



GLOBAL EDITION
Jun/Jul 2023
Number 119

Wrecks
JG McCullough

Guam
Muck Diving

Taiwan
Green Island

Ecology
Leaf Slug

Cave Diving
**Southern
Madagascar**

Contributors' Picks
**Ambient
Light**

INDONESIA

Lembeh & Bangka

COVER PHOTO BY SCOTT BENNETT

DIRECTORY

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PUBLISHER & EDITOR-IN-CHIEF
 Peter Symes
Editor@xray-mag.com

IN MEMORIAM
 Michael Symes, M.Sc, Senior Editor
 Barb Roy, Associate Editor

PUBLISHER, MANAGING EDITOR & CREATIVE DIRECTOR
 Gunild Symes
Gunild@xray-mag.com

SECTION EDITORS
 Andrey Bizyukin, PhD - *Features*
 Larry Cohen - *Photo & Video*
 Catherine GS Lim - *News, Books*
 Michael Menduno - *Tech*
 Ila France Porcher - *Sharks*
 Rico Besserdich - *Photo & Video*

ASSOCIATE EDITORS
 Scott Bennett, Toronto
Scott@xray-mag.com
 Catherine GS Lim, Singapore
Cat@xray-mag.com
 Matthew Meier, San Diego
Matt@xray-mag.com
 Michael Menduno, Berkeley
Michael@xray-mag.com

COLUMNISTS
 Matt Jevon - *Opinions*
 Steve Lewis - *Opinions*
 Gareth Lock - *Training*
 Ila France Porcher - *Shark Tales*
 Mark Powell - *Tech Talk*
 Simon Pridmore - *Opinions*
 Lawson Wood - *UW Photo*

Russia - Moscow
 Andrey Bizyukin, PhD
Andrey@xray-mag.com
 Svetlana Murashkina, PhD
Svetlana@xray-mag.com

CONTRIBUTORS THIS ISSUE
 John A. Ares
 Scott Bennett
 Rico Besserdich
 Sheryl Checkman
 Larry Cohen
 Pierre Constant
 Anita George-Ares, PhD
 Pascal Hanaff
 Kate Jonker
 Olivier Leger
 Catherine GS Lim
 Kyo Liu
 Herve Marsaud
 Matthew Meier
 Brandi Mueller
 Wesley Oosthuizen
 Loïck Penhoat
 Simon Pridmore
 Gary Rose, MD
 Michael Rothschild, MD
 Gunild Symes
 Peter Symes
 Debbie Tan
 Olga Torrey
 Cristian Umili
 MJ Wolborsky
 Steve Wolborsky

Sweden
 Lelle Malmström
Lelle@xray-mag.com

ASSISTANT EDITORS
 Rosemary E. Lunn, London
Roz@xray-mag.com
 Don Silcock, Sydney + Bali
Don@xray-mag.com

USA
 Larry Cohen, New York City
Larry@xray-mag.com

ADVERTISING ASIA-PACIFIC
 Juliette Myers, Sydney
Juliette@xray-mag.com

UNITED KINGDOM
 Rosemary E. Lunn, London
Roz@xray-mag.com

USA & INTERNATIONAL
 Matthew Meier, San Diego
Matt@xray-mag.com

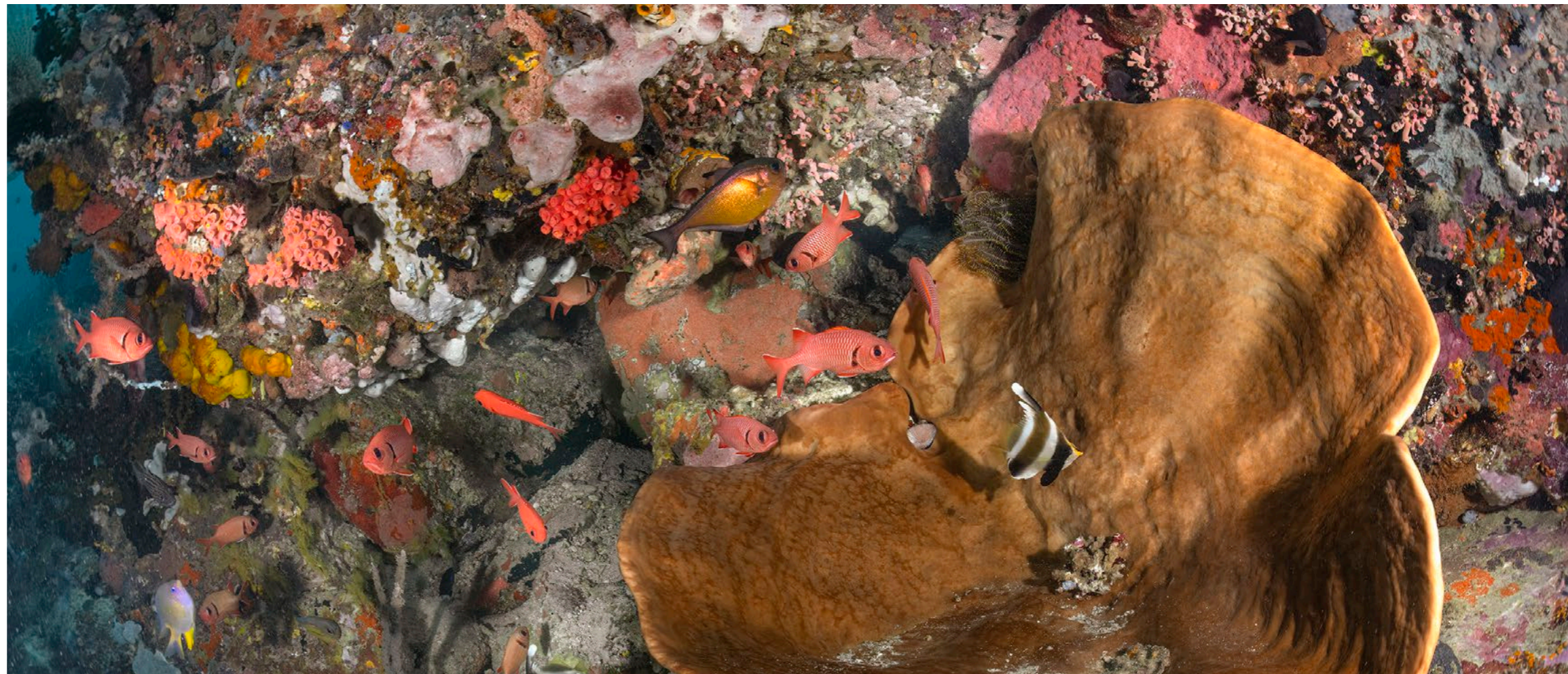
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COVER PHOTO: *H. barigbati* pygmy seahorse,
 Bangka, Indonesia
 Photo by Scott Bennett

Sahaung Reef, Bangka, Indonesia. Photo by Scott Bennett



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Crimes against Nature

As we were about to go press, the news came in that Brazilian authorities had confiscated nearly 30 tons of shark fins destined for Asia. Brazil's environmental protection agency, IBAMA, estimated that approximately 11,000 blue sharks and shortfin mako sharks, which Brazil listed as endangered only last month, had been killed.

That is a staggering and depressing number. Fishing for sharks is illegal in Brazil, so I hope the authorities throw the book at the culprits, and hard too.

As readers of this publication are aware, sharks are not only beautiful creatures to behold, but also intriguing sentient beings. More importantly, they are essential apex predators that play a crucial role in keeping marine ecosystems healthy. These are ecosystems that the rest of us (and some whole societies and economies more so than others) depend on in so many ways—not least, for food.

The greed of a few egoistic merchants, on such an industrial scale, is difficult to comprehend and stomach.

Our distant ancestors, who were hunter-gatherers, and those ethnic groups that still live this way today, have a deep-seated respect for nature, and for the animals they hunt in order to

survive. They would also thank the animals they killed for giving them the opportunity to survive and thank their deities too. In more recent times, many say grace at the dinner table for a similar reason: Being thankful for what is provided to us.

