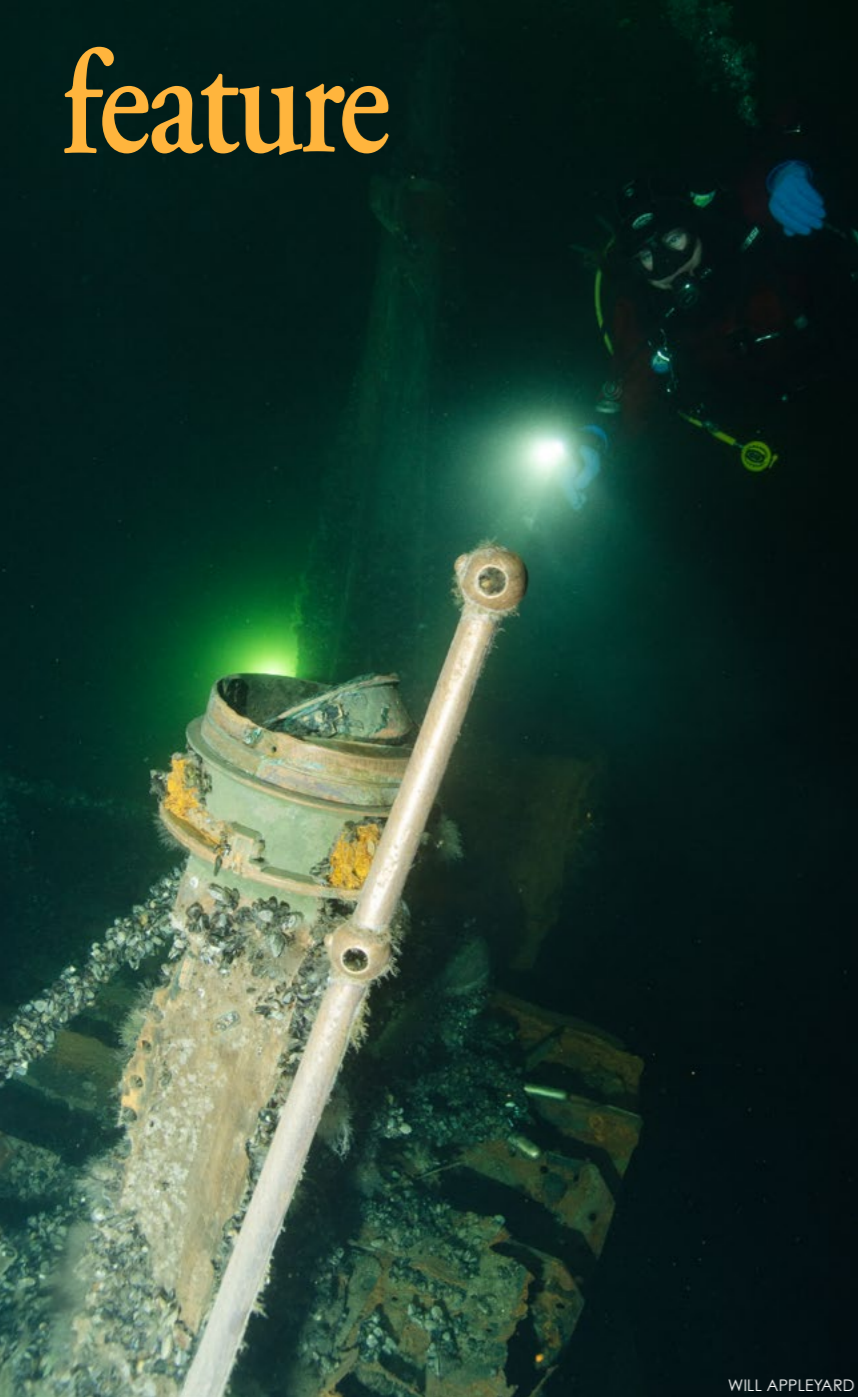
*Akula* was built in 1906 in Saint Petersburg, Russia. It was completed in 1909 and was equipped with three diesel

engines, with a total of 900 hp, as well as eight torpedoes.

It was Russia's first submarine and made to handle longer trips—to Japan, among other places. Its maximum speed was 16 knots at the surface, 7 knots at depth, with a diving depth of 50m. On 15 November 1915, *Akula* was out

on its 19th mission with a crew of 35 men. The assignment was to lay out four mines. However, *Akula* did not have time to lay any mines before it ran into one itself. *Akula* went to the bottom with its entire crew.

Will and I were ready quickly, so first in the water. Again, it was a green, swaying soup



WILL APPELYARD

Diver at *Akula's* conning tower, details of which seemed to be in pristine condition (above); The author shines a light on the propeller of the *Akula* wreck (right)



WILL APPELYARD

for the first few metres. Then, it eased up and there was really good visibility. We were on the descent line when suddenly the wreck of *Akula* appeared out of the darkness.

We swam out towards the submarine tower and looked out over the apparently quite intact submarine—it was mighty! We could see 25 metres of the 40m submarine, so it was easy to navigate. Will signalled to me that

he wanted us to go down to the four propellers at a depth of 30m on the starboard side. Will took some photos, and we swam around for a further look. The submarine's cladding was in very good condition, and there was basically no rust at all.

After 30 minutes, we saw our Finnish friends arrive, whereupon Will felt satisfied with the dive and signalled that he wanted to ascend. Since I had

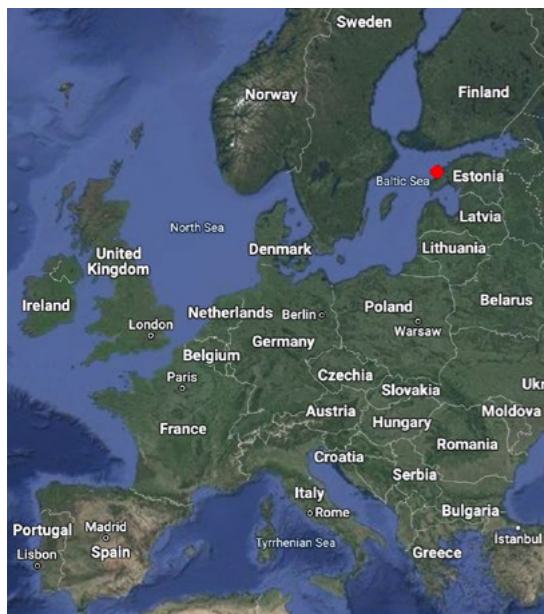
plenty of air and time left, I decided to check with our Finnish dive buddies if I could continue the dive with them. No problem! So, I continued to explore the submarine for a while longer. At the safety stop, I could not help but give the 35 crewmen who went down with *Akula* into the depths, and their families, a thought.

It was a powerful dive that ended three fantastic weekends in the Baltic

Sea—three weekends filled with experiences marked by history. The adventure was my first time diving the Baltic Sea, but definitely not my last. I, who normally love to dive in warm waters with lots of fish, must admit that this was beyond my expectations. With all the history surrounding it, the Baltic Sea was much more fascinating than I could ever have imagined. ■

*Susanne Lundvall is a diver and dive writer based in Lysekil on Sweden's western coast. She has been a diver since 1998 and works for the dive equipment manufacturing company SI TECH AB. She participated in Project Baltacar, which is a collaboration between Sweden, Finland and Estonia to promote wreck diving in the Baltic Sea.*

Locations of wrecks around the island of Hiiumaa in Estonia (right); Location of Hiiumaa in the Baltic Sea on map of Europe (below); Wrecks are marked with yellow buoys (far right)



### PROJECT BALTACAR

BALTACAR, Baltic History Beneath the Surface, is an EU project that took place 1 January 2017 to 31 December 2019. The project aimed to develop dive tourism and interest in the underwater cultural heritage of the Baltic Sea. This was to be done by developing and simplifying, in practical terms, the ways one could visit the Baltic Sea's unique and well-preserved wrecks.

### Hiiumaa-Dagö

Hiiumaa, which in Swedish is called Dagö, was in Swedish possession from 1563 to 1721. In 1721, the island was conquered by Russia. At the end of the 18th century, there were about 2,000 Swedes there, but when Russia conquered it, about half of these were deported to Ukraine.

Hiiumaa belonged to Russia until 1920, when the island belonged to the newly proclaimed Republic of

Estonia and was then occupied by the Soviet Union in 1940. Hiiumaa was then occupied by the Soviet Union until 1991. It has a lot to offer the history buff.

Hiiumaa is Estonia's second-largest island and is one of the oldest islands in the realm. There are approximately 8,300 people living on the island, and its largest city is Kärkla. The island is incredibly picturesque, has fantastic sandy beaches and is perfect for nature lovers.

### The wrecks around Hiiumaa

All six wrecks in the Estonian part of the EU project BALTACAR are marked with a yellow buoy and are therefore relatively easy to locate.

**HMS Myrtle** was a Scottish minesweeper built in 1915. She sank on 15 July 1919 as a result of an explosion caused by a German minefield. Six of a total of 79 crew members perished.

The wreck is 76m long and ten metres wide and lies at a depth of 28 to 34m.

**Shchit** was a 53m-long minesweeper built in Tallinn in 1916. On 6 December 1916, it struck a mine and slowly sank. All 38 of the crew, and also important documentation, were saved aboard the minesweeper *Gruz*. The wreck is spread over an area of 33 by 44m and lies at a depth of 11 to 13m.

**Altair** was a minesweeper built in Papenburg, Germany, in 1916. It was 37m long and 7.1m wide. On 14 October 1917, *Altair* entered a Russian minefield, and in the explosion, was split in two. Ten of the crew's 31 men perished. The wreck was torn apart in the explosion, so of its original 37m length, only 15 metres remain. The wreck lies at a depth of 24 to 28m.

**The submarine Akula** was built in Saint Petersburg, Russia, in 1906-1909. It was

56m by 3.7m by 3.4m in dimension and had a maximum diving depth of 50m. On 15 November 1915, it hit a mine and sank, together with all 35 crewmen on board. The wreckage was scattered over an area of approximately 40m by 4m, at a depth of 24 to 30m.

**The minesweeper No 1** was built in 1892 at W. Lindbergs shipyards in Stockholm. It was built as a freighter and named *Linnea*. It operated in Finnish waters until World War I in 1914, when it was rebuilt as a minesweeper and given the name *No 1*. On 16 September 1915, it struck a mine laid by the German submarine *UC-4* and sank. All of the crew survived. The wreck is divided into two parts and has a total length of 6m, with a width of 8m. It lies at a depth of 14 to 18m.

**E. Russ** was a steam freighter built in Germany in 1909 and subsequently gifted to England in 1919. On 15

September 1919, it was en route from Bordeaux to Tallinn when, north of Hiiumaa, it struck a floating mine. After 15 minutes, it sank, but all 27 crewmen and eight passengers survived. The wreck is 94m long and 14m wide and lies at a depth of 24 to 36m.

### COLLABORATIVE PARTNERS:

**Rummu Underwater Prison**  
Barrakuuda Dive Club ([barrakuuda.ee](http://barrakuuda.ee))  
Adventure Center ([rummu.eu/en](http://rummu.eu/en))  
**Hiiumaa**  
Renovated military 200-boat *Deep Explorer* is operated by Technical Diving Estonia ([Facebook](https://www.facebook.com/technicaldivingestonia))

### LODGING & DINING:

**Tallin** Hotel Viru ([sokoshotels.fi](http://sokoshotels.fi))  
**Hiiumaa**  
Viinaköök old distillery ([viinakook.com](http://viinakook.com))  
Resto Les & Lamma ([hiiumaale.ee](http://hiiumaale.ee))

For more information about Project BALTACAR, visit: [projectbaltacar.eu](http://projectbaltacar.eu) ■

Tiger shark  
on shark dive  
at Fuvah-  
mulah in the  
Maldives

Text and photos by Michel Braunstein

**Over the last few years, Fuvahmulah has become a world-famous pristine destination for close encounters with large tiger sharks. The green island is located at the deep south of the Maldives archipelago. Michel Braunstein reports.**

Local tiger sharks have been spotted close to the island since the very first people arrived around a thousand years ago. The locals are not afraid of tiger sharks. On the contrary, they live with them.

Many generations ago, fishermen who were cleaning fishes in the port used to throw the remains into the deep ocean. Over time, to spare boat fuel, they started throwing the remains right outside of the port and noticed that tiger sharks would gather at the port entrance every day to enjoy their meal.

Today, inhabitants continue this tradition of distributing snacks in the outskirts of the port to please their tiger friends. The locals invite visitors to meet the sharks, educate them about this sea predator, and show them that human beings are not regarded as shark food. They also remove the hooks from unfortunate sharks caught by some sport

fishermen whose lines broke.

Tiger sharks are among the few shark species (about 10 out of 500) considered to be dangerous to humans. Fuvahmulah sharks are impressive and must be respected; they do not try to hurt humans.

Two main dive operators and three

smaller ones operate in Fuvahmulah. I chose to dive with Pelagic Divers Fuvahmulah dive centre, which was amazing. All dive centres share the same tiger dive site, and they coordinate the diving schedule for their various groups. Three dive guides always accompany each group of divers. All

dive guides are highly trained and are very familiar with the sharks' behaviour.

They know how to repel the sharks if necessary and keep divers safe.

To attract sharks to the spot, the dive guides hide "snacks" under stones. Using "baits" is often criticised. Since sharks are accustomed

to consuming the fishermen's fish remains, they are fed the same food they are used to eating. This technique does not disrupt their natural life cycle; sharks do not become dependent on these "snacks" nor do they become aggressive when they do not get them and they still know



# Fuvahmulah

*Tiger Sharks in the Maldives*



Considered a dangerous shark species, in Fuvahmulah tiger sharks are impressive and deserve respect. On shark dives, they generally do not try to hurt divers, but dive guides are highly trained and repel sharks if necessary to keep divers safe.



Dive guides placed "snacks" under stones to attract the sharks (above); Some sharks had a fishing hook caught in the mouth, which needed to be removed (top left).

how to feed themselves in the ocean. Using "snacks" simply facilitates observation and the interaction with the predators, so that the divers can get to know and understand them. Most importantly, it shows that the sharks are not killers, as often falsely portrayed in popular movies and tabloids. Finally, and as previously stated, this technique also enables the removal of painful items from sharks such as hooks, ropes or nets.

Tiger sharks are beautiful creatures, and they can make your dive experience highly moving and unique. Fuvahmulah is one of the only places in the world where sharks can be approached and observed with so much ease. Most sharks are local and are given first names. At times, new visitors or new pups join the family. Diving with Fuvahmulah's tigers is quite easy and takes place at a shallow, 10-metre (30 feet) depth.

### The dive experience

During the pre-dive briefing, our dive guide Ina explained that there are three guides with the group to keep a proper overall watch of both divers and sharks during the dive; however, it is also set up in case there is any incident, so one of the guides can pull the victim back to the boat, while the second one repels the sharks if necessary, and the third one takes the rest of the dive group to finish the dive close to the reef. That was not really encouraging...

We left the small port of Fuvahmulah, and after a ten-minute boat ride, we reached the dive site, just outside the port. Our divemaster told us to be negatively buoyant while entering the water and to start descending immediately after jumping in. The reason for this was to prevent curious tiger sharks from coming too close to see if there was





Fuvahmulah



Most sharks are local and given first names, with new pups joining the family at times. Shark dives generally take place at shallow depths of around 10m.

big camera rig. It all happened quite fast though, with no issues.

We started to descend to the location we were aiming for, and I noticed a huge tiger shark swimming next to us in the blue. It was heading for the same location, where it appar-

ently knew there would be some interesting snacks.

When we arrived at the spot, we waited a moment for the previous group to leave, then took their plac-

es. We placed ourselves in a line. In the middle of the sandy area, Ina was waiting for the boat to send down a bucket with some fishtails. He placed the snacks under some heavy stones, and the tiger sharks came close to get them out. There were six or seven that turned around, went away, then came back again. When they went too close to Ina, he repelled some sharks by pushing them back on their snoots (noses).

The older ones, which were also bigger (up to 5.7m), knew the game well; they had developed some skills to get the snacks out from under the stones. For the younger ones (3m long), it was still quite new, and they did not know exactly how to proceed.

We watched this ballet of sharks, which was breathtaking. These animals were impressive. They were

quite slow and did not pay too much attention to the divers. They deserved a lot of respect, and we needed to avoid making them take an aggressive attitude.

On my second dive day, Ina came to take me from the side where I was in line with all the divers, and he brought me to the center of the playground. Wow, that was quite thrilling! I could almost touch the sharks, or they could touch me, because they were so close.

It was an unforgettable and incredibly exciting experience. I will surely go back again as soon as I can!

### Other underwater attractions

Besides the amazing tiger sharks, Fuvahmulah offers other beautiful underwater attractions. The reefs are beautiful, and make good supplemental dives to complement your





Fuvahmulah (left) has serene white sandy beaches (above) and traditional bright blue boats in port (lower left).



shark dives. Thresher sharks may be spotted (though not on every dive) at deep cleaning stations between 40 to 50m deep. They must be approached very slowly because they are very shy and swim rapidly into the depths. Under the right conditions,

you may encounter awesome schools of scalloped hammerhead sharks in the current. There are also whale sharks.

Black oceanic manta rays can be spotted around the cleaning stations all year round, especially during their mating season between March

and May. Whitetip sharks and grey reef sharks can be seen quite often. Depending on the season, you can also see schools of barracudas, yellow-fin tunas, sailfish, mola mola, whales and more.

### Topside excursions

After dives, there are also some cool things to do. The dreamy Thoondu beach is a must. Do not miss it if you are on the island. There is also Bandaara Kilhi and Dhadimago Kilhi, two beautiful freshwater lakes on the island, which are great for hiking. They are also where you can spot many species of birds and freshwater fish.

There is a cool mud place you can enter (preferably not with your favourite swimsuit). It is supposed to be very healthy for the skin. You can also visit some pre-Islamic historical sites. In addition, there are splendid spots where you can surf or

paddle. In the very hip pub called "Led Zeppelin," you can enjoy succulent meals and a nice atmosphere. For transport between places, it is very convenient to rent a scooter.

### More about the location

The island is in the deep south of the Maldives, about a 70-minute flight from Mal. It also has its own domestic airport, which makes it easy to reach. Usually, planes stop on another island on the way, which extends the flight time.

There are 14,000 inhabitants divided in eight different districts, which makes it the second-largest population hub in the Maldives. The locals speak a dialect that is unique to the island and distinctive of the official Maldivian Dhivehi language.

The island's economy relies mostly on fishing and agriculture. It is the biggest producer of mango and banana in the

country. Maldivian Rufiyaa is the official currency, but US dollars and Euros are accepted everywhere.

There are some hotels in Fuvahmulah, including Tiger Shark Residence, a nice guest house close to nature, and Atraxis, a more modern and international hotel. Electrical power plugs are UK-style, like all over the Maldives. ■

*Belgian underwater photographer and writer Michel Braunstein, who is based in Israel, has had a passion for the sea since he was 10, inspired by the films of Jacques Cousteau, and has been diving and taking underwater photos since his 20s. Starting with a rented Sea&Sea camera, then a Nikonos V he got as a birthday present, he eventually went digital and today shoots with a DSLR camera. In 1991, he developed a dive*

*computer with an optical PC connection, before the first model with a PC connection hit the market, which was made by Suunto. He moved to Israel from his Belgian homeland in order to be close to his beloved Red Sea. He has since dived many oceans, rivers and lakes all over the globe and his work has been published in magazines around the world, including Idive (IL), Diver Magazine (CND), Scuba Diver/Sport Diver (US), Unterwasser (GE), Let's Dive Mag (SP), Underwater Photography Mag (UK), Subaqua (FR), Marine Diving Mag (JP) and X-Ray Mag (DK). The first version of his website won the Prix du site de promotion (Promotion Website Prize) at the 34th edition of the prestigious Festival Mondial de l'Image Sous-Marine in Antibes in France (2007). Please visit: [michelbraunstein.com](http://michelbraunstein.com)*



Tiger shark on shark dive at Fuvahmulah in the deep south of the Maldives

## THE IMPORTANCE OF SHARKS

In the video clip below, there is a sequence filmed showing a small camera laying on the ground that looks like food. A shark comes and bites it to check what it is, then releases it. The shark, however, did not try to harm or bite the divers in the clip. We are not their food. See video: [youtube.com](https://www.youtube.com)

There are a few accidents each year, all over the world. They usually occur when sharks do not recognise targets correctly; to a shark, when spotting a surfer or swimmer from the depths, they look like a shadow. Just like with the camera,

a shark can swim up from the depths to catch a wrongly identified prey, taste it, then reject it. In some cases, this can be fatal.

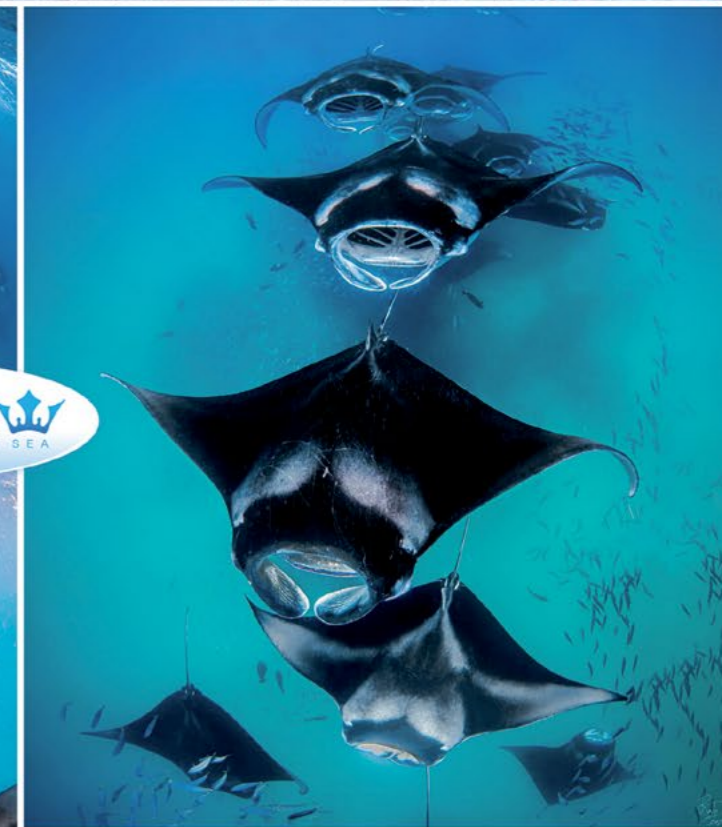
Sharks need to be respected. They are in their own home, and we are the visitors. Again, they do not eat people, they like different food.

Sharks are important for the oceans' health. They are at the top of the food chain, and if they disappear, all the ecosystems will be disturbed. The fish they consume would become too numerous, which in turn would eat too much of the smaller fish. At the end of the food chain, there are small critters that feed on plankton,

which produces a great part of our oxygen. If these critters (tiny shrimps) become too numerous, there would not be enough plankton to produce oxygen for humanity.

By destroying the highest level, the lowest level would also be destroyed, and the ocean would not be the planet's primary lung anymore.

Approximately seven people are killed each year due to accidental shark attacks worldwide. In contrast, an estimated hundred million sharks are killed every year due to fishing. The shark population has declined by 70 percent over the past 50 years. ■



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LEONARDO LAMAS / PEXELS

Nurse shark

## Some sharks return to the same sites to breed for decades

**Some species of shark return to the same breeding grounds for decades at a time, and live longer than previously thought.**

Scientists with the New England Aquarium found that nurse sharks (*Ginglymostoma cirratum*), returned to the waters off the Dry Tortugas, 70 miles (113km) from Key West, to mate for up to 28 years. The Dry Tortugas has been known as a courtship and mating site for nurse sharks since 1895.

A 30-year (1992–2021) study documented long-term site fidelity to this area, with data from 137 adult sharks.

Known individuals returned for up to 16 different mating seasons and for periods of up to 28 years, indicating that the shark's lifespan extends well into the forties, rather than about 24 years as previously believed.

Of all the sharks returning to the site, nearly 60 percent were monitored for more than 10 years and 13 percent were monitored for more than 20 years.

Males arrived annually in May and June and departed in July, whereas females arrived biennially or triennially in June, with a secondary peak in site use in September and August, likely associated with thermoregulation during gestation.

The scientists wrote that this evidence of long-term mating site fidelity of this shark population reveals the importance of identifying and protecting mating sites for this and other elasmobranch species. ■

SOURCE: PLOS ONE



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Edited by  
Catherine  
GS Lim



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Great white shark

## Great white shark swims more than 10,000km in 150 days

**The adult male shark, fitted with a pop-up satellite tag, travelled more than 10,000 kilometres in just five months.**

Researchers from the New South Wales (NSW) Department of Primary Industries (DPI) and Deakin University fitted an adult male shark with a pop-up satellite tag and tracked it for more than five months.

After being tagged, the shark swam more than 20km out to sea, then headed north to Queensland.

It roamed between 80 and 280km offshore between Agnes Water and the southern end of the

Great Barrier Reef, before heading to the cooler waters in southern NSW, Victoria and Tasmania.

DPI scientist Paul Butcher said more than 950 sharks had been tagged as part of the project, but this specimen was unusual because of its size.

The data collected so far showed that the larger great whites spent most of their time 20 to 30km offshore. They dive down to 700 to 800m in water depth, but spend most of their time in the top 50m of the water column. ■

SOURCE: NSW DEPARTMENT OF PRIMARY INDUSTRIES



ALBERT KOK / WIKIMEDIA COMMONS / CC BY-SA 3.0

Tiger shark in the Bahamas

## Shark and ray populations in Northwestern Atlantic are recovering

**The sharks and rays in the Northwestern Atlantic are experiencing an increase in population numbers.**

The shark and ray population in the north Atlantic are in recovery, according to a recent study published in the *Proceedings of the National Academy of Sciences* (PNAS) journal.

Lead author Nathan Pacoureau, postdoctoral research fellow at Simon Fraser University (SFU), and his team came to this conclusion after analyzing trends in fishing pressure, fisheries management and population status for wide-ranging coastal sharks and rays in the western Atlantic Ocean.

The study also found that three species no longer experience declines and six species of eleven are recovering. It was found that although the extinction risk increased with fishing pressure, this was offset by an action plan implemented in 1993.

The plan—the 1993 Fisheries Management Plan for Sharks—focused

on regulation, enforcement and monitoring. Although the results showed improvement in population numbers, Pacoureau acknowledged that they were a "microcosm of the wider problem faced by sharks and rays."

Elaborating, he said, "many shark and ray species range widely and successful conservation in one country can be undone by less regulated fishing areas outside those borders."

Using the International Union for Conservation of Nature (IUCN) Red List Index, the team showed that unrestrained fishing caused populations of the same species to collapse in the southwest Atlantic. In fact, the number of wide-ranging coastal species threatened with extinction was nearly four times lower in the northwest than it was in the southwest.

In conclusion, the study showed that well-enforced, science-based management of carefully monitored fisheries could lead to conservation success, even for slow-growing species.

■ SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES



KRIS-MIKAEL KRISTER / FLICKR / CC BY 2.0

Scalloped hammerhead shark



DAVID J. RUCK / NOAA / FLICKR / PUBLIC DOMAIN

Southern stingray in the Florida Keys



POINT & CLICK  
ON BOLD LINKS

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# Equipment

Edited by  
Peter Symes and  
Lelle Malmström



## Apeks DSX

The DSX technical dive computer from

Apeks is loaded with cutting-edge features, the manufacturer writes, including sidemount and CCR mode, induction or cable charging, and management of up to six gasses. A sidemount mode with gas switch notification makes it ideal for sidemount diving. It also has a CCR mode and is supplied with an oxygen analyser. (Note: No oxygen cell supplied.) The outer bezel is made from titanium to reduce weight and ensure maximum durability. The DiverLog+ app provides remote control of all the dive computer settings, dive log and profile data, and the locations, notes and other details from your adventures can be added. [Apeksgiving.com](http://Apeksgiving.com)



## Wipers

Are you having persistent issues with your mask fogging up, or do you tend to forget your toothpaste or defog agent? Then, perhaps this mask from RDK, which we spotted at the recent Boot show in Düsseldorf, is something for you. Pressing that button over the nose bridge will set in motion some small windshield wipers on the inside of the mask, clearing the glass of any fog. Click on the link to see a video of it in action. [RKDSports.com](http://RKDSports.com)



## Feelfree

The Track waterproof backpack from French Feelfree

Gear offers you two closing systems. When the waterproof membrane is not necessary, you can make it disappear by pressing it against the internal wall. Then, fold down the hood, and the backpack is waterproof. In an aquatic environment, take out the inner membrane, roll it up twice and clip. Then, close the hood, and the backpack is 100 percent waterproof. [Feelfree.fr](http://Feelfree.fr)

## Mares Sirius

The new nitrox- and trimix-capable Sirius watch-style dive computer aims to combine technology and elegance perfectly, writes Mares.

The recreational diver can see a simple screen, with the possibility of reading tank data thanks to the optional tank module. The Extended Range diver can insert up to five nitrox and trimix mixes to manage technical dives with hoseless tank data integration for up to five transmitters. It is equipped with a full-tilt digital compass with bearing memory and a stopwatch. It also comes with a Bluetooth connection to smartphones and is available in black or black-and-silver versions.

[Mares.com](http://Mares.com)



## Go electric

What does the climate-conscious dive club, and other owners of a dive boat with an outboard engine, choose as propulsion for their vessel? An electric engine, of course. The Avator 7.5e electric outboard, which delivers 750W of clean quiet power, is Mercury's next step forward in marine innovation and the first in a series of electric outboard products to be released in 2023.

[Mercurymarine.com](http://Mercurymarine.com)



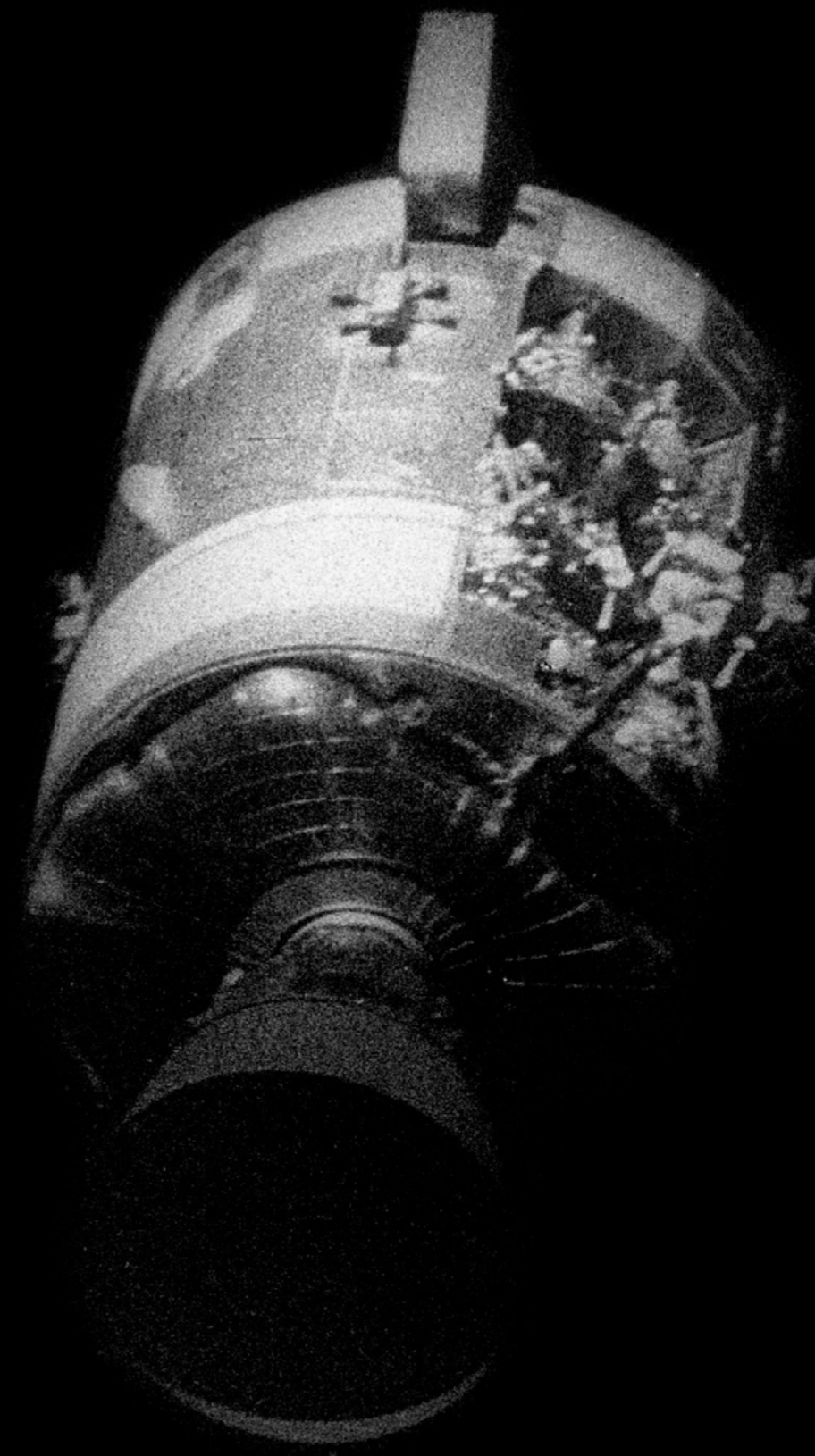
## Santi Blue Line

The Polish brand is launching a new generation of batteries dedicated to Santi's heating systems. New technology and electronics will maintain a voltage level and constant heating temperature throughout the battery's runtime. The Blue Power battery allows for two levels of heating and comes in two sizes: Medium with 198Wh (14 Ah) capacity and Large with 397Wh (28 Ah) capacity. The power cable is available in different lengths and is replaceable by the user. [SantiDiving.com](http://SantiDiving.com)



Edited by  
Peter Symes

In 1970, Apollo 13's lunar landing was aborted after an oxygen tank in the service module (SM) failed two days into the mission. The image shows the damaged service module, as seen from the Apollo Lunar Module (LM) *Aquarius*, hours before re-entry. The LM carried enough oxygen, but that still left the problem of removing carbon dioxide, which was absorbed by canisters of lithium hydroxide pellets. The LM's stock of canisters, meant to accommodate two astronauts for 45 hours on the Moon, was not enough to support three astronauts for the return journey to Earth. The SM had enough canisters, but they were of a different shape and size to the LM's, hence unable to be used in the LM's equipment. Engineers on the ground devised a way to bridge the gap, using plastic covers ripped from procedures manuals, duct tape and other items.



*The best-laid plans of mice and men often go awry.* — Robert Burns

Introduction by Scott Bennett

**As any underwater photographer can attest to, water and electronics do not mix. Despite our best attempts at planning for unforeseen circumstances, the law of averages dictates that things can and will go wrong. More often than not, some situations are ones we had not even considered.**

On a recent trip, I stopped in Orlando to attend the DEMA Show before continuing on to Mexico for a dive trip. Upon arrival in Orlando, I was horrified to discover that the case containing all my underwater equipment had a giant crack in it. Even worse, it was big enough to insert my hand into! Fortunately, the bag's inte-

rior lining remained intact, and all my gear was still inside. With only a few days in Orlando, I did not want to shop for a new bag. Fortunately, the day was saved by one of humankind's greatest inventions: duct tape!

On another trip, my housing had a leak, likely due to an improperly greased O-ring. Fortunately, my camera remained unscathed, but moisture around the circuit board caused both strobes to malfunction. I then placed several packets of silica gel around the circuit board and sealed the housing overnight. The next morning, everything worked perfectly.

#### Hard-learnt lessons

As the above examples show, some lessons are learnt the hard way, while sometimes we discover fixes or adapt and repurpose mundane items to make

life on the road easier. On other occasions, good ideas simply just pop up. Try to envision each happenstance as a learning experience, so if it happens again, you will know exactly what to do with minimal stress.

The following list of items has been compiled by asking editors, photojournalists and a number of our most seasoned contributors what they always pack to safeguard their gear and belongings against breakages and other inconveniences on a trip, as well as other hacks and tips.

The list is by no means comprehensive as everyone has different needs and wants, so it has been boiled down to items that were mentioned by several contributors. With better preparation, the vast majority of unwanted situations can be dealt with, so that long-planned dive trip can continue unimpeded.

# The Trip-Saving Kit We Bring *Travel Tips*

NASA / WIKIPEDIA / PUBLIC DOMAIN





## Bungee cords

Eminent in keeping your kit together, both above and below the water, i.e. to keep wing, harness, hoses and straps snugly bundled up during transport. Underwater, I use one to tuck my long hose under, so it does not dangle about where it can get snared, keeping me more streamlined. Found in hardware stores, gas or petrol stations and other shops.



## Airtags

Once you see your precious dive bags go down the conveyor belt after check-in, you are left crossing your fingers and hoping that your luggage makes it to your destination. An airtag in each of your bags can give you some peace of mind and also help locate luggage that has gone astray. A four-pack is currently priced at US\$99.



## USB charging hub

Rather than travelling with a whole bunch of chargers for each of your computers, phones, cameras and other electronic gadgets as well as assorted battery chargers, a charging hub can take care of all of these needs at once. This also does away with a lot of electric cords. This hub just takes a universal cord, such as the ones shown on the right. Charging hubs come in many sizes and capacities, but the model depicted below costs around €20 to €30.



## Charging cords with local prongs

Instead of bringing a handful of travel plug adapters, consider just getting charging cords that fit the local electrical sockets. The image above shows a pair, one with European prongs on the left, and the other a US version on the right. Each of these plug right into, say, the USB charging hub shown on the left—the socket is on the right end—or a multitude of chargers. Available in hardware stores on location or online for a couple of euros or dollars.

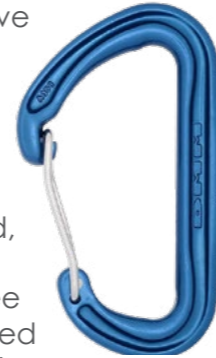
## Swiss Army knife

The Swiss Army knife is such a classic that it has even become a term in itself. It is also smaller and a lot lighter than Leatherman and other multitools.



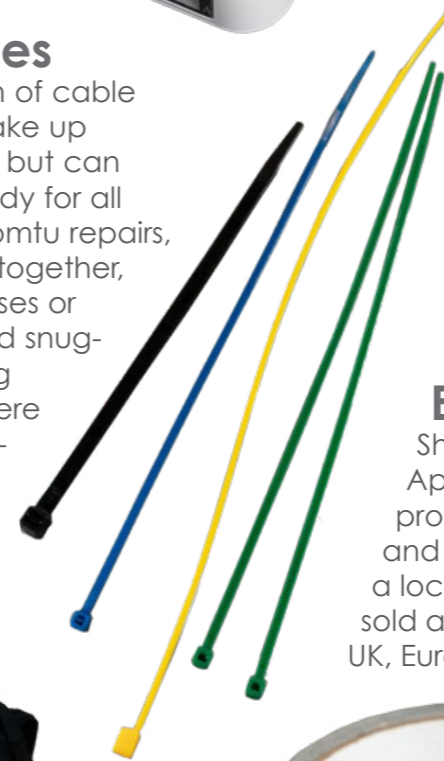
## Carabiner

We've only got two hands but some of us have plenty of D-rings on our BCD or harness onto which stuff can be clipped in a pinch. To this end, a carabiner tied to, say, a bungee cord, can be used to clip on anything handheld such as a camera, a dive lamp or mesh bag. Make sure you get the corrosion-resistant quality.



## Cable ties

A little bunch of cable ties do not take up much space but can come in handy for all sorts of impromptu repairs, tying things together, keeping houses or cables routed snugly, or closing things up. There is even a version that is reusable.



## Exchangable prongs

Shown here is a charger for Apple devices (top). The prongs are detachable and can be exchanged for a local version. This set was sold as a "travel kit" with a UK, European and US prong.