What happened to this thankfulness and appreciation?

Just because we can now order food deliveries online from the comfort of our homes or fill a shopping trolley with goods in the supermarket (we surely do not need to hunt or go fishing ourselves, in order to get dinner), it does not mean we are no longer dependent on nature. Food is not manufactured in factories, although some would argue that high-intensity farming and aquaculture come close, but that is another matter.

Drug smugglers face stiff sentences, in some countries even capital punishment, so why aren't crimes against the environment, which affect even more people, also pursued and prosecuted with a similar zest and resources?

That offenders often get away with little more than a slap on the wrist is also a slap in the face to the millions who work or campaign tirelessly to protect the environment so that there is something left for future generations.

Shark finning, overfishing, destruction of habitat and other crimes against nature, are all fuelled by economic incentives for some, who obviously do not care about the rules or the environment.

What we seem to be lacking are effective deterrents, which both eliminate and negate such incentives, as well as make punishment much more likely—in other words, a much stronger and sufficiently equipped law enforcement with international jurisdiction. Navy vessels are deployed to combat high seas piracy and war criminals are brought to justice at the International Court of Justice in the Hague, so tools do exist.

The recently ratified UN High Seas Treaty is hopefully a step in the right direction. The new agreement contains 75 articles that aim to protect, care for, and ensure the responsible use of the marine environment, maintaining the integrity of ocean ecosystems and conserving the inherent value of marine biological diversity.

It is a start, but what worries me is the wording being rather vague on enforcement.

— Peter Symes
Publisher & Editor-in-Chief

from the deep

NEWS

Edited by
Peter Symes

UN adopts historic treaty to protect high seas

The landmark accord will establish a legal framework to extend swathes of environmental protections to international waters.

The Biodiversity Beyond National Jurisdiction Treaty, widely known as the High Seas Treaty, establishes the first-ever framework for governing practices

like fishing, mining and oil extraction in international waters, an issue that has threatened oceanic ecosystems across the globe with little oversight.

Nearly 200 nations signed the document, officially known as the Biodiversity Beyond National Jurisdiction Treaty, after agreeing to its terms in March following roughly 15 years of discussion. "You have delivered," UN Secretary-General Antonio Guterres told the member nations Monday upon the treaty's adoption. "And you have done so at a critical time."

You have delivered.

Binding accord

The legally binding accord outlines rules to protect biodiversity in waters outside national boundaries. The legislation establishes large-scale marine protected areas in international waters, which protect biodiversity beyond the 12-mile stretches of water off coastlines protected by individual countries.

The treaty is meant "to prevent a cascading of species extinctions" brought on by overfishing, oil extraction, deep-sea mining and other activities with environmental impacts that occur in the high seas, Peter Thomson, the UN Secretary-General's Special Envoy for the Oceans, told CBS.

The treaty will create a new body to manage conservation of ocean life and establish marine protected areas in the high seas. ■ SOURCE: UNITED NATIONS

Climate change is disrupting weather patterns and ocean currents, raising sea temperatures, and altering marine ecosystems and the species living there, and marine biodiversity is under attack from overfishing, over-exploitation and ocean acidification.

— UN Secretary-General Antonio Guterres



The UN's 193 Member States adopted a landmark legally binding marine biodiversity agreement on Monday.

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Great Barrier Reef has a sort of chlamydia

Researchers have discovered bacteria closely related to chlamydia, a sexually transmitted infection in humans, on the Great Barrier Reef, which may assist coral tackle the problem of coral bleaching.

The discovery of chlamydia-like bacteria in corals of the Great Barrier Reef could help scientists understand the coral microbiome and its impact on coral reef health.

Corals are associated with a variety of bacteria, which occur in the surface mucus layer, gastrovascular cavity, skeleton and

tissues where they play a critical role in protecting corals against pathogens, cycling nutrients, and producing vitamins and essential amino acids.

Some tissue-associated bacteria form clusters, termed cell-associated microbial aggregates (CAMAs), which are poorly studied.

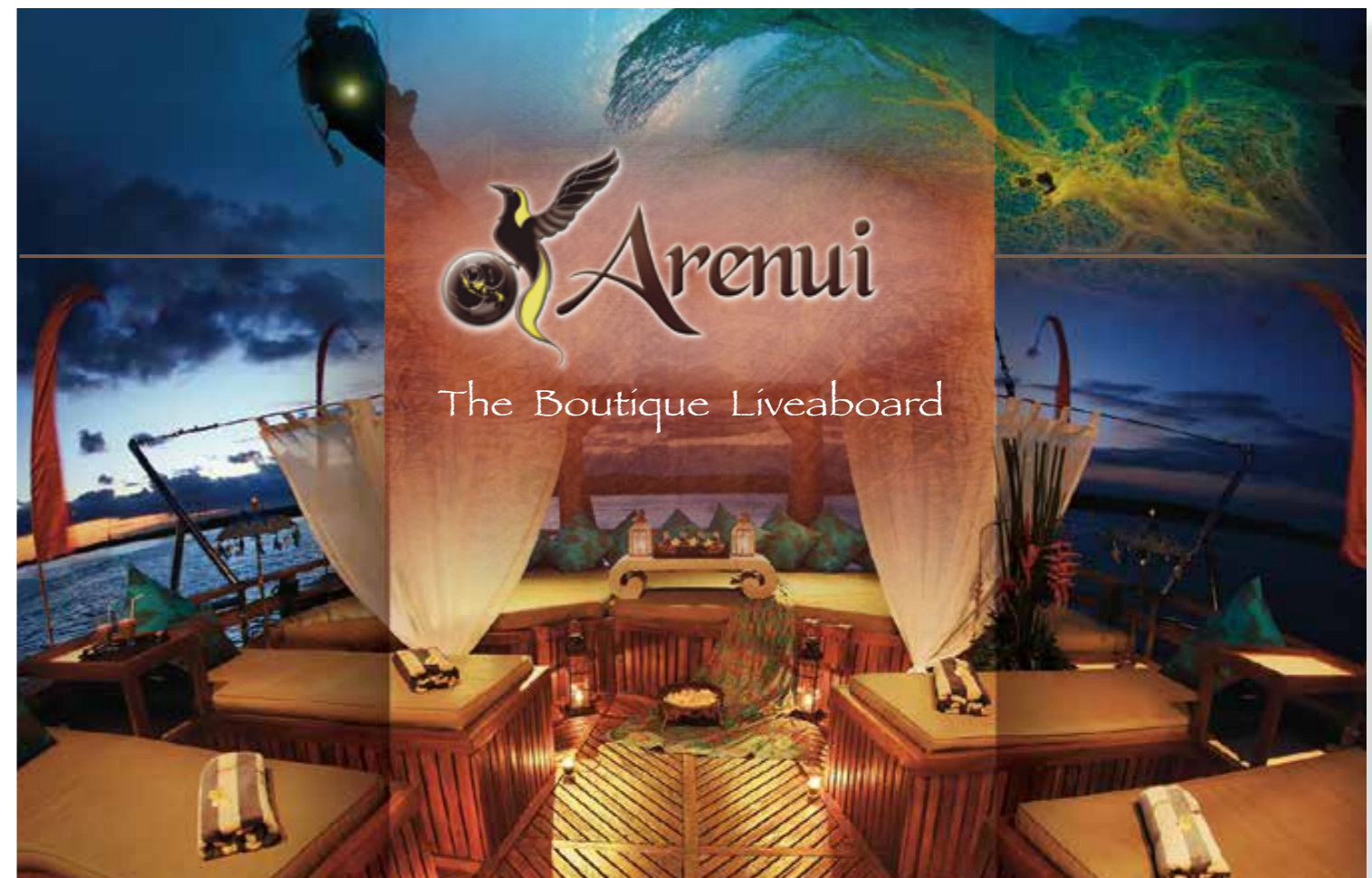
The research team, led by the University of Melbourne, found two types of bacterial clusters in coral tissue on the reef:

Endozoicomonas: a bacteria known to be widespread in corals, generally considered beneficial. It is generally thought that this bacterium is beneficial to corals because of its ability to

produce B vitamins and antimicrobial compounds.