## Weight belt with pouches

There are two reasons why I always pack this old weight belt, even before a suit. One is the buckles that can be both released and tightened with one hand, which is both safer and more comfortable. It also makes it much easier to adjust one's weight on the spot. Not to mention, it is a pet peeve of mine to have to thread weights onto standard issue weight belts every morning at some dive centres.



## Duct or gaffer tape

On the famous Apollo 13 mission, the astronauts fashioned duct tape and surplus materials into air filtration canisters in the lunar module to keep all three astronauts alive for the entire trip home. Less dramatically, dive travellers have used duct tape to patch together broken luggage, ripped suits and cracked equipment.



## Allen keys

A small set of Allen keys is not a heavy tool set for all contingencies, but is ideal for those delicate small screws inside camera housings and the like.



## Power bank

Many of us now travel with a whole array of electronic devices, and while en route or on location, we may find ourselves under circumstances where we cannot recharge devices that are running out of juice. To that end, bring a power bank with a high capacity, say 20,000mAh. Remember, as per airline regulations, batteries and power banks must be carried in carry-on luggage and not in any checked bags.



## Luggage scale

Who does not dread the encounter with the overzealous check-in counter agent, and perhaps being slapped with nasty fees for exceeding weight limitations (especially for divers travelling with a lot of camera equipment)? Take the uncertainty out of the equation by weighing your own bags beforehand, so you can accurately redistribute weight and belongings amongst your various luggage bags.



## Contact cleaner

Battery charger not working, dive computer not recharging, or flash not firing? Perhaps a bit of corrosion has materialised on the contacts.

## Meds

Should we be giving medical advice? No, and we are not. Initially, we were not going to mention any medical remedies, but it turns out that the following over-the-counter meds are almost universally found in our team members' bags: Imodium against travel diarrhea, bug repellent and ear drops to prevent swimmer's ear. Note: Products depicted are just samples. We do not endorse or recommend any specific product.



## Silica gel sachets

Save moisture-absorbing silica gel sachets from parcels you receive, instead of throwing them out. After reaching the maximum amount of moisture they can absorb, they can be "recharged" by placing them in the sun or in an oven for a few hours. They weigh next to nothing and can help dry out moisture that has gotten into places it should not be, or even help rescue some flooded equipment.



## Resealable bags

Excellent for keeping your assorted small gadgets organised and dry, or for making sure you do not lose small pieces. Choose reusable, biodegradable or compostable brands of sandwich bags from the supermarket, which will do the trick. Larger freezer bags can also be used for putting dirty or damp clothing, or wet swimwear, in your suitcase without getting the rest of your clothing or stuff wet. Further uses include holding spare batteries and carrying liquids through airport security.



## Hub with SSD

This device is brilliant. It combines an external hard drive with all the ports you need: USB-A, USB-C, card readers, mic plug, HDMI and internet. The actual hard drive is a PCIe NVMe SSD housed in a compartment under that corrugated lid. This actual case costs US\$99, excluding SSD and P&P.



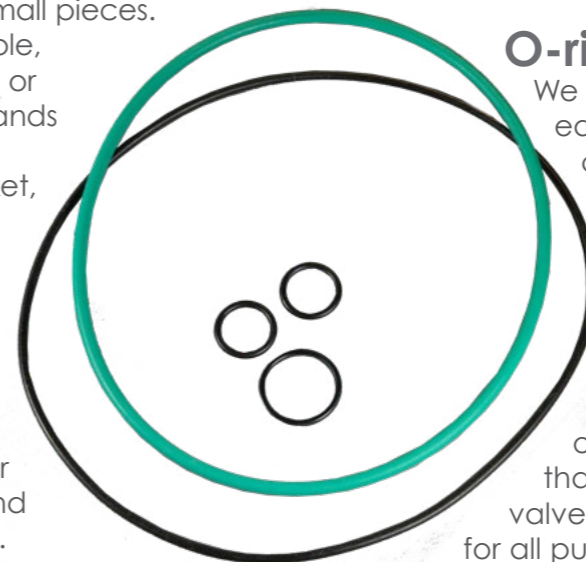
## Cue tips

Nothing is better at cleaning O-ring grooves. But get the kind that does not unravel easily.



## Elastic bands

Another household item that can come in handy when fixes are needed, or just to keep things organised or closed up. Weight and space is negligible.



## O-rings + lube

We have O-rings in most of our equipment, but the most delicate and critical ones are usually the ones that go into our cameras and video equipment. These also come in very specific sizes, so bring spares for anything that is mission-critical. To save on weight, you can use the same oxygen-compliant lubrication that is needed for regulators and valves, which are oxygen-compliant for all purposes.





Text by Simon Pridmore

**How much weight should a diver use? How much is too much or too little to maintain proper posture, balance and air consumption? How do you adjust for a new wetsuit? Simon Pridmore discusses weight issues and offers tips and advice.**

Helga was on the eighth day of a long liveaboard trip across Indonesia. The diving had been superb, and she was having fun and feeling relaxed.

She backrolled into the water, dropped down to the seabed at 24m and swam over to a coral head to see what she could photograph. The first thing she spotted was a tiny, beautiful, bright-red frogfish pretending to be a sponge. "Got you," she thought. "What a great start to the dive!" She spent a couple of minutes taking pictures from various angles until she was satisfied that she had the right shot, then turned to find her husband, who would normally be hovering close by. There he was. She flashed him an OK sign but, instead of responding in kind, he pointed at her

## *Helga and the* **Weight Debate**

waist. She looked down, wondering what the problem was and, at first, she could not see anything wrong. Then she saw what he had noticed.

She was not wearing her weight belt. Her initial thought was that she should

go back up to the tender boat and retrieve her belt, but then it occurred to her that she was already at 24m. What would be the point of ascending to get a piece of equipment to help her descend if she was already on the bot-

tom and doing just fine?  
She had been wearing 3kgs of weight on her belt. This was 1kg more than she would usually wear, because she had begun the trip with a brand new 3mm wetsuit and was aware

that, being new, this suit would have more positive buoyancy than her old suit, which had been compressed and recompressed during a couple of hundred dives over the years and had consequently become thinner,





NEJRON PHOTO / STOCK.ADOBE.COM

less able to keep her warm and less positively buoyant too.

Helga's husband slipped a 1kg weight off his weight belt and passed it to her with a shrug as if to say that was the best he could do. He raised a thumb, asking her if she wanted to abort, but Helga shook her head. She popped the weight he had given her into a zippered pouch on her harness and indicated that they should just continue the dive.

This they did. They had a great time, ascended after the prescribed 60 minutes and Helga managed the safety stop without any difficulty at all. She was a slim, petite lady, she always

used less air on a dive than the others in her group and usually surfaced with at least 70 bar in her cylinder.

### The weight debate

Back on the tender boat, Helga told the group what had happened. "Well, you have obviously been wearing too much weight!" said one person. "Maybe you don't actually need any weight at all?" said another, indicating that Helga had not even noticed she had left her weight belt behind until her husband pointed it out.

A third diver decided that this was an apt occasion to deliver a short speech on how: 1) it was always best

to wear as little weight as possible because carrying too much on your belt affected your posture in the water and pushed your legs down; 2) adding air to your BCD to compensate for the excess negative buoyancy lifted your head up and made you look like a seahorse; and 3) extra air sloshing around in your BCD made it hard to keep your balance and all that rocking and rolling increased your air consumption.

A few heads nodded in sage agreement. That seemed to sum it up.

However, a fourth diver begged to differ. "Not so fast," the diver said. "While all that might technically be

## A New Dive Book from Simon Pridmore

"Simon Pridmore's new book, 'Technically Speaking' is an outstanding tour de force from one of modern diving's most accomplished practitioners and best-selling authors."

— David Strike, Oztek & Tekdive Convenor

"Simon has completed a complex task with consummate skill and has accurately unravelled the when's, the who's and some of the why's, much of which would have been unjustifiably lost in the mists of time if not for this work."

— Kevin Gurr, Technical Diving Inventor & Innovator

"It will take some doing to better this account of tech's first steps...

as no matter how much you know or think you know; you will still find many obscure historical gems..."

— Kevin Denlay, Early Adopter & Wreck Finder

Technically Speaking is the latest book from best-selling Scuba series author Simon Pridmore. It is a selection of themed talks telling the early history of technical diving—where it came from, how it devel-

oped, how it expanded across the world, who the important movers were and how, in the decade from 1989 to 1999, the efforts of a few determined people changed scuba diving forever.

These ten years saw the greatest shake-up the sport has ever seen but technical diving's road to universal acceptance was anything but smooth, many obstacles had to be overcome and there were times when even viewed in retrospect, it seemed that its advocates might fail in their mission. Ultimately, success came down to perseverance, people power, good timing and more than a little luck.



Available in hardback, paperback and ebook at **Amazon Worldwide, Apple, Kobo, and Tolino.** See **SimonPridmore.com**

true in general, it certainly did not apply in Helga's case." The diver mentioned how they had all been diving together for a week and they could all agree that even when Helga had been wearing her belt with the extra weight, her posture and stability in the water were pretty much perfect. And she always had more air left at the end of a dive than any of them.

There was more nodding. These, everyone acknowledged, were all good points too. The conversation moved on.

### Observations

Helga had noticed three things dur-

ing her almost-weightless dive. The first was that she had not added any air to her BCD at all, the second was that her lower back had started to hurt during the second part of the dive, which was unusual, and the third thing was that she had found it more difficult to stay completely still while she was taking photographs.

She concluded that, after 20 dives in her new suit, she evidently no longer needed to wear more weight to compensate for its newness. She had managed to do the dive with just the 1kg her husband had lent her, yet she had missed the sensation of being rock-solid and "centred" in the water





that she usually felt. She also guessed that her lower back pain might be associated with her subconsciously arching her spine towards the end of the dive, as her cylinder gradually emptied and became increasingly positively buoyant.

### Conclusions

Her conclusion was that, while she had shown that she could accomplish a normal dive using only 1kg

of weight and was even able to descend wearing no weight at all when her cylinder was full, this was not sufficient justification for changing the way she dived. Yes, the advice that divers should carry less weight on a dive to improve their posture, balance and air consumption was entirely valid, but this did not mean that a diver should therefore carry less weight than they needed.

Less was not always best. As far as

Helga was concerned, her previous experience had told her that 2kgs was what she needed to be completely comfortable and relaxed on a dive, and this latest dive had just confirmed that this was the case, rather than the contrary.

She continued to dive with 2kgs with her 3mm suit and tried to remember never to forget her weight belt again. ■

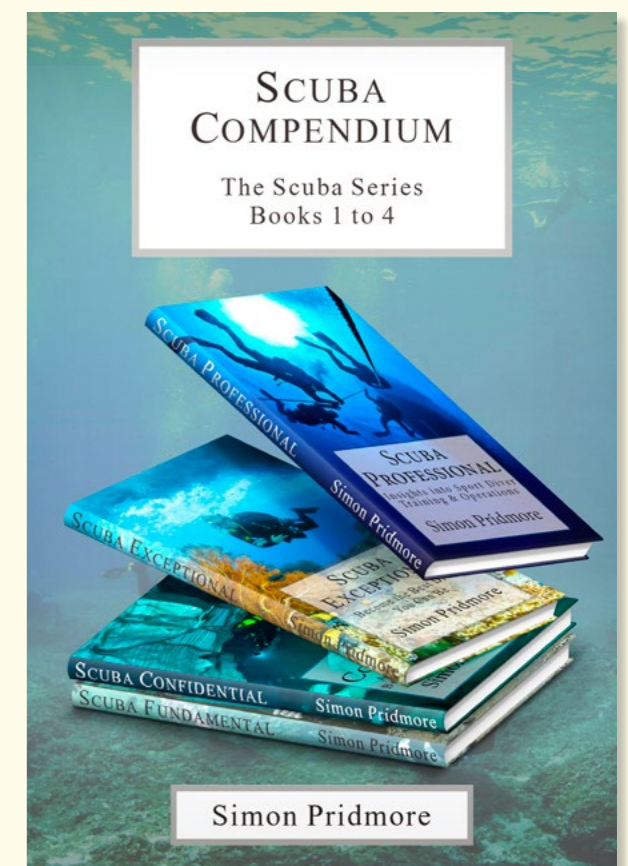
## NEW 4 in 1!

Simon Pridmore has released a new single-volume e-book, bringing together four books in his bestselling Scuba series:

- *Scuba Fundamental – Start Diving the Right Way*
- *Scuba Confidential – An Insider's Guide to Becoming a Better Diver*
- *Scuba Exceptional – Become the Best Diver You Can Be, and*
- *Scuba Professional – Insights into Sport Diver Training & Operations*

As Simon puts it, this is "a remastering and repackaging of the original albums rather than a greatest hits." Nothing is missing. *Scuba Compendium* gives e-book readers the advantage of being able to access all the knowledge contained in the four books in one place, making this a unique and easily searchable work of reference for divers at every level.

Simon has always promoted the idea of safer diving through the acquisition of knowledge, which is why he has chosen to release this highly accessible version. If you have read his work before, you will know that he provides divers with extremely useful advice and information, much



of it unavailable elsewhere; his points often illustrated by real life experiences and cautionary tales. He examines familiar issues from new angles, looks at the wider picture and borrows techniques and procedures from other areas of human activity.

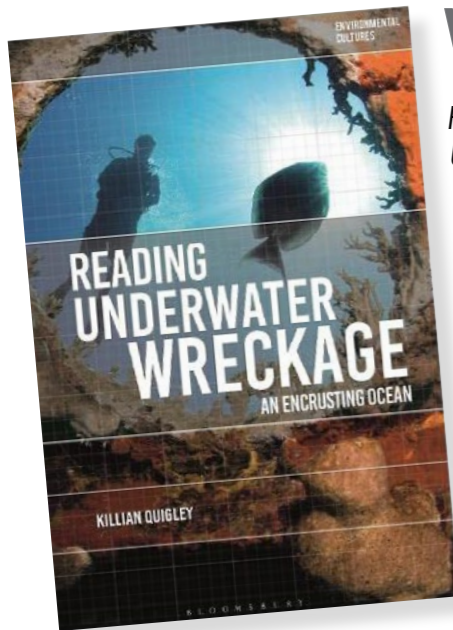
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**simonpridmore.com**

*Simon Pridmore is the author of the international bestsellers Scuba Fundamental: Start Diving the Right Way, Scuba Confidential: An Insider's Guide to Becoming a Better Diver, Scuba Exceptional: Become the Best Diver You Can Be, and Scuba Professional: Insights into Sport Diver Training & Operations, which are now available in a compendium. He is also the co-author of the Diving & Snorkeling Guide to Bali and*

*the Diving & Snorkeling Guide to Raja Ampat & Northeast Indonesia. His recent published books include The Diver Who Fell From The Sky, Dive into Taiwan, Scuba Physiological: Think You Know All About Scuba Medicine? Think Again! and the Diving with Divers series of cookbooks. For more information, please see his website at: **SimonPridmore.com**.*

Edited by Catherine GS Lim



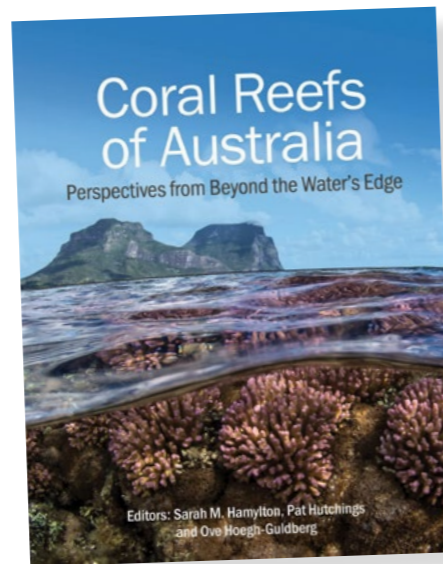
## Wrecks

*Reading Underwater Wreckage: An Encrusting Ocean*, by Killian Quigley

There are as many as three million shipwrecks in our oceans, some of them thousands of years old. This book

presents a novel, dynamic theoretical model for interpreting them and other drowned fragments—as junctures of artefact and ecofact, human remains and emergent ecologies. As they become encrusted by oceanic matter—some living, some inanimate—anthropic fragments participate in a distinctively submarine form of material relation. Drawing from centuries of literary, philosophical and scientific encounters with encrustations, this book would interest readers in search of new ways to perceive, describe and imagine submarine matters.

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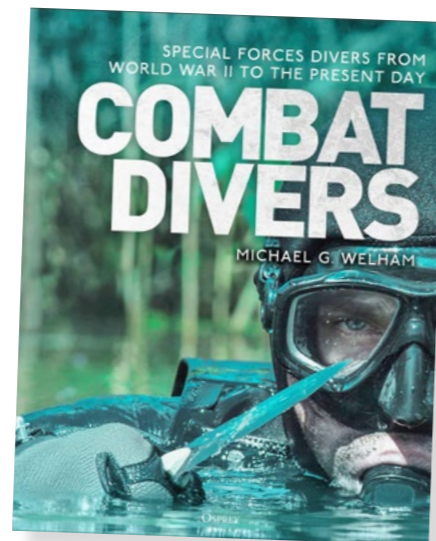


## Australia

*Coral Reefs of Australia: Perspectives from Beyond the Water's Edge*, edited by Sarah M. Hamylton, Pat Hutchings, Ove Hoegh-Guldberg

This comprehensive and interdisciplinary book celebrates humanity's evolving relationship with Australia's coral reefs, bringing together the diverse perspectives and experiences of Indigenous Australians, coral reef scientists, managers and politicians. It details the development of coral reef science in Australia, and shows how we interact with coral reefs, focusing on indigenous culture, coastal livelihoods, exploration, discovery, scientific research and climate change. Illustrated throughout with photos, maps and diagrams, this book will inform and inspire readers to learn more about coral reefs, so as to provide guidance for effective stewardship of the reefs for future generations.

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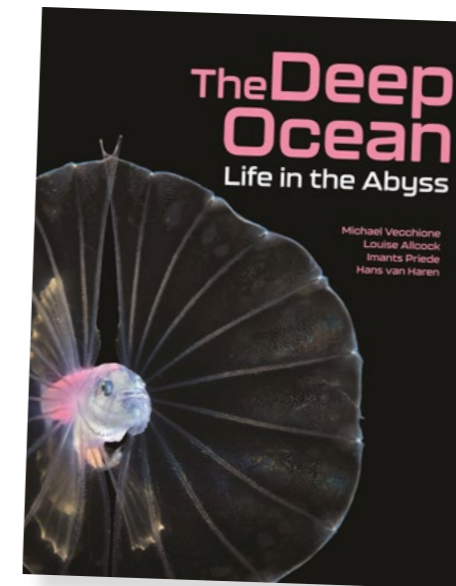


## Special Forces

*Combat Divers: An Illustrated History of Special Forces Divers*, by Michael G. Welham

Enter the secretive world of combat divers—their evolution and operations from World War II to the present day. Illustrated with rare images, writer and former Royal Marines Commando Michael G. Welham details units like the US Navy SEALs and the Royal Navy's SBS, and show how they operate and adapt to threats in different scenarios. Also included are little known operations around the world, the unique equipment used by these elite forces and first-hand accounts of the first female combat divers in the units.

Publisher: Osprey Publishing  
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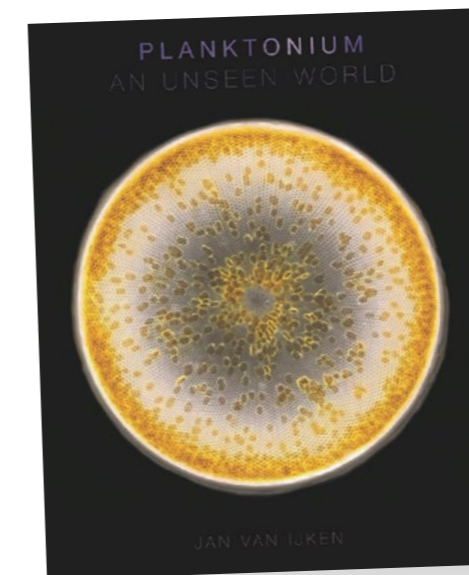


## Deep-Sea Creatures

*The Deep Ocean: Life in the Abyss*, by Louise Allcock, Michael Vecchione, Imants Priede and Hans van Haren

Written by world-class scientists, this book guides you into the deep ocean, amidst its canyons, trenches, cold seeps, abyssal plains and continental slopes. Read about oceanography and deep-sea exploration, as you come face-to-face with its underwater inhabitants through stunning photos, illustrations and graphics. Readers also learn about humanity's impact on this unique environment, through activities (like fisheries and whaling) and processes (like climate change and acidification).

Publisher: Princeton University Press  
Date: 18 April 2023  
Hardcover: 288 pages  
ISBN-10: 0691226814  
ISBN-13: 978-0691226811



## Plankton

*Planktonium: An Unseen World*, by Jan van Ijken

This book invites you into the enigmatic world of plankton. More than just being food for blue whales, plankton are essential to all life on earth, being responsible for half of the planet's oxygen supply, playing a part in the global carbon cycle and forming the base of the aquatic food chain. Today, plankton are threatened by climate change, global warming and ocean acidification. This book is part of a photo project and a short film by photographer/cinematographer Jan van Ijken, who had photographed the plankton through microscopes, to reveal their beauty and delicate structures in minute detail.

Publisher: Lannoo Publishers  
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COURTESY OF ANGELIQUE SONGCO / TMO



Text by Don Silcock  
Photos courtesy of Don Silcock and Angelique Songco / TMO

**In a country that has so much to offer the travelling diver and underwater photographer, there are certain exceptional locations in the Philippines that really stand out and top of the list has to be the remote reefs and atolls of Tubbataha. Don Silcock interviewed a central figure in the story of the conservation of Tubbataha's marine ecosystems: Angelique Songco.**

Pronounced "Too-bah-taa-ha," the name means "long reef exposed at low tide" in Sinama, the language of the nomadic Sama-Bajau sea gypsies, who are believed to have first discovered the area. Physically, the TRNP (Tubbataha Reefs National Park) consists of two atolls and one coral reef that are located in the middle of the Sulu Sea—effectively the core of the Philippine archipelago. Those "exposed reefs" are the highest tips

of the many extinct underwater volcanoes and mountains that form the Cagayan Ridge, which rises up from the 3,000m depths of the Sulu Basin. Tubbataha enjoys a stellar reputation for the health and biodiversity of its reefs, and I was lucky to experience them personally as the dark clouds of the Covid-19 pandemic finally cleared in April 2022. What I saw on my two back-to-back trips was truly impressive. Not only were

they what they had been promoted as, but there was a wonderful story behind it all, which kind of all leads to one person—the "Mama Ranger," aka Angelique Songco! I read everything I could find on Angelique and then managed to contact her through the TRNP to request an interview, which she kindly agreed to. Here is what I learnt about this exceptional woman.

*DS: Would you tell me about yourself and your early life so the readers can better understand who Angelique Songco is?*  
*AS: I was born in Mindanao in the southern Philippines and my overwhelming memories of my early years were the weekends spent at a forest camp with my family and my friends. As a young Filipino girl, the forest seemed a truly enchanted place and*

I remember trekking up the nearby river in search of its source and the magic stones that were said to give us the power to fly!  
Looking back, I think that was when I first started to love nature, but it was only later when my family moved to the island of Palawan that I was exposed to the ocean. I learnt to dive there and first heard the conservation message. I was hooked and had found my mission in life!



# Angelique Songco

*"Mama Ranger" of Tubbataha*

DON SILCOCK



COURTESY OF ANGELIQUE SONGCO / TMO



COURTESY OF ANGELIQUE SONGCO / TMO

TUBBATAHA REEFS NATURAL PARK  
WORLD HERITAGE SITE  
CAGAYANCILLO, PALAWAN, PHILIPPINES



Songco with marine park rangers at the ranger station (above) in Tubbataha Reefs Natural Park (right) in the Philippines

believe what I saw there!

I was astonished at the amount of marine life—there seemed to be huge clouds and waterfalls of fish everywhere and the water was so clear it was almost as if they were somehow floating in mid-air!

What I saw convinced me that something so beautiful simply had to be protected at all costs.

*DS: When did you first notice things were changing for the worse at Tubbataha?*

*AS: In 1985, I was working as a divemaster in Tubbataha—before it became a protected area—and we often saw fishing boats from other provinces using cyanide to catch huge numbers of fish. We also saw them catching turtles and collecting eggs.*

We would always request the fishing boats to leave and even sometimes threaten them, but they knew we could not really do anything because

Tubbataha was so isolated. Basically, there was simply no way to enforce the fisheries laws and the whole area was out of sight and out of mind.

We knew that this illegal fishing must be having an impact on Tubbataha but it was only in 1989, one year after the marine park was established, that research showed that 52 percent of the previous coral cover had been lost.

*DS: Your name is now synonymous with Tubbataha, but can you explain what role you actually played in getting a national marine park established?*

*AS: The Palawan provincial government did the groundwork for the marine park by raising the awareness of just how special and unique Tubbataha was at the national level. The first really tangible outcome of that initiative was establishing it as a protected area (PA). Then, in 1988, it became the first national marine park*

and no-take PA in the country.

I simply played a supporting role in all of that by attending public hearings and lending support whenever and wherever I could and continued to be involved by representing a local nonprofit conservation group—Saguda Palawan—on the park's policy-making body. Then, in 2001, with the support of WWF-Philippines, the board agreed to appoint a park manager and I decided to apply.

I was delighted when I actually got the job and from there went on to establish and lead the Tubbataha Management Office (TMO).

*DS: Did you have an initial plan for TMO or did it all just evolve over time?*

*AS: As I am sure you can imagine, it was quite a daunting task for me to establish the TMO as it was the first marine park in the Philippines, and I was effectively writing the manual as I went along!*



Songco planting trees for conservation in the Tubbataha Reefs Natural Park

TUBBATAHA MANAGEMENT OFFICE

COURTESY OF ANGELIQUE SONGCO / TMO





Underwater scenes from Tubbataha Reefs (top right and left); Hawksbill sea turtle at Tubbataha (centre inset)

My basic plan was to learn as much as I could about managing an offshore marine protected area. But, quite frankly, I really did not know what to do at first and my undergraduate course in literature was not exactly a great help!

I started by taking an online natural resources management course to make up for my lack of technical knowledge and I contacted so many people—experienced park managers, researchers and other practitioners to ask questions and learn from them. I also coordinated with the other agencies already working in Tubbataha so that we could integrate our efforts.

One of my first decisions, based on my hands-on experience out at Tubbataha, was that our overall success would depend on developing a core of well-trained and well-

equipped law enforcement personnel who would be based out on the reefs.

Our office is in Puerto Princesa, some 150km away, and there is just no way to enforce the strict rules in place to protect the park if the right people are not there to do it.

So many people were incredibly generous with their time, knowledge and experience in marine park enforcement, education, research, HR, tourism management and conservation. Tubbataha is a success because of the hundreds, perhaps even thousands, of people who have helped us in the past two decades.

*DS: As you explained, you were not directly involved in the initial stages of making Tubbataha the first marine park in the Philippines, but can you share any insight into the overall process?*

AS: The Provincial Government of Palawan (PGP) was instrumental in getting the initial national recognition of Tubbataha, which paved the way for the creation of the marine park during the rule of President Corazon Aquino.

They have continued to support us and agreed to construct the new ranger station that will be built soon with funds allocated by the Federal Department of Environment and Natural Resources, together with the Department of Tourism.

We had a tremendous stroke of luck in that President Aquino's successor Fidel Ramos was a scuba diver who had been to Tubbataha and understood the need to conserve it and ensure that the conservation was properly supported.

President Ramos provided both the resources and the management infrastructure to care for the park and

then established the policy-making body to make sure there were enforcers stationed there.

That did not come into force until 2005, but it really changed the game and has been a key element of our overall success with Tubbataha.

*DS: What was the biggest challenge in making Tubbataha a natural park and how did you overcome it?*

AS: The biggest challenge was how to get people to really appreciate Tubbataha. Very few people scuba dive and only a few of those who do can actually visit because of the limited tourism window, the distance and the cost.

It was really quite challenging to get the planners and decision-makers (who do not see the corals reefs) interested and concerned enough to allocate

funds and formulate good policy. We had to bring Tubbataha to the cities, schools and the media, because we could not take people there.

Over the years, Tubbataha has become famous—but... mostly for the bad things that happened to it. For example, back in 2002, five Chinese fishing vessels were caught poaching at Tubbataha, but the publicity generated by the incident produced a groundswell of support across the Philippines and its protection became a matter of national concern.

Tubbataha was in the media for weeks, which meant that many learnt about the uniqueness and value of the park for the first time and were outraged at what the illegal fishing vessels had done!

Prosecuting cases is also a challenge because one deals with unhappy and scared people. (Who would be happy



Barrel sponge, hard corals and unicornfish at Tubbataha Reef

after being arrested?) It is also painful to send poor people to jail. Even the marine park rangers are not happy to do it. But it is our job, so we must do it and do it well.

DS: What is the thing you are most proud of when you look back at the journey you have been on with Tubbataha?

AS: I am most proud of the people I work with. Our rangers are dedicated to their work, and so is the staff. Again, I get a lot of credit, but it is on the backs of these people that I stand on, really. One needs a good team for anything to succeed. I am proud of our team, how we all started so unsure of ourselves and transformed into this confident, proud and pas-

sionate people still in love with Tubbataha after 21 years.

DS: What is your biggest disappointment?

AS: My biggest disappointment was taking forever to develop second liners. A succession plan is critical, it is so clear in hindsight. I was so immersed in learning the ropes, studying the literature, experimenting with new approaches—I got lost in the here and now and did not look into the future enough. Perhaps because even my future and that of Tubbataha was not clear to me then.

DS: How confident and optimistic are you for the future of Tubbataha?

AS: With the extensive constituency that supports it, Tubbataha has a bright future ahead. Nature will not run out of style, there will always be those who will care for it. With most of our wild places being exploited to the point of destruction, keeping Tubbataha as wild as it is now is even more important. ■

Don Silcock is an underwater photographer and photojournalist based on the island of Bali in Indonesia. His website has extensive location guides, articles and images on some of the best diving locations in the Indo-Pacific region. Go to: [indopacificimages.com](http://indopacificimages.com)



# Beneath the Sea®



Photo courtesy of Arosigwo-Dominico -- Octopus Ballet

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# marine mammals

Text edited by Peter Symes



## Why whales don't get cancer

ROBBIE SHADE / CC BY 2.0

Whales have developed mechanisms against diseases such as cancer.

**Whales should have a greater risk of developing cancer than humans because they are bigger and have more cells. In fact, whales are some of the animals least likely to get cancer. The answer is in their genes, according to a new study.**

Cancer should be a near certainty for whales, being the longest-living and largest mammals there are. Across species, the higher the num-

ber of cells, the greater the number of cell divisions and the higher the probability of DNA damage and the transformation of a normal cell into a cancerous one.

However, the occurrence of cancer does not show a correlation with body mass. The lack of correlation between body mass and cancer risk is known as Peto's paradox.

Whales have developed mechanisms against diseases such as cancer, although the underlying molecular bases of these remain unknown. Now, it has been found they have a gene duplication that appears to

slow the division of cells, allowing the whales to live longer—but at the cost of reduced male fertility.

### Tumour-suppressing genes

A study led by Daniela Tejada-Martinez, a postdoctoral researcher at Thomas Jefferson University in Philadelphia, investigated the evolution of tumour suppressor genes (TSGs), in the ancestor of cetaceans, as well as in baleen and toothed whales. TSGs are considered among the most important anti-cancer responses in the body.

The study showed that over the

course of evolution in cetaceans, genes involved in the control of cancer onset were duplicated many times and progression was positively selected. It also found that cetaceans have a 2.4 times faster turnover rate of tumour-suppressing genes than other mammals. ■

SOURCES: NATURE, PROCEEDINGS OF THE ROYAL SOCIETY B

*Cancer happens precisely when the TSGs are not working properly.*

— Tejada-Martinez



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[mark@dolphin-way.com](mailto:mark@dolphin-way.com)

*From the first moment I opened "Dolphin Way", I was instantaneously captivated by the story. I indulged and read through the night till the final page. Though a novel, Mark has unravelled both facts and mysteries surrounding these fascinating, endearing animals. As a fellow marine mammal and ocean aficionado, I loved the book.*

– Ocean Geographic Magazine

*A superbly plotted, accomplished and entertaining novel with a powerful environmental message describing the intolerable pressure from human destruction of the dolphins' world.*

– Whale and Dolphin Conservation



Text and illustrations  
by Francesco Cameli

**Trim is a misunderstood, and often poorly rectified, scuba skill. In our scuba journey, trim is something that we may or may not encounter or discuss, unless we get into technical diving or more advanced recreational diving. My experience of this is that no one had really mentioned it to me until I took a GUE Fundamentals class—not in advanced, not in rescue, nor in drysuit. I was blissfully ignoring my trim. When it came time to address it, I struggled! So, in case my journey sounds familiar, I want to take a moment to share with you some tips that I have picked up along the way.**

First, let's examine what it is and why it is important. Simply put, trim is the orientation of the body in the water, determined by posture and the distribution of mass along the body and equipment. It is also affected by any other forces acting on the diver. This applies in all environments, be it a wreck, the seabed, a cave, or the intricate shapes of a coral reef.

### Why is good trim important?

It is important primarily because it assures your efficiency in the water. If you present a small surface area in the direction you wish to travel, you need less energy to propel yourself, allowing your kicks to work more efficiently.

As a result, you typically present a larger surface area to the surface

and seabed, and this helps to keep your buoyancy more stable enabling you to be more efficient. By being more efficient, less effort is required to undertake your dive.

Less effort equals less gas consumed, which in turn allows you to stay in the water longer, enjoying the dive, and having more fun. From a safety

perspective, more gas also means you have a greater gas reserve, which is a good thing. (See Figure 1.)

In short, we become more efficient, we stay in the water longer, we are safer, and we have more fun.

What else? Well, environmentally speaking, if you have good control of your trim, you can more easily fol-

low the contours of the site you are visiting and are therefore less likely, in conjunction with better buoyancy, to make contact with the reef, wreck, cave or general surroundings. You are also less likely to kick up sediment reducing or destroying the visibility. This allows us all to better preserve the original condition of the aquatic



# All the Trimmings

*Tips to Improve Your Efficiency in Water with Good Trim*

TIM SHEERMAN-CHASE / FLICKR / CC BY 2.0





DANIEL LOBO / FLICKR / CC BY 2.0

realm—A good goal to have on all our dives.

**Training**

Historically, there were few classes that addressed this skill specifically, but over the years, more and more agencies have turned their attention to teaching their students to achieve better trim and buoyancy control. Some have done better than others. I feel that the agency that I teach for, Global Underwater Explorers (GUE), does a particularly good job of addressing this. Its entry-level Fundamentals class for already certified divers concentrates mainly on buoyancy, trim and propulsion.

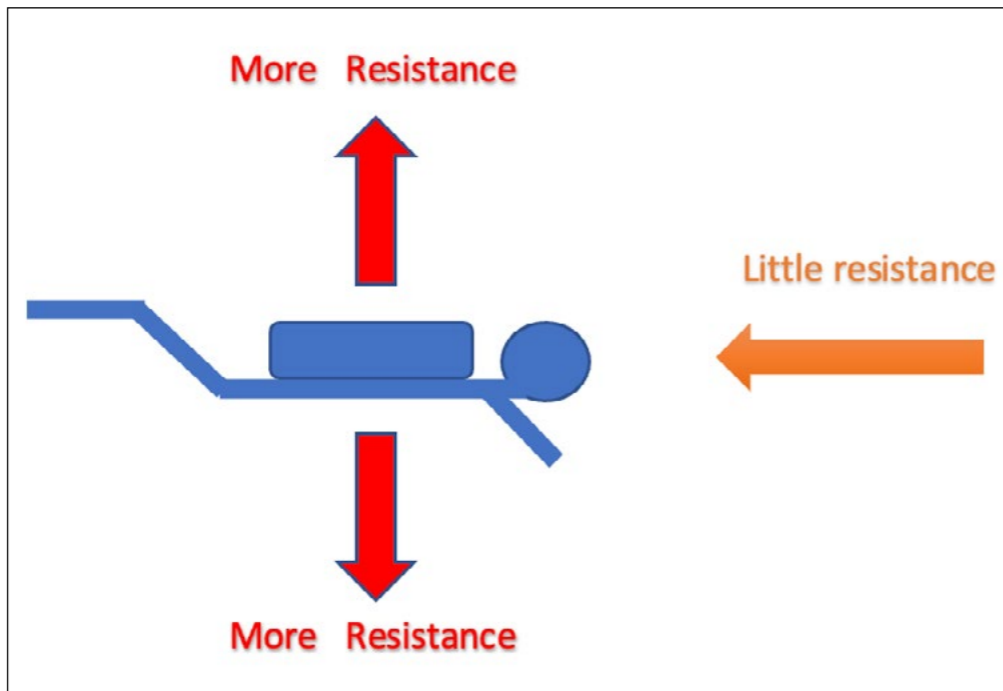


Figure 1. With good trim, divers are more efficient and can stay longer and safer underwater.

**Trim**

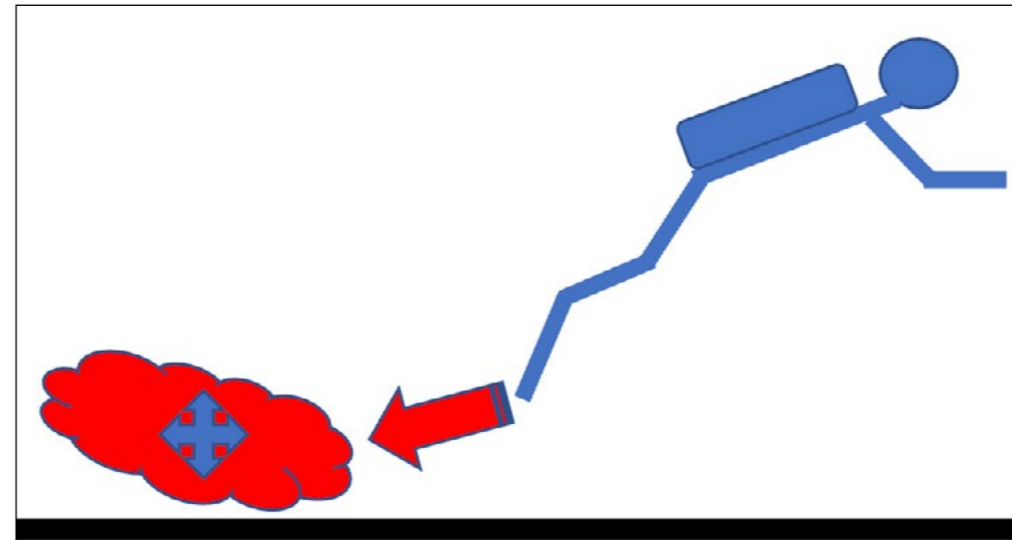


Figure 2. With proper trim, divers will avoid contact with underwater landscapes or raising silt in wrecks and caves, thus preserving natural conditions.

“Simple things done very well,” was what my friend, mentor and instructor examiner Guy Shockey once told me.

When I first learnt about the concept, I had somewhat of a physical approach to controlling my trim. Put your body in this position, flex these muscle groups and muscle it in. However, I really struggled and frequently had a sore back from overarching.

Though this method can work for some, it is important to note that, there is much more to it than that, and that diving is supposed to be a pleasurable experience. So, as my own diving progressed and I trained to become a GUE instructor, I became curious as to how to best teach and fix trim. It was in fact not until sometime later when a dear colleague of mine, Steve Millington, pointed out a small trick to me that I was able implement to refine my trim instantly. In time, more and more pieces began to fall into place, and now I have a much deeper understanding of how to diagnose and fix trim in my own students. Thanks, Steve!

A word of warning: Though you can play with some of these concepts yourselves, the best way to better your trim

is to spend some time in the water with a GUE instructor so they can observe you, show you video of yourself and, discuss the small details that will help you perfect it and keep it dialled in moving forward. Here, I merely aim to provide some pointers that you can digest and perhaps play with the next time you go diving.