Chlamydiales: a bacteria that contains the pathogens responsible for chlamydia infections in mammals but has never been described before in corals.

There is a possibility that these Chlamydiota bacteria get nutrients and energy from other coral-associated bacteria. One of the focal points for further research into the matter is the development of bacterial probiotics for corals, which can enhance their resistance to thermal stress and increase survival rates caused by climate warming. ■ SOURCE: SCIENCE (JOURNAL)



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MIDE welcomed big crowds each day to its new venue at MITEC in Kuala Lumpur on 26-28 May (right); Presentations were well-attended by audiences (far right); Images by Lens Beyond Ocean competition winners were on display in the gallery (lower right); Underwater photographer and expedition leader Imran Ahmad and his daughter Izabell gave a talk about their diving experiences as a family (bottom right).

MIDE 2023: Bigger and Better

Text by Catherine GS Lim

The 2023 Malaysia International Dive Expo was a hit! Despite a last-minute change of venue, moving to the Malaysia International Trade and Exhibition Centre in Kuala Lumpur on 26-28 May, the show exceeded expectations. X-Ray Mag associate editor and regional representative in Asia, Catherine GS Lim, reports.



CATHERINE GS LIM

The opening ceremony of the expo was officiated by YBhg. Datuk Hajah Saraya binti Arbi, Secretary General, Ministry of Tourism, Arts & Culture Malaysia (MOTAC).

Entering the exhibition hall on Day One at MIDE 2023 gave me a distinct buzz. Squaring my shoulders in anticipation, I walked past the booths and waved hello to old friends. As I made my way deeper into the hall, I felt a raising sense of excitement. MIDE 2023 was my first overseas dive show since the pandemic, and it appeared to be off to a promising start.

In April, when the organisers announced a change of venue due to circumstances beyond their control, there was some degree of anxiety amongst the exhibitors. Yet, instead of looking back at what could have been, the organisers swiftly pivoted and seamlessly shifted their operations to the new venue.

All this in 35 days. Organising an international dive show at a completely new venue in five weeks was a class act. Kudos to the organisers and their dedicated team, their associates and suppliers.

Record number of exhibitors

This year, MIDE hosted a record number of 222 exhibitor booths. Amongst them were 69 new exhibitors. As always, the show ran from Friday to Sunday, with more visitors on the weekend.

It was good to see the crowded aisles. The dive community is a tight-knit one. Many exhibitors were from the main dive community, comprising dive centres, liveaboards, resorts, equipment retailers/suppliers, and dive boats. I also noticed exhibitors from related



CATHERINE GS LIM

industries and organisations, like those focused on conservation, sports medicine and even underwater hockey.

The sport of underwater hockey intrigued me. Sure, I had heard about the sport from other dive shows but had been under the impression that it was confined to university sports clubs and niche circles. Thus, it surprised me to learn from National Head Coach Roshan Babu Balakrishnan that quite a number of scuba divers played the sport. It was a special treat too that members of the Malaysian national underwater hockey team had set aside time to share their passion with MIDE visitors.

Inclusivity and diversity

It also appeared to me that as a dive show, MIDE was more inclusive, in terms of its demographics—I was seeing greater numbers of younger divers walking the aisles and even inside the booths. Not only were more of them taking the plunge (literally), they were also giving talks about their marine conservation efforts, à la 15-year-old Julia Aveline Rabenjero's stage presentation about "Youth in Conservation" as well as a panel discussion about dive education on youth, with the topic of "Young Generation Scuba Diver with Mission."

Even nine-year-old Izabell Ahmad took the stage with her father, UW photo pro and expedition leader Imran Ahmad, one of Asia's most celebrated and internationally pub-

lished underwater photographers (while her mother Debbie Tan recorded their presentation from the floor) to share her diving experiences.

During the light-hearted 30-minute presentation, it was obvious that travel and diving bonded the family closer together and elevated their experiences. In addition, Imran admitted that because they did things together, it gave him a different kind of meaning to how he did his photography and how he ran his trips.

Presentations and forums

As with previous MIDE shows, there were many stage presentations and forums, as well as the Dive Divas Fan Club booth and the exhibition of the winning entries of the annual Lens Beyond Ocean International Photo Competition. As always, the winning entries wowed its viewers by providing fresh perspectives into the underwater realm—and perhaps some inspiration for their next dive trip.

Overall, this year's show was indeed larger, in terms of physical space and its collective vision. It is a dive show that has reasserted itself by focusing on what mattered most to the



CATHERINE GS LIM



CATHERINE GS LIM



DEBBIE TAN

dive community and industry—the essentials like dive trips, dive courses and underwater photography—while keeping an eye on the future by involving more conservation groups and the younger generation. ■

Diver at the large right-hand boiler, which is tilted to starboard, located at the back of the *John G. McCullough* wreck

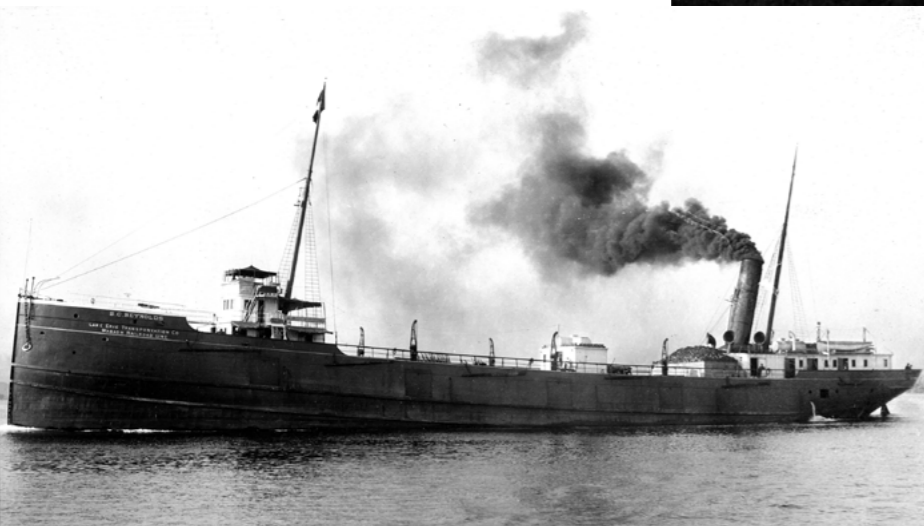
Text and photos by Pascal Henaff
Drawing by Herve Marsaud
Translation by Loïck Penhoat

How did a late 19th-century ship from the Great Lakes region of the United States end up shipwrecked off the coast of France, in the Bay of Biscay? Pascal Henaff has the story and shares impressions from a dive on the wreck.



John G. McCullough

Late 19th-Century Great Lakes Steamer in the Bay of Biscay



The *John G. McCullough*, when it was called *S.C. Reynolds*. Source: Historical Collections of the Great Lakes, Bowling Green State University

The *John G. McCullough* was built in 1890 by the Union Dry Dock Company in Buffalo, New York, USA, on behalf of the Erie Railroad Lake Line company. At 1885 gross tons, the ship measured 77.72m long and 12.22m wide.

Two boilers fed a triple expansion machine, located at the rear of the boat. The remaining space on the ship was used for freight.

Launched under the name of *S.C. Reynolds*, it was renamed *John Griffith McCullough* in 1902

in honour of the company's president. McCullough was born on 16 September 1835 in Newark. After graduating from the University of Delaware in 1855, he worked as a lawyer in Pennsylvania, California and

Vermont. He eventually settled in New York, to chair the steering committee of the Erie Railroad Company in 1888, and then became governor of Vermont in 1902. He died in May 1915.