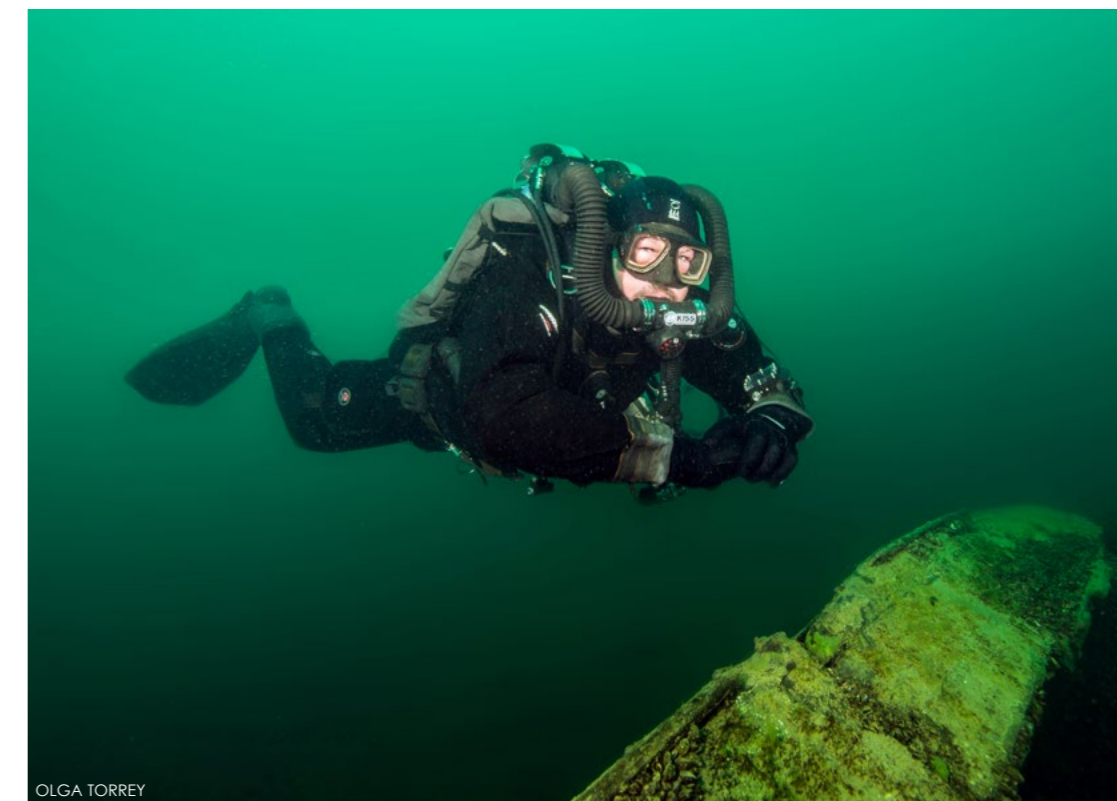
**Physicality and physics**

When I teach my students, my goal is to help them to trim out with the least amount of physical effort. The first thing I do

is to look at the student and approach the problem from a physics standpoint on the principle that all matter must acquiesce to the laws of physics.

I begin outside of the water. What is your build? Are you taller? Smaller? Muscular? Stocky? A sinker or floater? The answers to these questions help suggest an appropriate scuba tank. This is particularly helpful when diving with doubles, as the tanks become a large mass object that you need to balance properly.

I am 6ft, 2in tall so, as much



OLGA TORREY



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as I like my Worthington HP100s, they are not ideal for my frame, so I choose to dive with HP120s, which are longer. In time, and once you perfect trim, you will be able to dive with anything, but here, we are at the very start of your journey to better trim. Once you have learnt this, being out of trim will simply feel odd and you will automatically correct it.

I can hear some of you now screaming, "Adjust your shoulder straps, dummy!" at the computer screen. Well, yes, you can do that, but remember that we must walk a thin line between lowering our tanks whilst also still being able to reach our valves. For me, 100s would have needed to be so far down my back that valve manipulation would be tricky even though I have good shoulder mobility and reach. Hence, my choice of a longer tank to move

some weight backwards. Knowing which way to go with the tanks is also important.

Now, if I loosen the crotch strap on my backplate to help me reach my valves, then I nullify the function of the crotch strap. This is also not ideal.

A tail weight can help some but be careful not to overweight yourself, you want to dive a balanced rig. I find that in some configurations and with no added weight, I am already too heavy. Simply adding weight is not the answer for me. Again, make

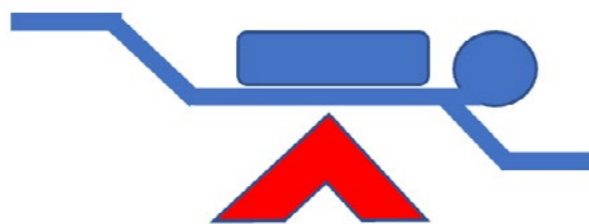


Figure 3. The aim is to create a well-balanced you, before you even start moving.

sure you add weight in the correct place. A diver who trims head up may decide to add weight higher, but this would in fact make the matter worse not better.

The solution lies in balancing, quite literally, plate position, tank choice and reach to valves. Create a well-balanced platform before you even start to move around—Create a state where, if you remain motionless, you neither rotate forward nor backward. (See Figure 3.)

That is only the beginning. It is what we can look at before we enter the water. Once in the water, many other things

come into play. Let's examine some together now.

### Your suit

If you are in a drysuit, you must consider the air bubble that exists within your suit. How big is it and where does it reside?

Firstly, if you were taught to use a drysuit for buoyancy, I would urge you to return to using your BCD for this and add just enough air in the suit to make the squeeze comfortable. Then, try not to allow all the gas to pool at your feet, but rather, try to distribute it as evenly as possible in your suit. Remember, the potential for accumulating a large volume of gas accidentally in a drysuit is much greater than doing so in a wing. This much larger bubble, if untamed, can move around too much, making it hard to control. Remember, we want to be

stable, still and relaxed, so we can enjoy the dive, not constantly fight the equipment.

Of course, if you are in a wetsuit, this is a moot point and is one less thing to concern yourself with.

### Your fins

Now that you have considered your suit, I invite you to turn your attention to your fins. I have seen many fin sins! Or rather, fins that are not the right choice for the diver's configuration.

Fins are important because they are at the end of some pretty long levers—your legs. Too light and you cannot use them to your advantage. Too heavy and you are constantly fighting to keep them up. Again, here you need to find a good compromise that works for you and your overall setup. If you are correctly weighted, in sensible tanks, placed somewhere sensible on your back, then you can really do all the fine adjustments by extending or retracting your arms and legs a little. However, if your starting balance (trim) is off, then you will be fighting this every moment of your dive. That does not make for a pleasant trip under the waves!

### Your equipment

Moving other equipment around your body will also have an effect, but for us GUE divers, the equipment configuration is standard, so we have a familiar, fixed starting point.

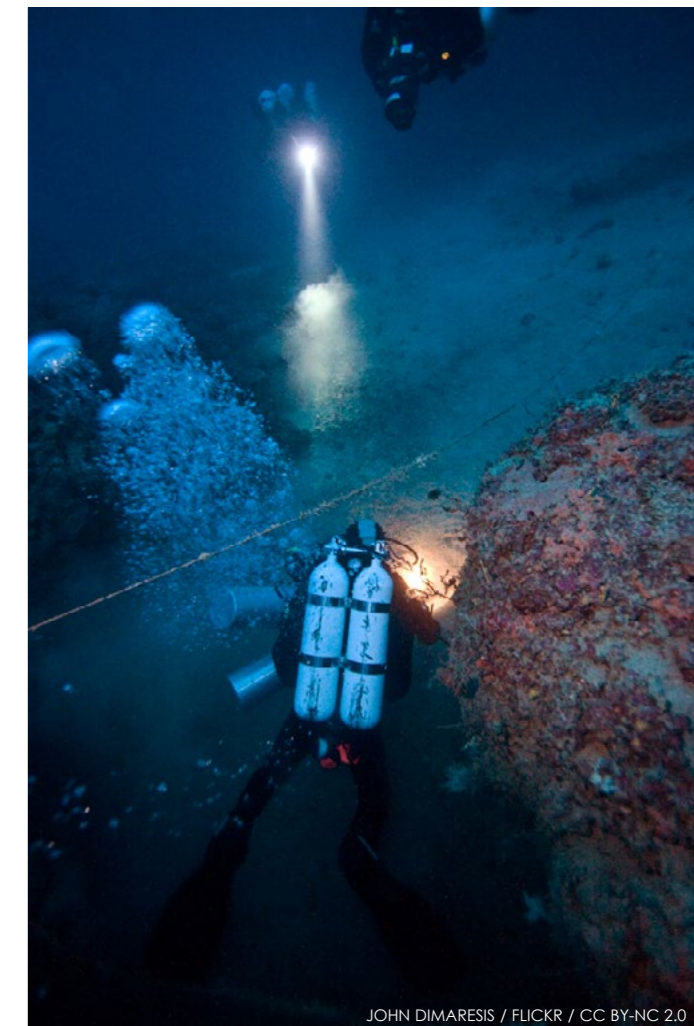
I am not going to tell you where to put what, but I suggest that if you carry a lot of equipment on a dive, you must consider where you attach it and what potential impact it can have on your balance in the water. To that end, we use a BP and wing because the wing allows us to place

gas where it is needed to offset say a deco, stage or pony bottle. This is not really possible with a jacket-style BCD.

All this and we have not even begun to discuss any muscle groups yet. You see, if you get all of the basics right, then trimming out becomes a joy and not a chore. It is a great tool you can use to your advantage on a dive rather than something you must constantly struggle with.

### Position in the water

Let us discuss your position in the water. We want you to be as hydrodynamic as you can be in the direction of travel whilst presenting the largest surface area to aid with buoyancy in the up and down directions. If you are in open water, why not trim out to 0



JOHN DIMAREZIS / FLICKR / CC BY-NC 2.0



Figure 4. Effective trim (on the left) means keeping the body flat from knees to shoulders. Knees should be bent, with fins flat to aid with stability.

degrees? Whilst swimming over a varied reef, vary your orientation. Indeed, in a fundamentals class, we also teach you to propel yourself backwards efficiently, and so all the same rules as moving forward apply.

How do we achieve this position? By keeping our bodies flat from knees to shoulders. Knees slightly bent, with fins flat to aid with lateral stability. Arms in front of us, head up to see better and a slight arch in our back. To me, all these things should require little to no strain.

Of course, at first this may engage muscle groups that are not used to being engaged. The glutes need to be engaged just enough to keep the knees up, so you do not bend at the hips. (See Figure 4.)

After a short time, this becomes effortless. Holding your head up may also be challenging. I know I had poor neck mobility when I started. In time, this got better, and it also helped my trim and my field of vision. The arching of the back is so you do not slouch or have a rounded back. Do that just enough to keep a straight back

but do not overarch.

That was where most of my discomfort came from. I was head-heavy, and to counteract that, I would try to lift my chest and upper body by overarching. Ultimately, that caused substantial back fatigue and was what my initial instructor had missed in his approach to fixing my trim.

### One size does not fit all

One size rarely fits all so as instructors, it is in our ability to find these little fixes for the individual that the true expertise lies. Less sergeant major, more curious tinkerer is the approach I now like to take.

Who would have thought that such a simple concept would in fact be relatively complex! I invite you to try some of these tips on your next dives, and if you are still stuck and want to take your diving to the next level, consider taking a GUE Fundamentals class.

I hope I was able to help a little. Happy diving! ■

*Born in Nice, France, and raised in London, United Kingdom, and his hometown of Genova,*

*Italy, Francesco Cameli speaks four languages and currently resides in Los Angeles, USA.*

*The work of Jaques Cousteau and Luc Besson's film The Big Blue inspired him to become a marine biologist; however, he turned to a career in music where he has become a successful recording engineer and owner of two world-class recording studios. He is an avid technical and cave diver, budding underwater photographer, and GUE instructor teaching recreational and fundamental curriculums as well as Technical Diver 1 in various countries, including the United States, Italy and Mexico. In 2020, he conceived, designed, and built a GUE premium dive centre, and has taken part in several projects, including Ghost Fishing (Los Angeles), Reef Alert Network (Portofino, Italy), Project Baseline (Orange County, USA) and Map the Gulf (Sardinia, Italy). He has contributed to the TV show Expedition Unknown as an exploration tech diver, cameraman and 3D photogrammetry diver.*

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# THE NAUI & SKILLBRIDGE PARTNERSHIP



Historical photo of the 1937 *Hindenburg* hydrogen-filled airship disaster that took place in New Jersey, USA

Text by David Strike

In the early part of the 20th century, American physicist and chemist Professor Elihu Thomson—the person credited with putting the eventual use of helium on the diving menu—had originally proposed the use of hydrogen as a suitable replacement for nitrogen in the breathing mix used by divers.

The advantages of hydrogen over helium are enormous. Hydrogen is half the atomic weight of helium, less dense, more readily available and far cheaper. However, on the downside, it is also highly flammable, and requires great care in its use—a fact highlighted by the 1937 *Hindenburg* disaster when the world's most luxurious airship (a “lighter-than-air” passenger aircraft that halved the time taken by

the trans-Atlantic ocean liners to travel between Europe and America) burst into flames, killing 37 of its passengers, when an electrostatic discharge from a securing line ignited escaping hydrogen during landing.

Nevertheless, while the use of hydrogen for airships and Zeppelins came into question, the attraction of hydrogen as an alternative replacement for nitrogen in a diver's breathing mix continued to encour-

age research into its use. Austrian physiologist and physician Hermann von Schrötter (1870–1928)—a pioneer of aviation and hyperbaric medicine who made essential contributions to the study of decompression sick-

ness—conducted experiments in the use of hydrogen, as did Swedish researcher Arne Zetterström.

Conducting research into the use of hydrox mixtures for the Swedish Navy, Zetterström made a series of dives in

## Hydrogen *in the Mix*

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SWEDISH NATIONAL MARITIME AND TRANSPORT MUSEUMS / PUBLIC DOMAIN



SWEDISH NATIONAL MARITIME AND TRANSPORT MUSEUMS / PUBLIC DOMAIN

Swedish researcher, Arne Zetterström (above), conducting trials with hydrox mixtures for the Swedish Navy (left)

## ABOUT ARNE ZETTERSTRÖM

Arne Zetterström (1917–1945) is best known for researching hydrox, a breathing mixture, for the Swedish Navy.

In 1943, Zetterström made the first mention of using hydrogen as a breathing gas. Six ocean dives were completed with this mixture between 1943 and 1944, the deepest reaching 160m (on 96% hydrogen and 4% oxygen).

Zetterström encountered technical issues while diving from HSwMS *Belos* on 7 August 1945. The misreading of his signals by his support divers was followed by a quick ascent, which led to lethal decompression sickness and hypoxia. ■

SOURCE: WIKIPEDIA.ORG

In 1992, Comex divers set a new depth record with an experimental dry-dive (in a pressurised chamber) to a simulated depth of 701m (2,300ft) for seven hours, but required 24 days of decompression. ■

1943 and 1944 (the deepest to 160m, using a mix of 96% hydrogen and 4% oxygen) before his untimely death in 1945, in a diving accident unrelated to his use of hydrogen in the breathing mix. Professor J.B.S. Haldane (son of J.S. Haldane) also toyed with the idea of using hydrogen and oxygen mixtures and the theoretical advantage of the lighter gas in decompression research.

## 534m depth

In 1988, four divers from the French diving company COMEX (Compagnie Maritime d'Expertises) and two French Navy divers spent eight days in a chamber that was gradually being pressurised to a depth equivalent to 53 times that at the surface. The capsule was lowered to depth in the



Historical photo of the hydrogen-filled airship *Graf Zeppelin* in Los Angeles in 1929

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*Contributors' Picks*

# Minimalist

*Underwater Photography*

Text and photos by John A. Ares, Rico Besserlich, Sheryl Checkman, Larry Cohen, Anita George-Ares, Kate Jonker, Matthew Meier, Brandi Mueller, Gary Rose, Michael Rothschild and Olga Torrey

**We asked our contributors what their favorite minimalist underwater photos were and they returned with a creative mix of macro, wide-angle and close-up abstract images in color and black and white. Here, *X-Ray Mag* contributors share their favorite images from the tropical waters of Fiji, French Polynesia, Chuuk, the Solomon Islands, the Philippines, Indonesia, Malaysia, the Egyptian Red Sea, the Bahamas, Cuba, the Cayman Islands, Mexico's Yucatán and Revillagigedo Islands, Bonaire and Honduras to the temperate waters of South Africa and the US East Coast.**





Photo 1. (above) Using shallow depth of field and contrasting negative space to highlight a hairy shrimp (*Phycocaris simulans*) in Anilao, Philippines. Gear: Canon EOS 7D Mark II camera, 60mm macro lens with +15 diopter, Sea&Sea housing, Sea&Sea YS-D1 strobes. Exposure: ISO 200, f/22, 1/200s



Photo 3. (above) Using negative space and a smaller subject—a two-bar anemone clownfish (*Amphiprion bicinctus*)—in the frame. Red Sea, Egypt. Gear: Canon EOS 7D Mark II camera, Tokina 10-17mm fisheye lens, Sea&Sea housing, Sea&Sea YS-D1 strobes. Exposure: ISO 160, f/11, 1/200s

Photo 4. (previous page) Using black and white to create a minimalist image of a ghost nudibranch (*Lecithophorus capensis*) at Gordon's Bay, South Africa. Gear: Nikon D850 camera, Nikkor 105mm macro lens, Isotta housing, single Inon Z240 strobe. Exposure: ISO 64, f/22, 1/200s



Photo 2. (left) Using a snoot to isolate a cape dorid (*Hypselodoris capensis*) at Gordon's Bay, South Africa. Gear: Canon EOS R5 camera, Canon RF 35mm macro lens, Marelux housing, Inon Z240 strobe with Marelux SOFT Pro Snoot. Exposure: ISO 100, f/22, 1/200s

Photo 5. (below) Using shallow depth of field to blur the background and isolate a cape dorid (*Hypselodoris capensis*) at Gordon's Bay, South Africa. This photo shows how the same subject can be photographed in different ways. Gear: Nikon D850 camera, Nikkor 105mm macro lens, Isotta housing, two Inon Z240 strobes. Exposure: ISO 64, f/14, 1/250s

## Simple & Clean Compositions

Text and photos by Kate Jonker

Minimalism in underwater photography is a way of capturing the beauty and details of a subject by using simple and clean compositions. This technique draws the viewer's attention to the subject being photographed by removing distractions in the frame.

One way to achieve minimalism in underwater photography is by using a shallow depth of field. By focusing on the subject and blurring the background and foreground, we remove distractions and direct the viewer's eye towards the subject. (See Photo 1 and 5.)

Another technique to create minimalistic underwater photos is by using a snoot. A snoot is a lighting device that only illuminates the subject, resulting in a black background that highlights the subject's colours and details. (See Photo 2.)

Negative space is another way to achieve a minimalistic look in underwater photography. By photographing a single subject against a



contrasting-coloured background, the subject becomes the star of the show and is emphasised against the empty space. (See Photo 3.)

Converting images to black and white can also result in attractive minimalistic photos, especially if the image has fine details that are highlighted against a black background.