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History

In the beginning, the *John G. McCullough* performed its function on the Great Lakes (a historical photo shows it sailing down the St. Clair River). Then in 1915, it was sent back to the shipbuilding company in Buffalo, and on to Davie Shipbuilding, a shipbuilding and repairing company in Quebec. The vessel had to be modified for another use, different from the one it had had on the Great Lakes. During this same time, the United States went to war, just after the *Lusitania* was torpedoed. The *John G. McCullough* was then requisitioned by the US Army Transport Service (ATS).

In early May 1915, the vessel was under the command of Frederick Hastswell. It left London filled with ballast and sailed to Belgium. There, it picked up freight (truck axles and



wheels, cement bags, etc) for the US Army. It then headed towards Rochefort, armed with a 90mm gun. The vessel had a total crew of 32, including four Americans, 26 Brits, one Dane, and one German. The US Army Brittany Patrol Division instructed the ship to navigate around the Raz de

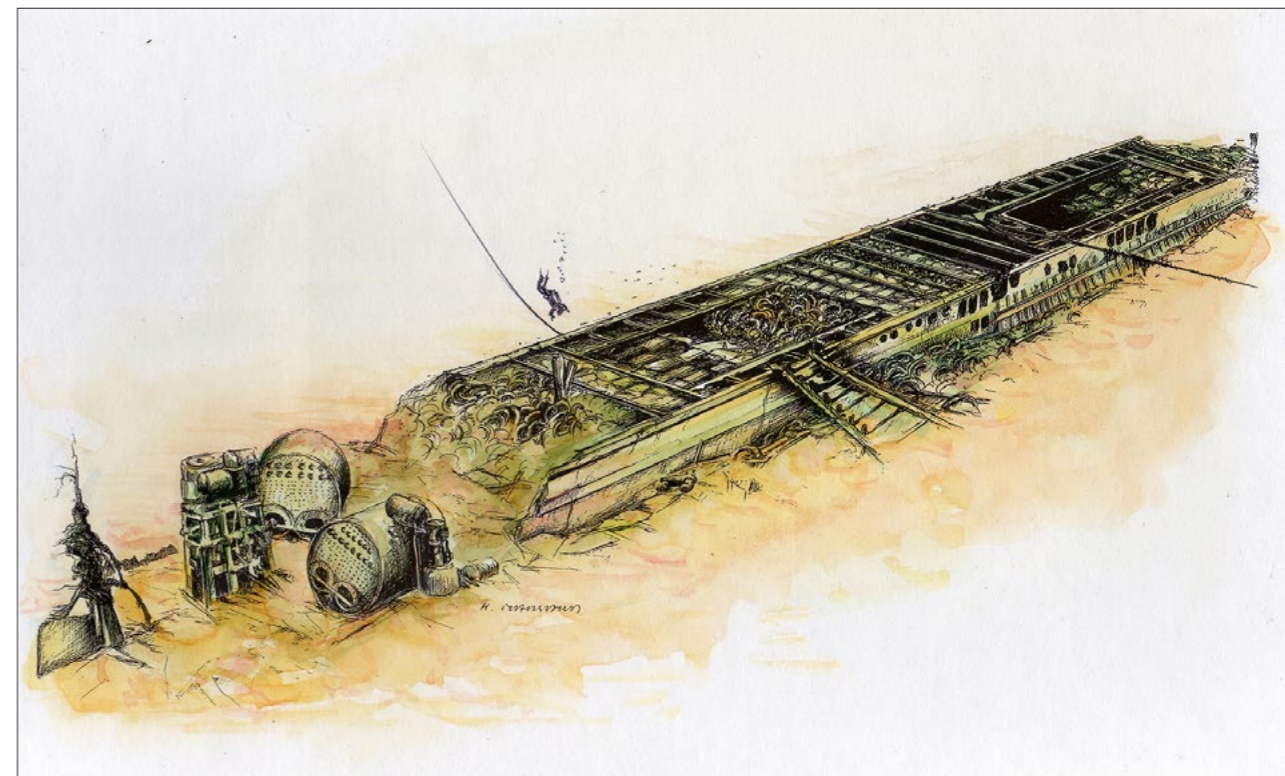
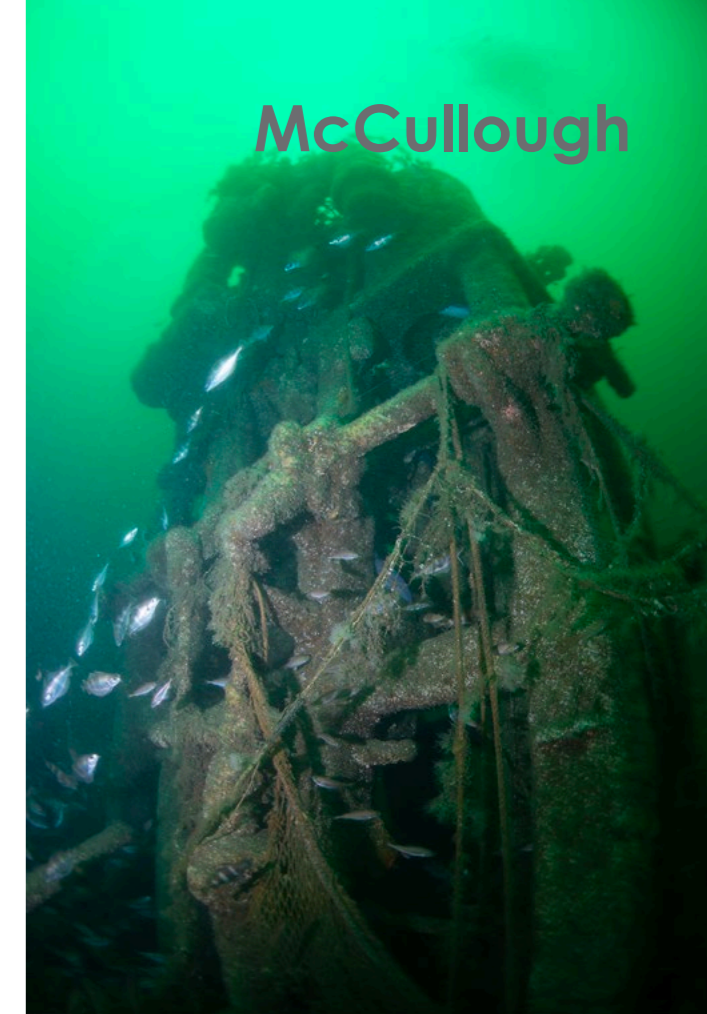


Illustration by Herve Marsaud of the actual wreck, as seen on a dive (above); Diver on starboard side of *John G. McCullough* (centre and top right); Diver at the right-hand boiler that is tilted to starboard side (top left)

Diver under the ever-impressive steam engine mount

wrecks

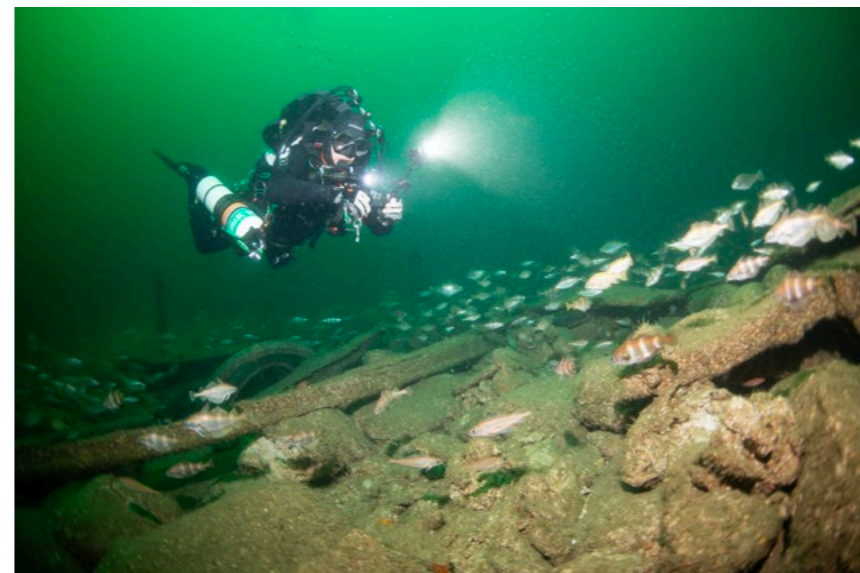
Part of ship's cargo consisted of bags of cement, which has now solidified, thereby preserving the structure of the vessel (below); Diver at post of the stern (right); The steam engine that protrudes from the bottom by at least three to four metres (far right)



Starboard view from bottom of cargo hold overflowing with truck wheels (right); Diver enjoys wandering above the wreck (centre)

Sein, and travel down the coast along the Glénan Archipelago (Archipel des Glénans) and to the island of Groix (Île-de-Groix). The ship then had to sail away from the Quiberon Peninsula in order to later reach an escort vessel, which was bound for the island of Aix (Île-d'Aix).