(See Photo 4 on previous page.) By using shallow depth of field, snooting, negative space and contrasting colours, underwater photographers can create stunning and impactful minimalistic images that showcase the beauty and wonders of our underwater world. Visit: [katejonker.com](http://katejonker.com)



Photo 3. (left) Green tunicate. Gear: Canon Rebel SL1 camera, Canon 60mm f/2.8 USM macro lens, Ikelite housing, twin Ikelite DS161 strobes. Exposure: ISO 100, f/11, 1/160s

Photo 4. (bottom left) Colonial tunicate. Gear: Canon Rebel T1i camera, Canon 100mm f/2.8 USM macro lens, Ikelite housing, twin Ikelite DS161 strobes. Exposure: ISO 400, f/22, 1/160s

Photo 5. (below) Nudibranch. Gear: Canon Rebel T1i camera, Canon 100mm f/2.8 USM macro lens, Ikelite housing, twin Ikelite DS161 strobes. Exposure: ISO 400, f/22, 1/60s

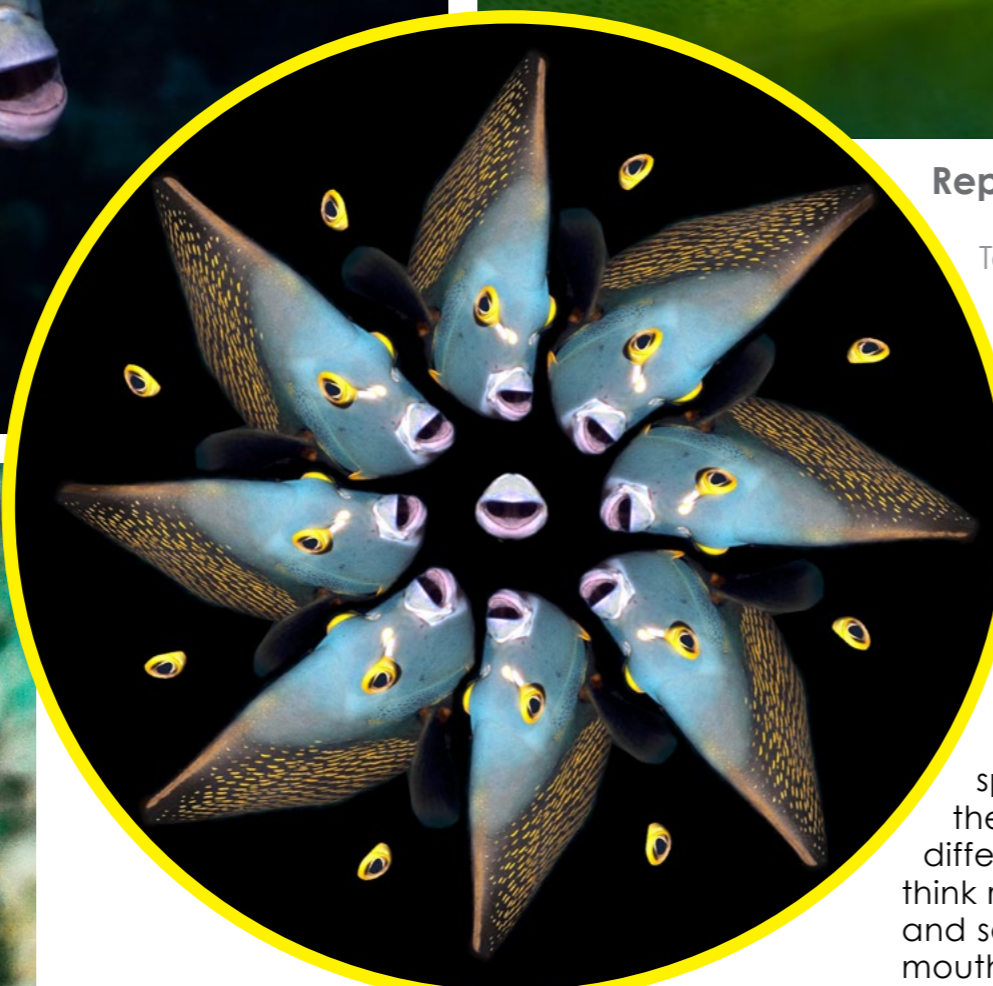


Photo 1. (top left) French angelfish. Gear: Canon 10D camera, 50mm Sigma macro lens, Ikelite housing, twin Ikelite DS161 strobes. Exposure: ISO 100, f/11, 1/160s

Photo 2. (above) Angelfish composite using Photoshop. Gear: Canon 10D camera, 50mm Sigma macro lens, Ikelite housing, twin Ikelite DS161 strobes. Exposure: ISO 100, f/11, 1/160s

### Repetition

Text and photos by John A. Ares

One of the characteristics of a minimalist photo is repetition. Images of underwater creatures frequently display repetitive elements.

Photos 1 and 2 show two versions of the same French angelfish shot in Bonaire, Netherlands Antilles. Photo 1 is minimalist because the angelfish is sufficiently isolated with a lot of negative space. However, I thought the angelfish also deserved a different treatment. In Photo 2, I think repeating the whole image and some of its distinctive parts (eyes and mouth) makes for a stronger, more intriguing image while still being minimalist.

The green tunicate in Photo 3 is monochromatic and has a dominating, oval character. The image was taken in Dumaguete, Philippines.

Photo 4 is an image of a colonial tunicate. The tiny, black individuals are called zooids. Repetition of the zooid elements is suggested in



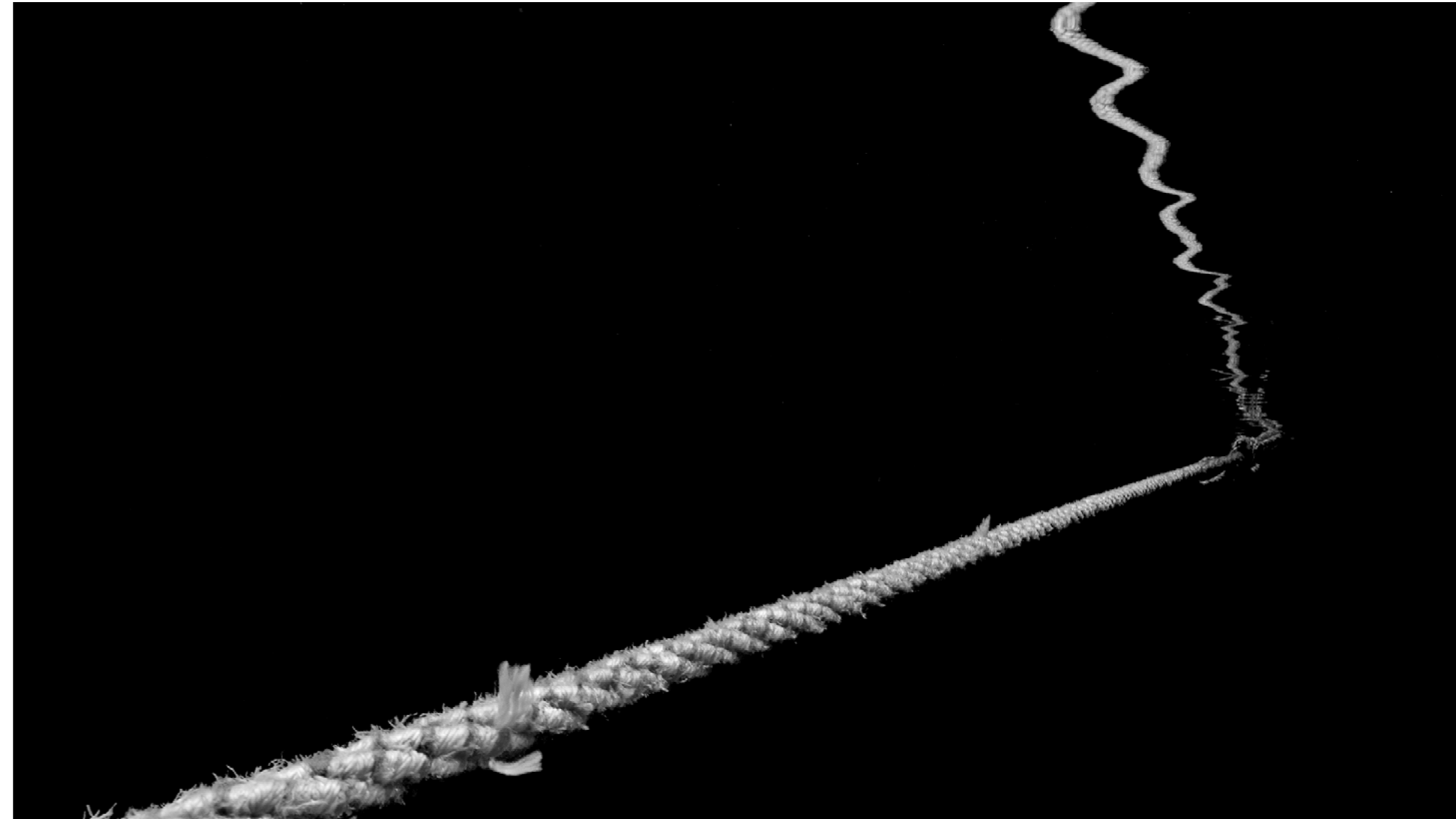
the sand background. The image was taken in Puerto Galera, Philippines.

The nudibranch, *Phyllodesmium rudmani* (Photo 5), closely mimics the octocoral that it eats. The white rhinophores (frontal sensory organs) definitively identify this as a nudibranch. This is often a difficult creature to spot among the octocorals. The image was taken in Puerto Galera, Philippines. Visit: [JohnAres.com](http://JohnAres.com)





Photo 2. (below) Anchor rope with reflection, Hurghada, Red Sea, Egypt. Gear: Canon 7D camera, Sigma 10-20mm lens, Easydive housing, two Sea&Sea YS110a strobes. Exposure: ISO 200, f/11, 1/160s



### Minimalistic Images

Text by Rico Besserdich

I always like to explore macro motifs and photograph them with a very shallow depth of field, such as the soft coral in Photo 1. This helps show “minimalism” in the resulting image. Photo 2 shows an anchor rope reflecting itself on the water’s surface. I do often enjoy spending some minutes in extremely shallow water after the main dive is done. The simplest objects such as a rope can still serve as an interesting subject to photograph. Photo 3 shows sunrays passing through the water. I could watch them forever! Visit: [maviphoto.com](http://maviphoto.com)

Photo 1. (right) Soft coral, Anilao, Philippines. Gear: Canon 40D camera, Canon 60mm macro lens, Ikelite housing, two Sea&Sea YS110a strobes. Exposure: ISO 100, f/3.5, 1/200s

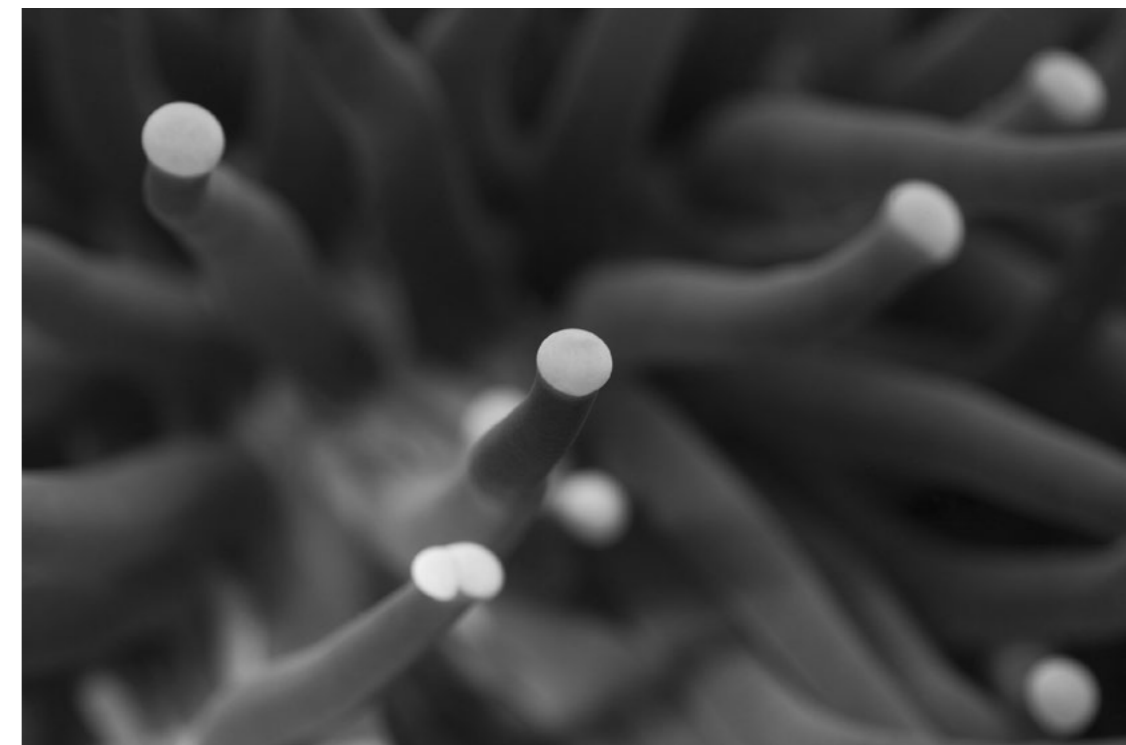
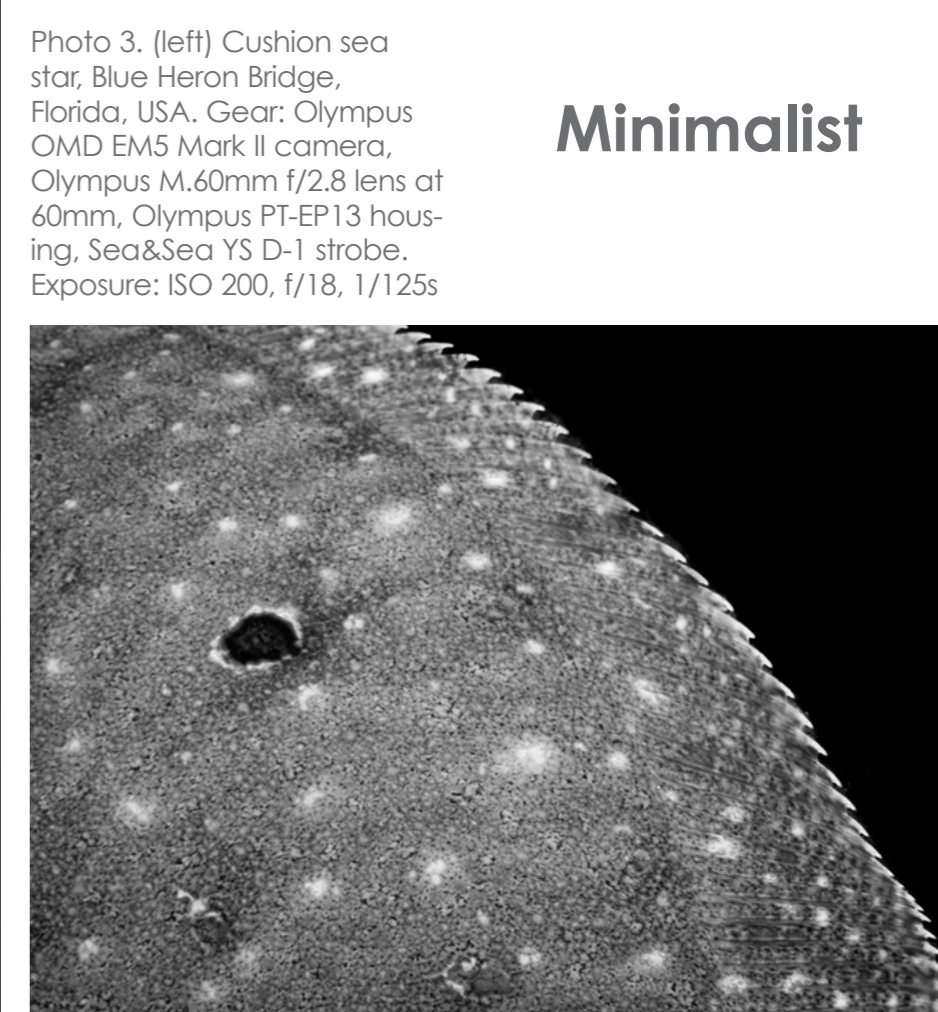


Photo 3. Sunrays, Sharm El Sheikh, Red Sea, Egypt. Gear: Canon 7D camera, Canon 10-22mm lens, Easydive housing, available light. Exposure: ISO 100, f/8, 1/125s





## Minimalist

Photo 3. (left) Cushion sea star, Blue Heron Bridge, Florida, USA. Gear: Olympus OMD EM5 Mark II camera, Olympus M.60mm f/2.8 lens at 60mm, Olympus PT-EP13 housing, Sea&Sea YS D-1 strobe. Exposure: ISO 200, f/18, 1/125s

Photo 2. (right) Knobby sea rods, Sponges Wall, Roatan, Honduras. Gear: Olympus OMD EM5 Mark II camera, Olympus M.60mm f/2.8 lens at 60mm, Olympus PT-EP13 housing, Sea&Sea YS D-1 strobes. Exposure: ISO 200, f/11, 1/125s; Photo 4. (upper right) Flounder, Blue Heron Bridge, Florida, USA. Gear: Olympus OMD EM5 Mark II camera, Olympus M.60mm f/2.8 lens at 60mm, Olympus PT-EP13 housing, Sea&Sea YS D-1 strobe. Exposure: ISO 200, f/16, 1/125s

Photo 1. (above) Diver and raindrops, Nabs Dive Wall, Roatan, Honduras. Gear: Olympus OMD EM5 Mark II camera, Olympus M.9-18mm f/4.0-5.6 lens at 18mm, Olympus PT-EP13 housing, Sea&Sea YS D-1 strobes. Exposure: ISO 200, f/8, 1/100s

### Less is More

Text and photos by Sheryl Checkman

As the saying goes, less is more. Sometimes, the less you include in a photograph, the stronger the composition and the more impactful the image—such as the silhouette against a simple background in Photo 1. As I was surfacing after a dive on Nabs Dive Wall in Roatan, I looked up to see that it was pouring on the surface. Above me, another diver was also surfacing, and her silhouette against the raindrop-textured blue water told the story.

Isolating texture, shape, line and color can also tell a minimalist story (see Photo 2). When diving on Sponges Wall, also in Roatan, I encountered some knobby sea rods (a form

of gorgonian). I chose to focus tight on the strong vertical lines of the sea rods with their knobby texture, against a dark background, leaving out the distractions of its surroundings.

The tight crop in Photo 3 of the bright orange cushion sea star, which I found at Blue Heron Bridge in Florida, highlights the texture and diagonal lines on the sea star's surface and legs. The orange color against the dark background makes this composition pop.

I encountered the flounder in Photo 4 hiding in the sand, also at Blue Heron Bridge. I decided to convert the image to black and white in order to highlight the diagonal composition, contrasting values of gray with the white spots in its body, and the one black dot of its eye juxtaposed with the black background. Visit: [Instagram.com/sherylcheckman](https://www.instagram.com/sherylcheckman)



# feature

Photo 3. (right)  
Queen parrotfish, Bay  
of Pigs, Cuba. Gear:  
Olympus OM-D E-M1  
camera, Olympus  
60mm macro lens,  
Aquatica housing,  
Sea&Sea YS-D1  
strokes. Exposure: ISO  
200, f/5.6, 1/40s

Photo 4. (far right)  
Bigeye red snapper,  
Dahab, Egypt. Gear:  
Olympus E-520  
camera, Olympus  
50mm macro lens,  
Olympus housing,  
Sea&Sea YS-01  
strokes. Exposure: ISO  
100, f/5.6, 1/160s



Photo 1. Sea turtle, Pom Pom Island, Malaysia. Gear: Olympus OM-D E-M1 camera, Olympus 60mm macro lens, Aquatica housing, Sea&Sea YS-D1 strokes. Exposure: ISO 200, f/8, 1/160s

## Minimalist Eye

Text and Photos by Larry Cohen

When underwater, I get sensory overload. There is so much to see, with different shapes and colors swimming around me in the current. My goal is to minimize the vast amount of visual stimulation into a simple image. One subject I am fascinated with is the eye. It does not matter if the subject is human or marine life; I want the viewer of my images to look into the eyes of my photo's subject. This is especially true when encountering a large subject with a macro lens on my camera.

I decided to do a late afternoon dive on the house reef the first day of arriving at Pom Pom Island Resort in Malaysia. Expecting to see an assortment of tiny creatures, I decided to use my Olympus 60mm macro

lens. So, of course, an enormous sea turtle greeted us. Having the wrong lens for this massive animal, I decided to capture an image of the eye (Photo 1). On the same dive, I encountered a giant blue-spotted stingray. So, I did another close-up (Photo 2).

When diving near the Bay of Pigs in Cuba, I used my macro lens on the day's second dive. While looking for small marine life, I stumbled across the largest queen parrotfish I ever saw. Again, I captured a close-up of the eye (Photo 3).

While diving off Dahab in Egypt, one of my strobe arms broke. So, I decided to shoot macro and use one strobe above my port. I spotted a bigeye red snapper under a ledge (Photo 4). Using one strobe created a strong shadow that added to the minimalistic composition. Visit: [liquidimagesuw.com](http://liquidimagesuw.com)



Photo 2. Blue-spotted stingray, Pom Pom Island, Malaysia. Gear: Olympus OM-D E-M1 camera, Olympus 60mm macro lens, Aquatica housing, Sea&Sea YS-D1 strokes. Exposure: ISO 400, f/8, 1/160s



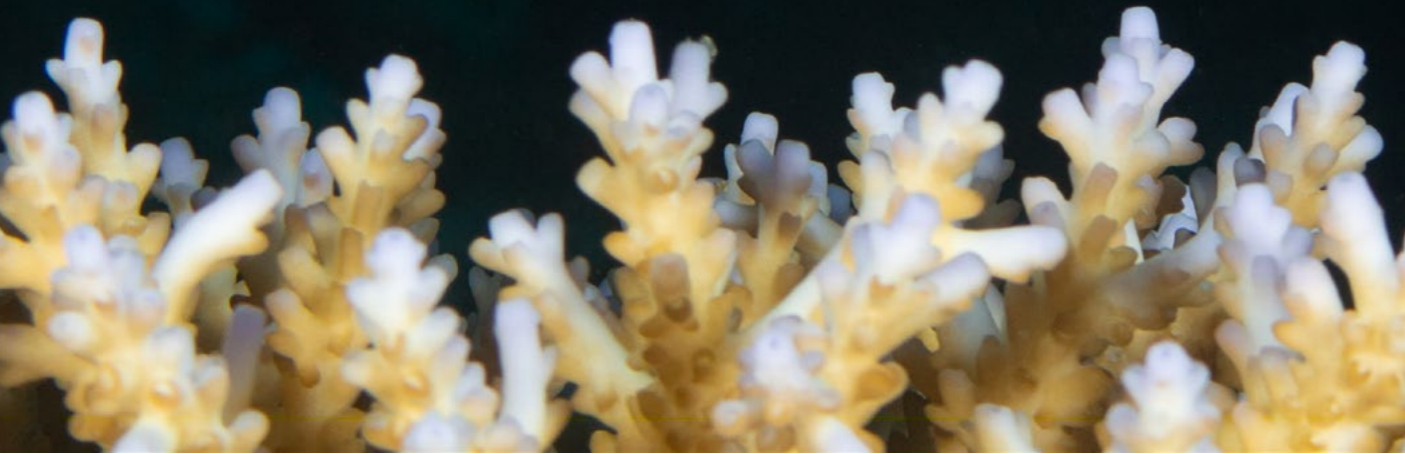


Photo 4. (above) Reticulated dascyllus, Taveuni Island, Fiji. Gear: Canon EOS Rebel SL1 camera, Canon EF-S 18-55mm f/3.5-5.6 IS STM lens, Ikelite housing, two Ikelite DS 161 strobes. Exposure: ISO 100, f/11, 1/200s

Photo 2. (right) Blacktip sharks, Moorea Island, French Polynesia. Gear: Canon EOS Rebel SL1 camera, Canon EF-S 10-18mm f/4.5-5.6 IS STM lens, available light. Exposure: ISO 400, f/22, 1/200s



ANITA GEORGE-ARES

## Isolation

Text and photos by Anita George-Ares

Staten Island Zoo is home to a pair of playful river otters. Knowing that I would unlikely be able to photograph a river otter underwater, I took the image of the otter (Photo 1) by shooting through a glass wall in a dimly lit tunnel that was part of the otter enclosure. The negative space isolates the otter and the diagonal trail of bubbles rising from the otter's coat.

Shark Sandbank, located in nearshore Moorea, is popular with swimmers and snorkelers. Pink whiprays and juvenile blacktip sharks circle unceasingly in the shallow area. I chose this image (Photo 2) as an example of minimalism as the sharks are isolated in the center surrounded by dappled negative space. To improve the contrast and highlight the patterns of light on the sharks and sand bottom, I used Nix Silver Eflex Pro 2 and Adobe Photoshop CC 2018 to convert the image to black and white.

I photographed a beautiful purple anemone (Photo 3) while diving in Fiji. This image is an example of minimalism as there is the single element of tentacles with a predominant color of purple. The anemone appears to glow.

The image of the dascyllus hovering over the coral is another example of minimalism (Photo 4). The fish

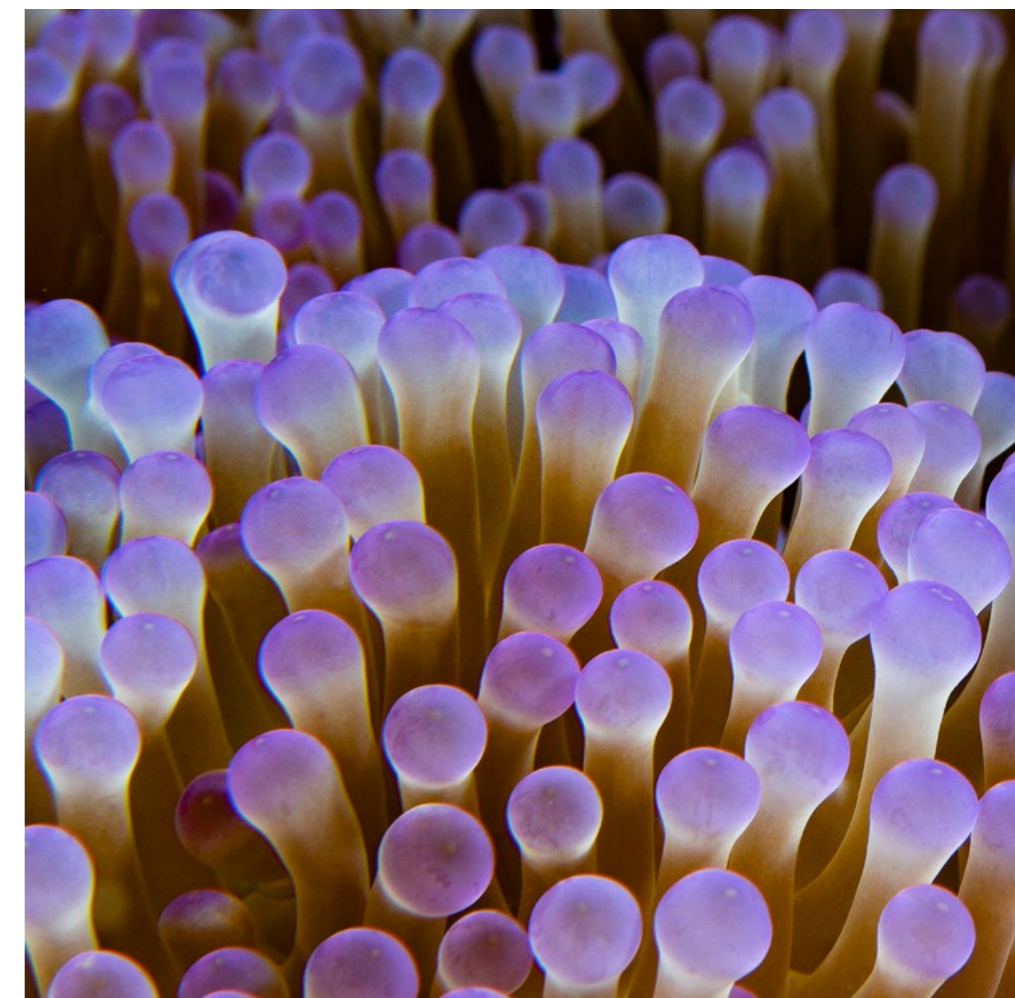


ANITA GEORGE-ARES

## Minimalist

Photo 1 (left). River otter, Staten Island Zoo, New York City, USA. Gear: Canon EOS 7D Mark II camera, Sigma Sport DG OS HSM 70-200mm f/2.8 D lens, available light. Exposure: ISO 2000, f/2.8, 1/1000s

Photo 3 (below). Anemone tentacles, Viti Levu Island, Fiji. Gear: Canon EOS Rebel SL1 camera, Canon EF-S 60mm f/2.8 macro USM lens, Ikelite housing, two Ikelite DS 161 strobes. Exposure: ISO 100, f/11, 1/160s



ANITA GEORGE-ARES

is isolated in the water column, surrounded by black negative space. The blue color on the lips and fins of the fish provides a pop of color. Please visit: [facebook.com/profile.php?id=100016947967639](https://www.facebook.com/profile.php?id=100016947967639)

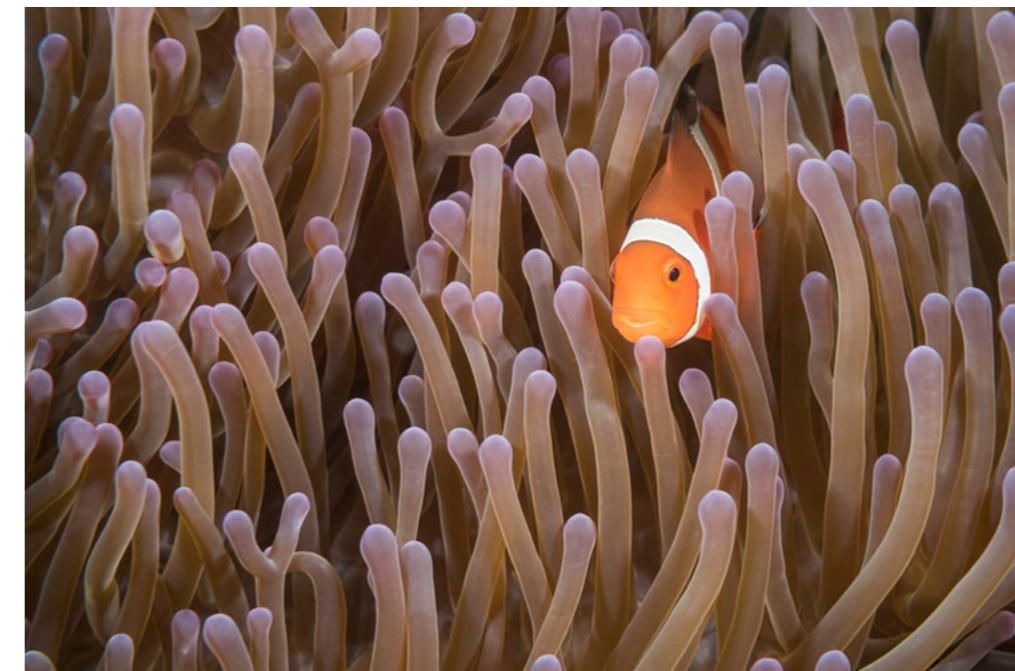




# Minimalist

Two blue tang fish swim in front of a pair of large sea rods, Bonaire, Netherlands Antilles (left). Gear: Nikon D3 camera, Nikon 24-85mm lens, Subal housing, two Sea&Sea YS-250 strobes. Exposure: ISO 200, f/5.6, 1/40s

Looking down at a chevron manta ray swimming in blue water near the surface, San Benedicto Island, Revillagigedos Islands, Mexico (left). Gear: Nikon D810 camera, Sigma 15mm fisheye lens, Subal housing, available light. Exposure: ISO 200, f/7.1, 1/80s



False clown anemonefish in an anemone, Dumaguete, Philippines (above). Gear: Nikon D810 camera, Nikon 105mm macro lens, Subal housing, two Sea&Sea YS-250 strobes. Exposure: ISO 100, f/13, 1/125s



Detail view of a red crown-of-thorns sea star, Marovo Lagoon, Solomon Islands. Nikon D810 camera, Nikon 105mm macro lens, Subal housing, two Sea&Sea YS-250 strobes with snoots. Exposure: ISO 200, f/9, 1/200s

## Producing a Minimalist Feel

Text and photos by Matthew Meier

Minimalist: Less is more... saying a lot with very little, in a visual way. In searching for images to fit this topic, I found significantly more examples amongst my topside imagery than underwater. Still, I tried to select a variety of examples highlighting some of the different ways the term "minimalist" is defined—whether that is by isolating the subject, using a single element, utilizing a pop of color, showing lots of negative space, showcasing texture or contrasting textures and creating a silhouette or simple shapes with the composition. Whether you are shooting wide open spaces or creatively framing macro subjects, there are numerous ways to produce a minimalist feel. I am already thinking ahead to my next dive trip on how best to use some of these techniques to produce more compelling images. Visit: [MatthewMeierphoto.com](http://MatthewMeierphoto.com)



Caribbean reef shark swimming over the sandy bottom, viewed from above, Grand Bahama Island, the Bahamas (left). Gear: Nikon D3 camera, Nikon 24-85mm lens, Subal housing, available light. Exposure: ISO 400, f/8, 1/200s



## Minimalist

Photo 2. (left) Cenote Fire. After extensive rains, the waters of Cenote Car Wash in Mexico sometimes turn a fiery orange. Looking back through the cave exit into daylight, the cavern walls make a natural vignette and tree branches produce shadows streaking through the opening. Gear: Nikon D850 camera, Ikelite housing, ambient light. Exposure: ISO 2000, f/7.1, 1/80s



Photo 4. (far left) Orange, Raja Ampat, Indonesia. By removing the color saturation of the anemone in postproduction, the bright orange of a false clownfish stands out. Gear: Nikon D850 camera, Ikelite housing, dual Ikelite DS161 strobes. Exposure: ISO 200, f/18, 1/200s

### Eliminating the Non-Essential

Text and photos by Brandi Mueller

There are many definitions of minimalism, including to live a life striving to only use what serves a purpose and to reduce clutter and waste. In art, it is often described as using lots of negative space, shapes, shadows and using few colors. Essentially, to eliminate the non-essential or unnecessary.

For me, minimalism in underwater photography refers to images with a very clear subject. It can be images with lots of negative space, with only one small part of the image in focus or images that are not busy like grand reef scenes.

Instead, perhaps the Bokeh effect may be used, like in the image of a seahorse (Photo 1) where only the face is in focus. In Photo 2, the exit of a cave makes a natural vignette of shadow and tree branches from the surface reaching down into the water, while tannic waters glow a fire-like orange. Or it could be the simplicity of a diver's fins (Photo 3) photographed as the diver prepared for a dive into a Mexican cenote, with light beams dancing through the water. Or it could be accomplished by using unnatural alterations in post-production to make a colorful false clownfish stand out against a black-and-white anemone. (See Photo 4.) Visit: [brandiunderwater.com](http://brandiunderwater.com)



Photo 1. Seahorse, Raja Ampat, Indonesia. Using a wide aperture, the Bokeh effect is achieved by making only one small area of the image in focus and the rest blurred. This seahorse's face stands out. Gear: Nikon D850 camera, Ikelite housing, dual Ikelite DS 161 strobes. Exposure: ISO 200, f/7.1, 1/200s



Photo 3. Sunbeams and Fins. A diver begins a dive into a cenote as sunbeams dance below. Gear: Nikon Z7ii, Ikelite housing, ambient light. Exposure: ISO 2500, f/11, 1/25s





All photos were taken with a Nikon D500 camera, Tokina 10-17mm lens, Nauticam housing, and Inon Z330 strobes. Photo 1. (top right) Hammerhead shark—the power of a stark white background. Exposure: ISO 200, f/11, 1/125s @17mm. Photo 2. (above) Lemon shark—high shutter speed with bright natural light. Exposure: ISO 100, f/11, 1/80s @10mm.

### A Minimalist Approach

Text and photos by Gary Rose, MD

When I prepare for a day of underwater photography, I generally have an idea planned, in advance, of what I am going to photograph on that given day. For example, I will dive where there are plenty of sharks, mantas, or sea life on the coral reef. On some occasions when I am drift-diving in a heavy current, especially in deep water, I approach my photo shoot in a different way. I take an approach of “minimalism.”

If you look up the word “minimalism,” you will find many different definitions. I personally like the one found in the Meriam-Webster dictionary:

*“...of, relating to, or following a style (as in art or design) that is*

*characterized by simplicity and uses a small number of colors, parts, materials, etc.”*

What many underwater photographers do not realize, on any given open water dive, is that they are surrounded by unlimited negative space, which is the perfect minimalist canvas.

I find my negative space early in the dive, searching for a totally uncluttered background. After a few test shots to determine my camera settings, I patiently wait for the right subject to enter this preconceived negative space. I prefer to have a canvas of deep blue, but it is not always available. By playing with shutter speed, ISO and strobes, I can create a homogenous white or black background and highlight a single subject. (See Photo 1 and 2).

On “sporty” days, I like to create my negative space by shooting up. This has a few benefits, particularly the magical swirls, whirls and wave patterns that emphasize the simplicity of one of my favorite effects—the silhouette. In Photo 3, I was able to capture two interacting subjects in silhouette and feature their connectivity. The negative space, the surface above them, is magical. There is so much energy in this photo. You can feel the forces that are drawing them together. The interplay between them is powerful. The viewer cannot resist being drawn into the photograph with a desire to be engulfed by the energy.

Minimalism gives meaning to the concept of “Less is more.” Visit: [garyrosephotos.com](http://garyrosephotos.com)



Photo 3. Diver and giant manta ray—a Chihuly-inspired surface counters the simplicity of the silhouettes. Exposure: ISO 200 f/9, 1/125s @107mm



Photo 4. (below) Diver on the wreck of the *Hesper*, Bonaire, Netherlands Antilles. Frame grab from a video file. Gear: Canon EOS 7D Mark II camera, Tokina 10-17 fisheye lens (10 mm), Nauticam housing.