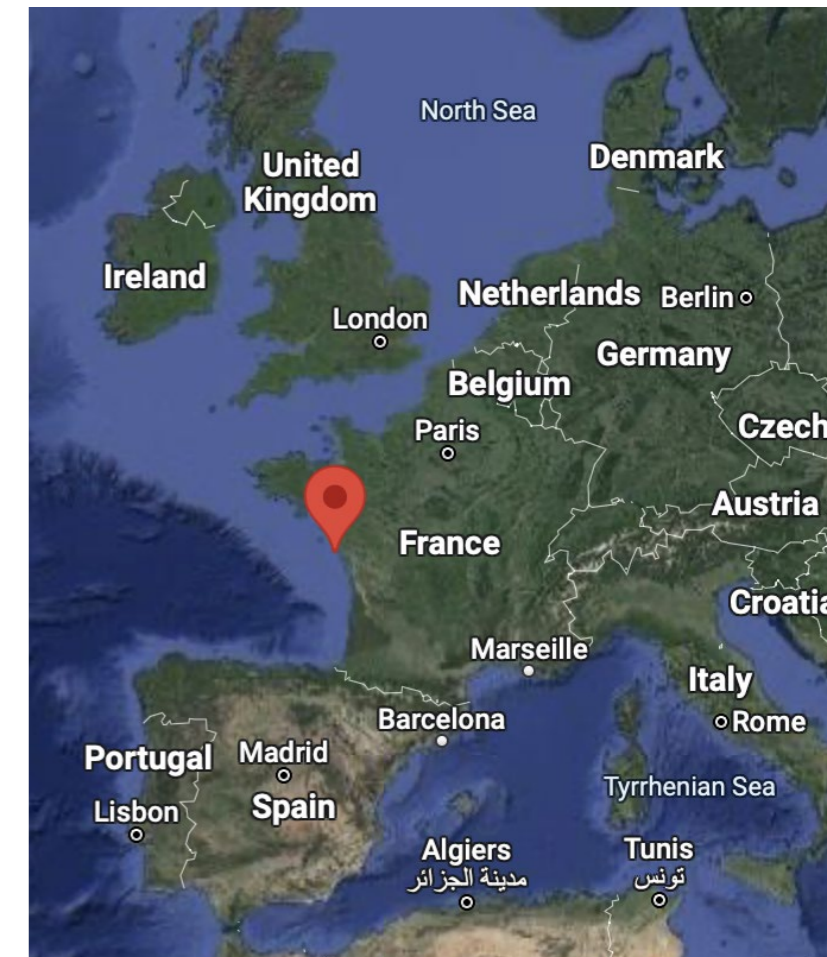
On 18 May 1918 at 4:45 a.m., the ship was situated to the south of the island of Yeu (Île d'Yeu); visibility was between one and two miles. Without zigzagging, the ship headed south-east, at a speed of 6.5 knots. The American patrol boat *Emiline*, which was escorting the *J.G. McCullough* to port, was one mile behind it. Navigation lights on the ship had been turned off, and all other lights had been obscured. Suddenly, a violent explosion



took place on the starboard side, 10m aft of the bow, which surprised everyone. The officer in charge of the watch, and the helmsman, said they saw the wake of a torpedo, but no one had spotted a submarine periscope. No distress message could be sent because electrical power was out in the ship's dynamo room.

The *J.G. McCullough* started to sink bow first. Badly partitioned, the ship went down in three minutes. The crew just managed to take shelter inside two lifeboats, which had been hastily dropped into the water. Meanwhile the escort patrol boat launched five depth charges but to no avail. Then it went to assist those stranded. The

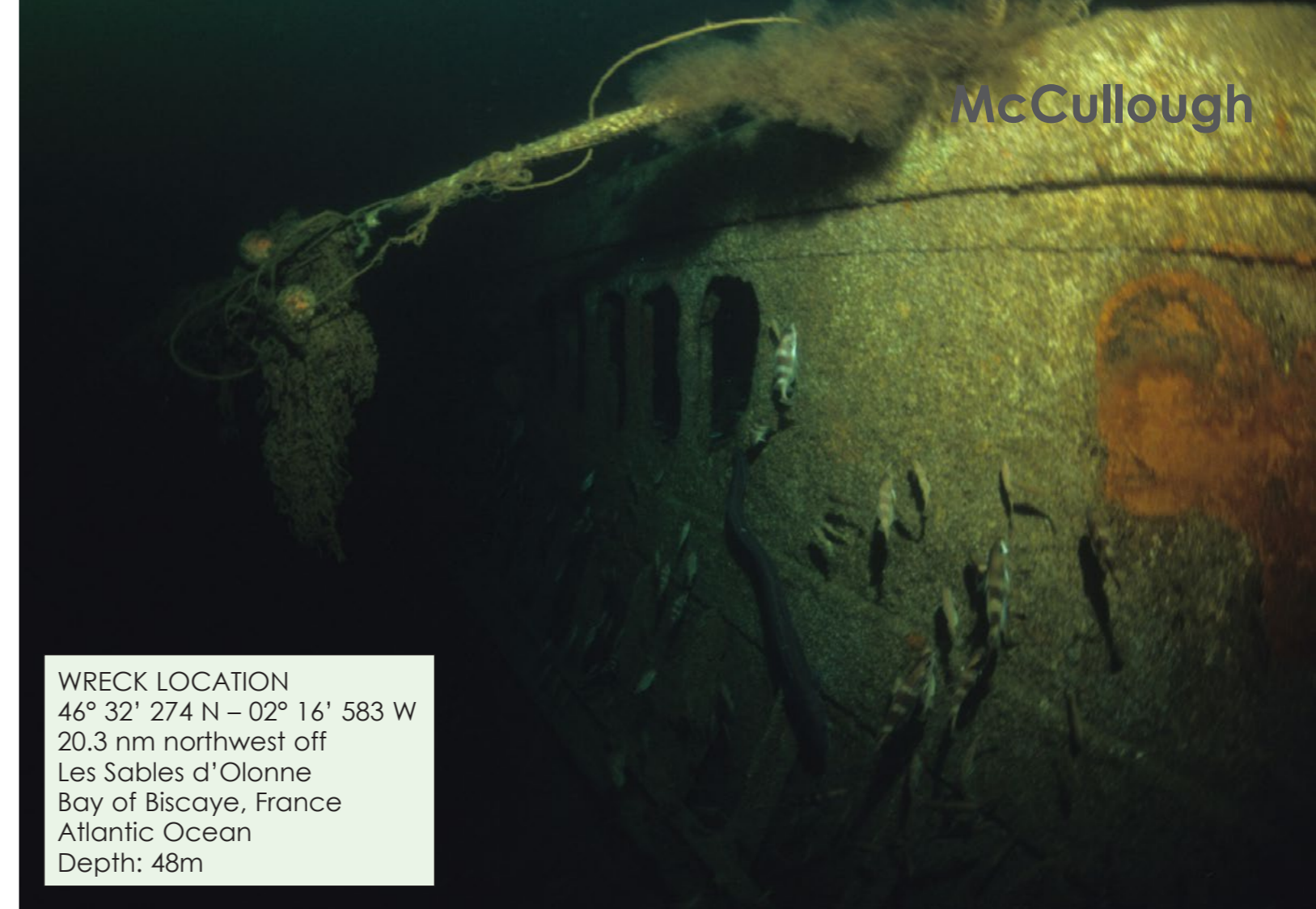
escort patrol boat brought the shipwrecked sailors back to the harbour of La Pallice. Only one crew member was lost: second engineer and officer, Daughtry, who had returned to the boiler room after the explosion in order to try to restart the engine. The report at the time raised doubts as to whether the explosion



Location of wreck off Les Sables d'Olonne, France

IMAGERY ©2023 TERRAMETRICS. MAP DATA ©2023 GOOGLE





WRECK LOCATION
 46° 32' 274 N – 02° 16' 583 W
 20.3 nm northwest off
 Les Sables d'Olonne
 Bay of Biscaye, France
 Atlantic Ocean
 Depth: 48m



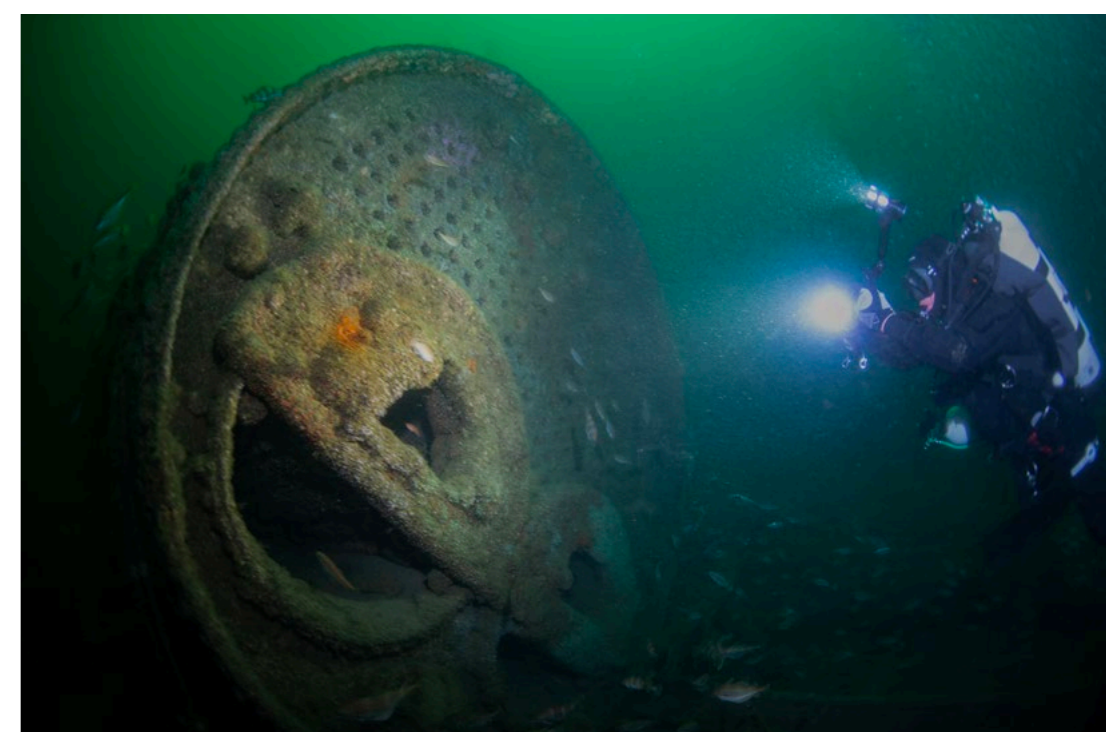
had been caused by a mine or a torpedo. From the German side, it was thought that the shipwreck must have been the work of UB 74.

UB 74 was a submarine of the UB III type (coastal torpedo attack boat class). It was 55.30m long and armed with 10 torpedoes and one 88mm canon. UB 74 had a crew of 34 and could dive to a depth of 75m. On the day of the alleged attack of the *J.G. McCullough*, UB 74 was commanded by Ernst Steindorff. It was eventually sunk by the patrol boat *Lorna* in the South of England (Lyme Bay) on 26 May 1918, using depth charges.

quite good shape at a depth of 48m, in particularly clear water, 20nm off Les Sables d'Olonne. A telephone cable, which started at the coastal town of St Hilaire de Riez (formerly linking the old world to the new, which is now out of service), runs across the wreck.

Thanks to its cargo of cement bags, which preserved the original shape of the wreck, except for the damage suffered at the bow due to the explosion, the remaining three quarters or so of the ship have been kept as they were on the day the vessel sank.

In summertime, a thick blanket of plankton develops in the 10m zone. What light penetrates through the depths to the wreck is enough to

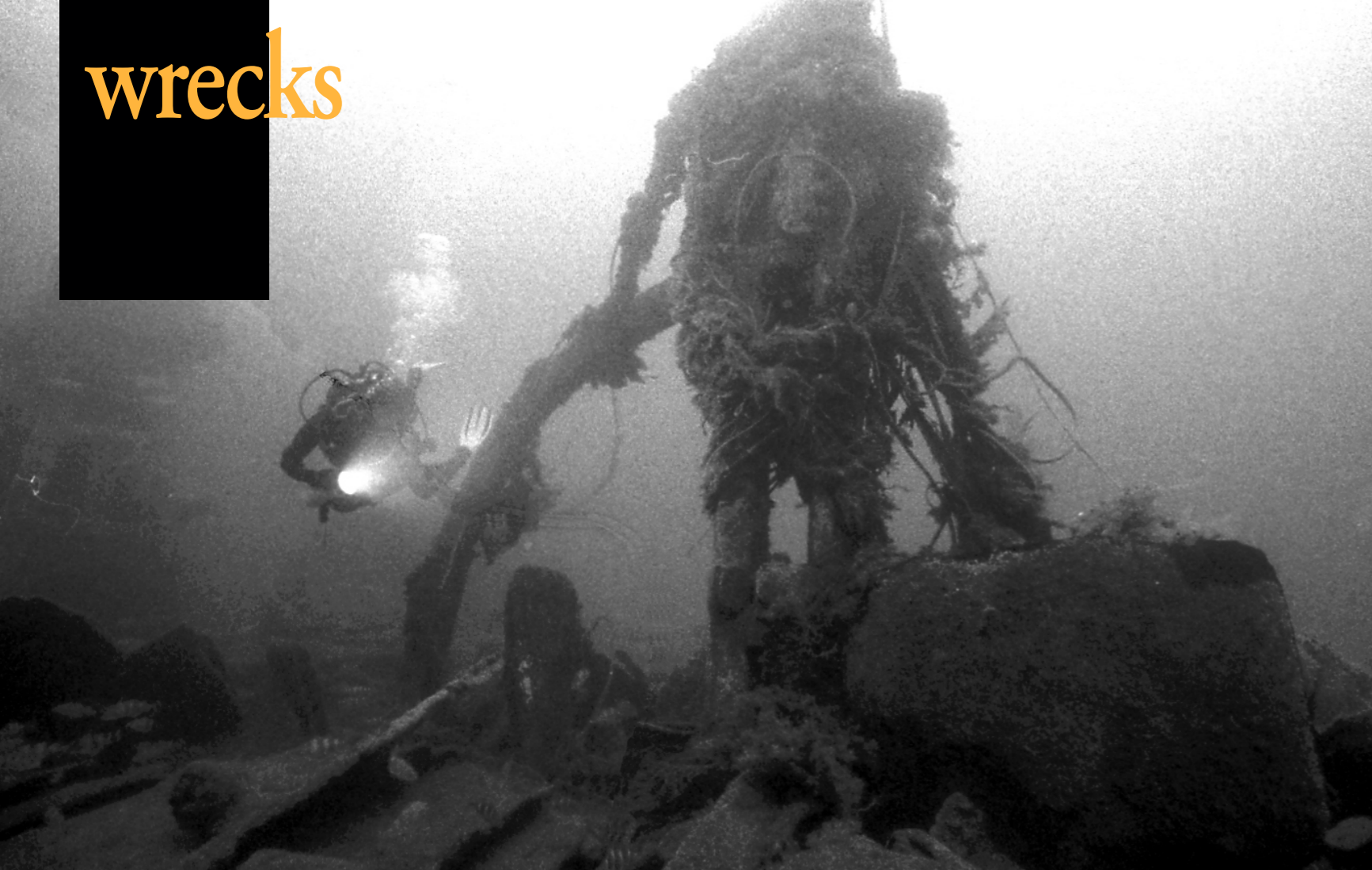


illuminate almost the whole ship, at a glance. Horizontal visibility often reaches 20m. The hull

rises to the height of four or five metres above the sea bottom. On the starboard side, part