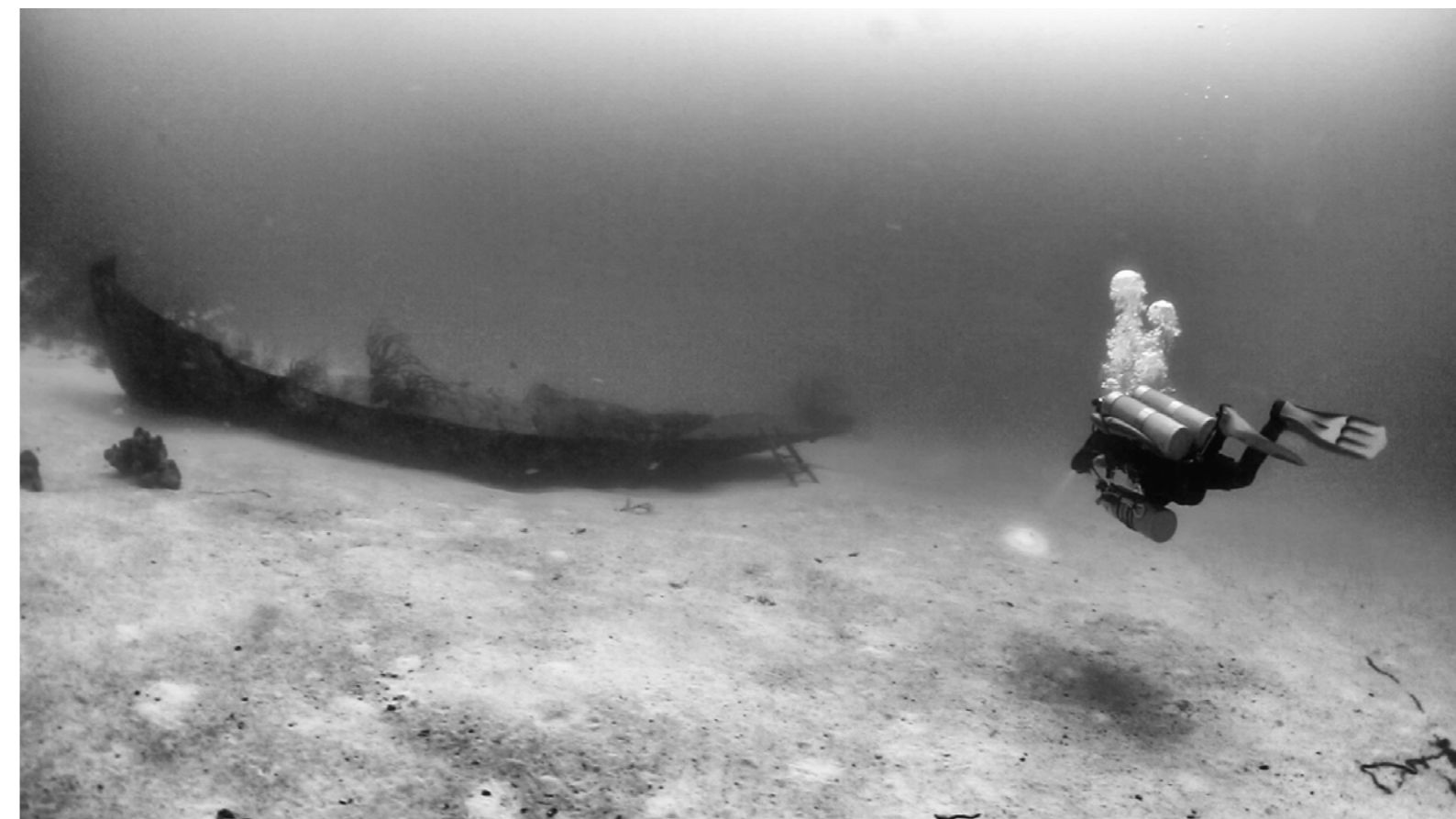


Photo 1. (above) Diver on a wreck off Pompano, Florida, USA. Gear: Canon EOS 7D Mark II camera, Tokina 10-17mm fisheye lens (at 10mm), Nauticam housing, dual Inon Z-240 strobes. Exposure: ISO 250, f/10, 1/200s; Photo 2. (left) Diver at the Dutch Springs Quarry, Pennsylvania, USA. Gear: Canon EOS 7D camera, Tokina 10-17 fisheye lens (10 mm), Nauticam housing, dual Inon Z-240 strobes. Exposure: ISO 250, f/8, 1/250s

## The Power of Negative Space

Text and photos by Michael Rothschild, MD

Get close, and then get closer. That is what every underwater photographer learns on day one. We long for clear water, fisheye lenses and powerful strobes to make the subject dominate the frame—to punch through the page or screen and grab the viewer's attention. But this article is about minimalism, where composition and balance are stressed. This is where you realize just how powerful negative space can be.

The first image (Photo 1) shows my dive buddy flying through the midwater cathedral light rays, the power of his DPV vis-

ible in the taut tethers. The second image (Photo 2) is another cathedral shot, but this one is painted in the muted colors of our local freshwater quarry. Here, the blue-green waters contrasts with a grassy bottom. The third (Photo 3) was taken over a deep wreck. The rising ascent line and boat span the vertical image and tell the story of deco—the part that has been done and the part yet to finish. The fourth (Photo 4) shows a minimalist wreck sitting on flat and unadorned sand, balanced by an approaching diver.

Find beauty in simplicity. Not every scene needs to be a circus. Visit: [dive.rothschild-design.com](http://dive.rothschild-design.com)



Photo 3. Diver on a wreck in Truk Lagoon, Federated States of Micronesia. Gear: Canon EOS 7D Mark II camera, Tokina 10-17 fisheye lens (10 mm), Nauticam housing, dual Inon Z-240 strobes. Exposure: ISO 160, f/11, 1/250s



# feature

Photo 1. (right) The photographer looks small yet is a part of something bigger, with a purpose. Playa Del Carmen, Mexico. Gear: Olympus OM-D E-M5 camera, Olympus 7-14mm lens, Nauticam housing, dual Sea&Sea strobes. Exposure: ISO 320, f/7.1, 1/250s

Photo 2. (far right) This boat was sunk to be part of an artificial reef at Matakning Island, Celebes Sea, Sabah, Malaysia. Gear: Olympus OM-D E-M5 camera, Olympus 7-14mm lens, Nauticam housing, dual Sea&Sea strobes. Exposure: ISO 200, f/5.6, 1/160s

Photo 3. (below) Batfish (circular spadefish) at Matakning Island, Celebes Sea, Sabah, Malaysia. Gear: Olympus OM-D E-M5 camera, Olympus 12-50mm lens, Nauticam housing, dual Sea&Sea strobes. Exposure: ISO 200, f/7.1, 1/125s



Minimalist



## Minimalist

Text and photos by Olga Torrey

A few years ago, my scuba buddy Larry Cohen and I went to photograph the bull sharks off the coast of Playa Del Carmen in Yucatán, Mexico. We hoped to see female bull sharks, which returned to their breeding grounds every year. The dive operation we were diving with did not do shark feeding, so we knew we would be lucky if we saw just a few of them.

We stayed on our knees, making ourselves negatively buoyant by deflating our BCDs, and looked for sharks. The space was empty, with pale blue water all around and white sand beneath us. The image of Larry, the photographer, alone, with his camera in hand, in an enormous body of water (Photo 1), made him look small yet part of something bigger, with a purpose.

The other three photos were taken at Matakning Island in the Celebes Sea

in Sabah, Malaysia. The boat in Photo 2 was sunk to be part of an artificial reef. The vessel had sailed the sea at one time and was now tied at anchor to serve as a shelter for marine life. The boat looked abandoned and lonely, but soon it would blossom with marine life, which would call it home.

The batfish (Photo 3) is a very peaceful and social fish, and it forms schools with others of its species. Therefore, in this image, instead of showing the whole school of the batfish, I deliberately focused on one single individual, and used the tail fins of the rest of the school of fish as a backdrop.

Photo 4 shows a trumpetfish. With its elongated, almost snake-like appearance, rigid body and long snout, the trumpet fish lives on coral reefs and is camouflaged in seagrass beds. I took a close-up photo of the trumpetfish when it tried to blend in with the algae. Visit: [fitimage.nyc](http://fitimage.nyc)



Photo 4. Trumpetfish at Matakning Island, Celebes Sea, Sabah, Malaysia. Gear: Olympus OM-D E-M5 camera, Olympus 12-50mm lens, Nauticam housing, dual Sea&Sea strobes. Exposure: ISO 400, f/6.3, 1/160s



### Isotta housing for Sony Alpha 1

Isotta now has a housing for the Sony Alpha 1. The housing for the Sony a1 is built around Isotta's B120 port system, with 120mm bayonet, and comes with Isotta's classic features: anodised aluminium construction, integrated adjustable handles, double O-ring seals on buttons and removable parts, Isotta's signature one-handed open/close, and a built-in moisture detector. There is a large-bore M28 port for attaching recorder/monitors such as the Atomos Ninja V or Ninja V+. The housing comes with two fibre-optic ports as standard, with Nikonos N5 or S6 bulkheads as extra options. [isotecnic.it](http://isotecnic.it)



### Ikelite's update kit for Sony a7R V

Ikelite now has an update kit that allows you to convert its underwater housing for the Sony a7 Mark IV for use with the new a7R Mark V camera. The kit includes a camera mount to fit the a7R V and a modifier for the lock on the camera's mode dial. The US\$40 update kit is aimed at existing owners of the Sony a7 IV housing who are upgrading to the a7R V. As of January 2023, if you purchase Ikelite's a7 IV housing, the camera mount and control modification for the a7R V are included in the box. [ikelite.com](http://ikelite.com)



### Nauticam housing for Canon EOS R6 Mark II

Nauticam has unveiled its new housing for the Canon EOS R6 Mark II. The original EOS R6 can also be accommodated in the housing with the addition of a conversion kit ("provided upon request," according to the manufacturer). In addition to its new, higher-resolution 24.2MP sensor, the EOS R6 II shoots 12fps bursts with the mechanical shutter (40fps with the e-shutter) and records oversampled 4K/60p video from the full sensor width. The NA-R6II housing offers the well-known, classic Nauticam features: integrated handles, ergonomic control placement (right-thumb levers for M-Fn and Rec, with a sub-lever for AF-ON), and the ability to accept both legacy EF lenses via an adapter in addition to native RF lenses. Dual fibre-optic bulkheads offer flash triggering via an optional manual LED trigger or an optional TTL flash trigger. Like all of Nauticam's latest mirrorless camera housings, there is a large-bore M24 accessory port for hooking up an Atomos Ninja V monitor/recorder via HDMI 2.0 to capture 4K/60p 4:2:2 10-bit video—just in case. [nauticam.com](http://nauticam.com)

### OM System M.Zuiko ED 90mm F3.5 Macro IS PRO

OM Digital Solutions (formerly known as Olympus) has announced a new macro lens for Micro Four Thirds with a 2:1 reproduction ratio—the OM System M.Zuiko ED 90mm F3.5 Macro IS PRO. With its "PRO" designation, this lens is designed for enthusiasts and professional underwater photographers. Knowing of the x2 crop factor of OM Digital Solutions cameras, a 180mm (90 x 2) effective focal length could deliver the "big difference." Constructed with 18 elements, arranged in 13 groups, the lens features a stabilisation system that works together with OM System and Olympus camera bodies to deliver up to seven steps of compensation via 5-axis sync image stabilisation. The lens also features an acceleration sensor on the lens that detects motion blur for correction of shift (according to the manufacturer), which might have a positive impact on macro shooting. The M.Zuiko ED 90mm F3.5 Macro IS PRO weighs 453g and is just 5.4in long by 2.7in in diameter (136mm x 70mm). A minimum focus distance of 8.8in (22.4cm) means a working distance of around three inches (8cm) from the end of the lens, thus giving enough room for proper lighting when trying to shoot the tiniest critters. [explore.omsystem.com](http://explore.omsystem.com)



### Ikelite's updated 200DL series housing

Ikelite has announced its updated "200DL" series housing. The housing is compatible with the a7 Mark IV and the new a7R Mark V. Originally designed for the a7 IV, an upgrade kit can be added to allow compatibility with the a7R V. Camera mount and control modifications are included in the box. The housing features an ABS-PC blend body and transparent back, Dry Lock (DL) port system, ergonomically designed levers and hard-anodised aluminium buttons, and an M16 port for attaching accessories such as an external monitor/recorder. There is out-of-the-box manual triggering of strobes by Ikelite, Sea&Sea, Inon and Retra, as well as TTL exposure with Ikelite DS-series strobes when adding the optional DL2 DS Link TTL converter. [ikelite.com](http://ikelite.com)

### Seacam Achromat 4.0 Micro Lens

Seacam's new Achromat 4.0 Micro Lens and flip system is out now. Normal macro not enough for you? Here you go! The supermacro lens achieves a magnification of 4:1, meaning four times larger than classic macro lenses. The 4.0 Micro Lens features a standard 67mm thread and is ready to use with Seacam's MIP 60 and MIP 80 microports. The new Achromat 4.0 supermacro lens can be paired with Seacam's new flip system, which mounts on its MIP 60 or MIP 80 microports. The Single Flip Adapter Base is designed for one lens, and with the Dual Flip Adapter Extension, usage of the macro lens devices is possible. [seacam.com](http://seacam.com)



# Tony Fredriksson



## P O R T F O L I O



Tony Fredriksson

The artist, Tony Fredriksson, with his driftwood sculptures *Giant Trevally* (above) and *Humphead Parrotfish* (top right). PREVIOUS PAGE: *Humpback Whale*, driftwood sculpture by Tony Fredriksson

Interview by G. Symes  
Photos courtesy of Tony Fredriksson

**Originally from Zimbabwe, artist Tony Fredriksson is a sculptor based in South Africa who creates incredibly life-like sculptures of marine life out of driftwood, drawing inspiration from how the wood is eroded by weather, scoured by streams or sanded smooth by sand. X-Ray Mag interviewed the artist to learn more about his artworks and creative process.**

**X-RAY MAG:** Tell us about yourself, your background and how you became an artist.

TF: We are all born with different gifts, mine is art. I was born and grew up in Rhodesia (present-day Zimbabwe). At six years old, my parents gave me plasticine, so modelling and sculpting became my favourite pastime. I studied art and went into the commercial world of graphics for the printing industry doing lithography and photography. I have enjoyed almost every form of art: painting, drawing, architecture, sculpting in different mediums, and photography.

In this time, I also did numerous fish drawings and a fishing-relat-

ed cartoon for fishing magazines. During the 1980s, my brother and I started a fish taxidermy business but with a difference. We made sculptures of their trophy fish to encourage anglers to catch and release.

My gift was also used to start a small business producing small sculptures of animals, pets and insects which lasted about 12 years, combined with making rustic furniture.

Do we associate “becoming something” only when what we do is exchanged for income? I think there are millions of artists who don’t make a living from their art but are forced to earn a living through other means.



Tony Fredriksson with his *Hammerhead Shark* driftwood sculpture





The artist with a pair of his *Barracuda* driftwood sculptures

## Tony Fredriksson



*Coelacanth*, driftwood sculpture by Tony Fredriksson

**X-RAY MAG:** How and why did you choose driftwood as a material for your sculptures? What are the challenges, advantages and joys of working with driftwood?

TF: Eccl. 9:11 says: "I have seen something else under the sun: The race is not to the swift or the battle to the strong, nor does food come to the wise or wealth to the brilliant or favour to the learned; but time and chance happen to them all."

I picked up a piece of weathered wood from a wildlife rehabilitation enclosure and turned it into a sculpture of a lionfish (2010). A gallery owner saw the sculpture and invited me to have a solo exhibition of driftwood fish. My first solo exhibition of fish sculptures sold out that year and hence became the start of the driftwood sculptures.

Time is the greatest challenge, collecting the raw material, looking for that perfect part, then sorting the pieces to connect them into the chosen subject.

The big advantage is that your building material becomes your armature which can also be exposed on the surface. Because the driftwood has endless shapes and textures, it becomes mind-boggling when you see a variety of possibilities for each piece. The predicament is to decide how to use

the material. I find limitless potential in the hunt that ends in using part of creation to create something that resembles creation.

**X-RAY MAG:** We realise you create sculptures of many kinds of species on land and in the sea, but what fascinates you most about marine life in particular? How does driftwood lend itself as a material in the sculpture of marine life?

TF: Seventy-one percent of the earth is covered by oceans and lakes, filled with 21,000+ colourful and diverse fish species. I come from a family of generations of fishermen, so fish has always been an obsession with us. I even did illustrations for books on fish and screenprints of them, bred and farmed with them. Fish tanks and garden ponds have always been part of our lives. It was easy to collect driftwood in rivers or on the coast when exploring these places.

The reason many of my commissions are for marine life is due to the fly-fishing fraternity's conservation ethics. They can catch-and-release and still continually enjoy "their catch."

**X-RAY MAG:** Who or what has inspired you and your artwork and why?

TF: I can't say that I have been influenced by a mentor, but I do get inspired by other artists' work. All my inspiration comes from Creation itself; everything is fearfully and wonderfully made. Just the study of anatomy with each subject can be enthralling, what's beneath the surface, how we are put together.

My inspiration comes from the wood itself, after a tree dies, it may have been eroded by the weather, then washed down a stream and finally sanded smooth by the sand on a beach. It is continually changing shape.

**X-RAY MAG:** What is your artistic method or creative process?

TF: Once I find a piece that resembles a part of the subject, I draw out a rough design of the subject from this piece and then start searching for all the other parts. I collect images of the subject from all angles and use these as a reference to get the proportions and pose correct. The important step is to join them securely with wood glue and screws which I cover up. It is an advantage to use the same-looking wood so



The artist with his *Sailfish* driftwood sculpture (above), *Lobster* (top left) and *Sea Turtle* (bottom left) driftwood sculptures

that the artwork has a uniform finish. The final artwork is frozen to make sure there are no bugs in the wood.

*X-RAY MAG: What is your relationship to the underwater world and coral reefs? How have your experiences underwater influenced your art? In your relationship with reefs and the sea, where have you had your favourite experiences?*

TF: I have been blessed to be able to experience Alphonse Island and

Farquhar Atoll Islands in the Seychelles whilst there making fish sculptures for the Blue Safari Lodges. Snorkelling on these reefs and seeing first-hand the fish that I had illustrated or studied in numerous books was worth remembering. I am always blown away by the different shapes and colours of the reef fishes. No illustration or painting can do their true underwater colours justice.

During 2022, my son and I were able to flyfish for the humphead parrotfish on Farquhar Atoll. The

resort had a skull of a humphead that looked almost like a sheep skull, which amazed me, as it resembled a sheep skull. The fish even seemed to graze together on the coral at high tide like sheep. I had done an oil painting of one and wished to actually see one close-up at the time. We both managed to hook them, gently hold, photograph and examine them before releasing them back into the "herd" where they continued to feed as if nothing had happened.



*X-RAY MAG: What are your thoughts on ocean conservation and how does your artwork relate to these issues?*

TF: I have seen the extent of the pollution in various beaches and inland waterways but have not yet made any artwork for ocean conservation, only annual artworks of rhinos that have been auctioned towards their survival. But just the fact that a fish can be released because there is a way to commemorate the catch with a sculpture, contributes to conservation. I know the prohibition on travel and activities of trawlers during [the pandemic] lockdown did improve fish numbers in our African waters, but I am not an expert in this matter.

None of the wood used in my sculptures has been harvested from living trees, and hardly anything unnatural is used, except for a few screws and glue. I do, however, get some orders for castings

of the sculptures in bronze or marble composite.

*X-RAY MAG: What is the message or experience you want viewers of your artwork to have or understand?*

TF: There is no message in the sculptures; they are simply representations of the Lord's creatures, both great and small, to bring enjoyment to others. I love to make mechanical subjects too, musical instruments and motor vehicles, which celebrate humankind's ingenuity.

*X-RAY MAG: What are the challenges or benefits of being an artist in the world today? Any thoughts or advice for aspiring artists in ocean arts?*

TF: For me, the greatest benefit today is the easy access to reference material on the web and how easy selling has become





Bluefin Trevally (left), driftwood sculpture by Tony Fredriksson. The artist and resort staff with his Manta Ray driftwood sculpture on Alphonse Island in the Seychelles (below)

## Tony Fredriksson

have creativity within us. I have seen this in children who use their imaginations for games, stories and play. Sadly, we seem to lose some of this as we age. We should never stop playing and imagining but continually cultivate our senses to find wonder in every day.

I pray for help with each artwork to be able to capture just a small part of the beauty and wonder of God's

handy work in my sculpture. Don't bury your gift. ■

For more information or to purchase artwork, please visit the artist's website at [openskywoodart.com](http://openskywoodart.com) or on **Instagram @tonyfredriksson\_** or **Facebook @ Tony Fredriksson Driftwood Sculptures**.

online. I still sell art through galleries and enjoy face-to-face interaction in that environment. Social media allows everyone to connect, so we can have more interaction with people from around the world.

You never know what will succeed, so keep as many doors open for business and diversify. I have seen artists saturate a geographic area with their art until the public finds a new trend. If the artists do not come up with something new, they will struggle. Artists should always challenge themselves to learn a new skill or try a different medium and be flexible.

*X-RAY MAG:* How do people respond to your artworks?

TF: It is always rewarding to see first-hand reactions to one's work—fascination, wonder and even amazement—in a gallery. At a private school where I had my *Gorilla* sculpture on display, I watched a dog become frantic when noticing the *Gorilla*. At a client's home, I watched as their cat's hair stood up and it cautiously crept around my *Serval Cat* sculpture.

Probably the most amazing incident was with my life-size *Masai Warrior* sculpture in a private home, which was burgled. There was a shootout with a security company, and the sculpture was shot in the leg during the skirmish, as it was mistaken for a person. I offered to repair it, but the clients wanted the "wounded" sculpture as a memento.

*X-RAY MAG:* What are your upcoming projects, art courses or events?

TF: I do try to do at least one exhibition or group show a year. I have been invited to participate in a show with artists who do recycling art during March this year. Otherwise, my time is limited with commissions each year and I don't have time for courses or other events.

*X-RAY MAG:* Lastly, is there anything else you would like to tell our readers about yourself and your artwork?

TF: The Bible says we were made in God's image. Therefore, like God who created you and me could make this amazing world and universe, we all