View of the ship's deck, with its cargo still in place (above); The transatlantic cable that passes over the wreck (top left), and as seen from the starboard side (top right); Diver shines light on one of the boiler's starboard furnaces (right)

Diving the wreck
 The *J.G. McCullough* lies in



Diver at the top of the rudder and one of the propeller blades, as seen from the back of the wreck

of a cargo boom rests on the sand. It is possible to slip under the deck beams—in particular, at the front end of the port side—in order to swim one's way closer to the cargo and meet today's "crew members," mainly consisting of lobsters. On the starboard side, a large flap of metal sheet rests against the hull. Lots of harmless conger eels gather under it and hardly give way to our passage. On the port side, some pieces of the fittings that slipped out of the ship, can easily be recognised.

The most interesting part of the wreck is in the aft area. Here, two wonderful boilers are slightly displaced, and the imposing machine towering above this part of the wreck is colonised

with sea anemones. The frame of the stern still holds the rudder, but the propeller is half buried in the sand. A fishing net is tangled around the rudder stock, giving it a ghostly aspect.

It is an easy dive despite its depth. This compact wreck is easily navigated. Moreover, it is the only wreck in this area that is typical of the Great Lakes of North America (the engine and both boilers are located in the aft end). ■

To learn more, see the video by Pascal Henaff about the Bay of Biscaye's wrecks off Les Sables d'Olonne at: [youtube.com/channel/UCnCdlg34vdGSqIGv4E1dq7A](https://www.youtube.com/channel/UCnCdlg34vdGSqIGv4E1dq7A) Pascal Henaff has been a diver since 1975 and an underwater

photographer since 1989. He has written articles for underwater magazines since 1995. Today, he is more specialized in reportages on wrecks. Visit: wildseapictures.com

Herve Marsaud has been a diver since 1990. He is a retired professor of applied arts at a technical high school, and a maritime history buff. Visit: sites.google.com/site/hervemarsaudphoto

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

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



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British T-class submarine HMS Triumph

British WWII submarine located in the Aegean Sea

The British submarine HMS Triumph, which disappeared without a trace in 1942, has finally been discovered on the bed of the Aegean Sea by Greek researcher Kostas Thoktaridis and his team.

Kostas Thoktarides told state news agency ANA his team had located the wreck of HMS Triumph at a depth of 670ft at an undisclosed location in the Aegean Sea.

The HMS Triumph was a British T-Class submarine involved in military operations in the Aegean Sea and elsewhere in the European theatre of the Second World War. It carried out twenty missions, including attacks against Axis ships, landing British commandos and

rescuing Allied soldiers, until it disappeared during a mission in 1942. Eighty-four submariners were killed when the HMS Triumph sank.

HMS Triumph was last spotted by an Italian pilot about four nautical miles southeast of Cape Sounion, which is near Athens, at 12:00 noon on 9 January 1942.

For decades after its disappearance, various attempts to find it had been mounted by teams from the United Kingdom, Malta and Russia—all without success.

Thoktarides' search for the submarine began in 1998 and was "the hardest mission I have ever undertaken in my life," he posted on Facebook. "The history of the submarine is multi-aspected and unique in naval chronicles, as it is inseparably connected with the national

resistance and secret services of the time, which operated during the occupation," Thoktaridis told the Athens-Macedonian News Agency.

What sank the sub?

Before discovering the lost submarine at the bottom of the Aegean, several theories were proposed for its disappearance. Among them were the hypotheses it struck a mine and sunk, it was incapacitated by an accident diving, or struck land.

Thoktarides told ANA that the submarine's periscopes and hatches were down, indicating it was in a deep dive during its final moments. It appears to have sunk due to a powerful explosion in the fore section, but the cause of the blast remains unclear, he said.

■ SOURCES: ATHENS-MACEDONIAN NEWS AGENCY

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Wreck site off Japan identified as World War II US destroyer

USA's Naval History and Heritage Command (NHHC) confirms the identity of a wreck site off the coast of Okinawa, Japan as World War II Destroyer USS Mannert L. Abele (DD-733).

USS Mannert L. Abele (DD-733), was an Allen M. Sumner-class destroyer of the United States Navy, which was launched on 23 April 1944. On 12 April 1945, Mannert L. Abele was operating 75 miles off the northern coast of Okinawa, when enemy aircraft appeared on radar.

Despite numerous hits from 5-inch and light anti-aircraft fire and spewing smoke and flames, a Mitsubishi A6M Zero kamikaze first crashed into the starboard side. It penetrated the aft engine room where it exploded.

Only a minute later, Mannert L. Abele took a second and fatal hit from a Yokosuka MXY-7 Ohka kamikaze rocket-powered flying bomb that struck the starboard waterline abreast the forward fireroom. Its 2,600 lb (1,200 kg) warhead exploded, buckling the ship,

and "cutting out all power, lights, and communications."

Almost immediately, the destroyer broke in two, its midship section obliterated. Its bow and stern sections sank rapidly. It was the first US warship to be damaged or sunk by the rocket-powered Yokosuka MXY7 Ohka suicide flying bomb. The number of casualties in its sinking was 84.

Identification

The US Naval History and Heritage Command (NHHC) used information provided by Tim Taylor, an ocean explorer and CEO of Tiburon Subsea, and Taylor's "Lost 52 Project" team to confirm the identity of the Mannert L. Abele.

War grave

The wreck of the Mannert L. Abele is a US sunken military craft and the final resting place of sailors who lost their lives during the battle. As such, it is protected by US law and under the jurisdiction of the Department of the Navy. While non-intrusive activities, such as remote sensing documentation on US Navy sunken military craft are allowed, any activity that may result in the disturbance of a sunken military craft must be coordinated with the NHHC and, if appropriate, authorized through a relevant permitting program. ■

SOURCE: US NAVAL HISTORY AND HERITAGE COMMAND



USS Mannert L. Abele off Boston Navy Yard, Massachusetts, 1 August 1944

BUREAU OF SHIPS COLLECTION, US NATIONAL ARCHIVES / PUBLIC DOMAIN





MAGELLAN LTD AND ATLANTIC PRODUCTIONS / VIA PRESS RELEASE

Titanic shipwreck recreated in detailed 3D visualisation

The first full-sized digital scan of the *Titanic* provides a unique 3D view of the entire ship, revealing the remains as they lay submerged at the bottom of the Atlantic Ocean with a level of detail that has never been captured before.

An ambitious digital imaging project has produced what researchers describe as a “digital twin” of the RMS *Titanic*, showing the wreckage of the doomed ocean liner as if the water has been drained away.

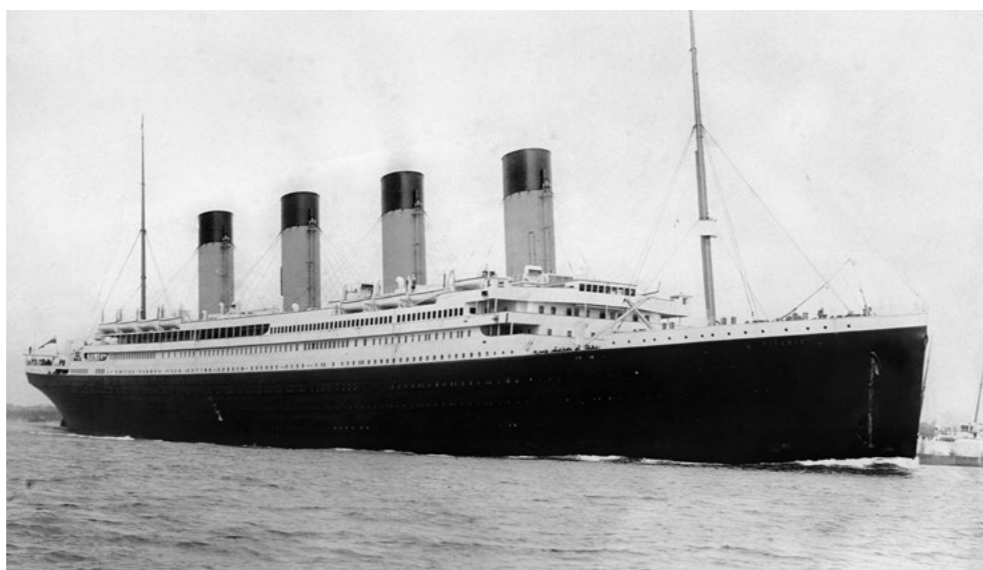
The model was created with data using deep-sea mapping gathered by two submersibles—named *Romeo* and *Juliet*—during a six-week expedition to the North Atlantic wreck

site in the summer of 2022, to map “every millimetre” of the wreckage as well as the entire three-mile debris field.

The project, undertaken by Magellan Ltd., a deepwater seabed mapping company, yielded more than 16 terabytes of data, 715,000 still images and a high-resolution video.

While parts of the ship—including the vast bow section—are immediately recognizable, other sections of the ship near the stern have yielded to over a century of decay, appearing now as little more than tangled piles of metallic debris. ■

SOURCE: ATLANTIC PRODUCTIONS



RMS *Titanic*, 1912. Photo by Francis Godolphin Osbourne Stuart

WIKIMEDIA COMMONS / PUBLIC DOMAIN

Malaysia detains Chinese ship suspected of looting two British WWII wrecks

The UK Ministry of Defence condemns the “desecration” of the battleship HMS *Prince of Wales* and battleship HMS *Repulse*, which were sunk off the coast of Malaysia in 1941.

Malaysia's maritime authorities have detained a Chinese-flagged cargo ship amid reports this month that scavengers targeted two British World War Two wrecks off the coast of Malaysia—the HMS *Prince of Wales* and HMS *Repulse*—which were sunk by Japanese torpedoes in 1941.

An inspection of the cargo ship led to the discovery of old steel and cannon shells believed to have been scavenged from the HMS *Prince of Wales*. The shells could be linked to a separate seizure by police at a Johor jetty last week of multiple unexploded World War II-era artillery.

The Malaysian Maritime Enforcement Agency (MMEA) stated that it was working with Malaysia's National Heritage Department and other agencies to identify the ordnance discovered.

Worst disaster

HMS *Prince of Wales* was a King George V-class battleship—the most modern British battleships in commission during the Second World War. In its final action, the vessel attempted to intercept Japanese troop convoys off the coast of Malaya when it was sunk alongside the

battlecruiser HMS *Repulse* by Japanese aircraft on 10 December 1941, two days after the attack on Pearl Harbor.

Their sinking is considered one of the worst naval disasters in the history of the Royal Navy. It was also one of the first battles to show that even the most powerful of modern warships—the *Prince of Wales* was commissioned less than a year before it sank—were vulnerable without supporting air power.

Designated war graves

A spokesperson for the UK Ministry of Defence in London said: “We strongly condemn any desecration of any maritime military grave. Where we have evidence of desecration of the wrecks of Royal Navy vessels, we will take appropriate action, including working with regional governments and partners to prevent inappropriate activity at such sites.”

“We are distressed and concerned at the apparent vandalism for personal profit of

HMS *Prince of Wales* and HMS *Repulse*,” said professor Dominic Tweddle, director general of the National Museum of the Royal Navy, in a statement.

“They are designated war graves. We are upset at the loss of naval heritage and the impact this has on the understanding of our Royal Navy history.”

Repeatedly looted

The British vessels, on the seabed some 100km (60 miles) off the eastern coast of Malaysia, had been targeted for decades. The shipwrecks are targeted by scavengers for their rare low-background steel, also known as “pre-war steel.” The low radiation in the steel makes it a rare and valuable resource for use in medical and scientific equipment.

In October 2014, the *Daily Telegraph* reported that both *Prince of Wales* and *Repulse* were being “extensively damaged” with explosives by scrap metal dealers. ■ SOURCES: MALAYSIA MARITIME ENFORCEMENT AGENCY

COLLECTIONS OF THE IMPERIAL WAR MUSEUMS / PUBLIC DOMAIN



Royal Navy battleship HMS *Prince of Wales* in Singapore in 1941



CAFE/CREDIT / CC BY 2.0

Why paying for things abroad in home currency is a bad idea

When it comes to paying for things abroad, currency choice “services,” which offer credit cardholders the convenience of being charged in home currency rather than the local one, can be costly. A study revealed the fees charged for these transactions can be exorbitant.

International customers are increasingly exposed to dynamic currency conversion (DCC), that is, the option during check-out to proceed with a transaction in the home currency instead of a foreign currency.

Exorbitant fees

However, one study, cited by CNN, shows the average fee applied to this kind of conversion is a whopping 7.6%, more than double the cost of paying in the local currency (usually between 1.5% and 3%).

Despite the high fees, research published in the Journal of Public Policy & Marketing shows that more than half of international customers still choose to pay in their familiar home currency. The most obvious explanation is an understandable preference for the familiar when dealing with money abroad.

Any advantages?

Dynamic Currency Conversion may, on the other hand, reduce some risks for customers such as fluctuations in the exchange rate between the transaction and the handling of that transaction by the customer’s home bank, because the exchange rate is guaranteed by the DCC service provider. In some cases, it may be preferable for customers to use DCC as long as the DCC markup applied by the provider of DCC does not exceed the conversion fees applied by the home bank. ■ SOURCE: JOURNAL OF PUBLIC POLICY AND MARKETING

Wrecks4All app features Adriatic wrecks

The Maritime Faculty in Kotor of the University of Montenegro has released Wrecks4All, a new free-to-use application that showcases the wrecks of Bosnia and Herzegovina, Croatia and Montenegro.

The region of Adriatic Sea that borders the three countries has a long nautical history, spanning the ancient Hellenistic and Roman eras to the Second World War and the present. The Adriatic’s seafloor bears witness to numerous historical events.

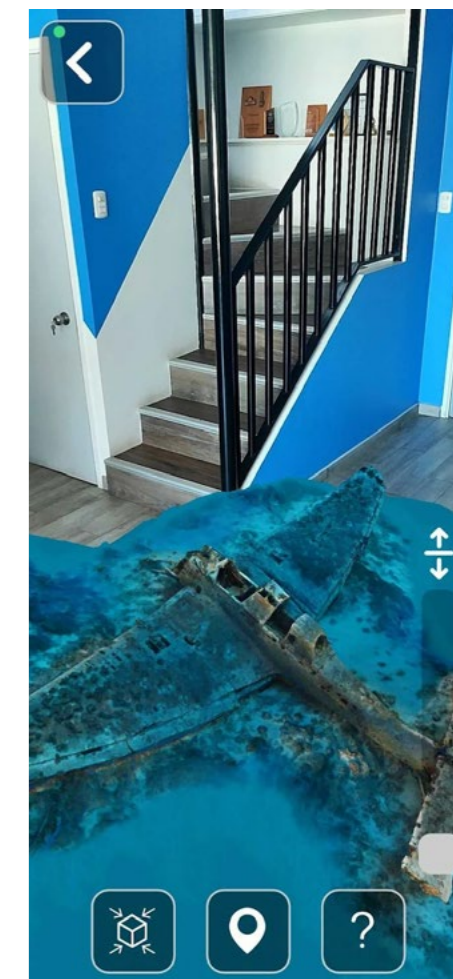
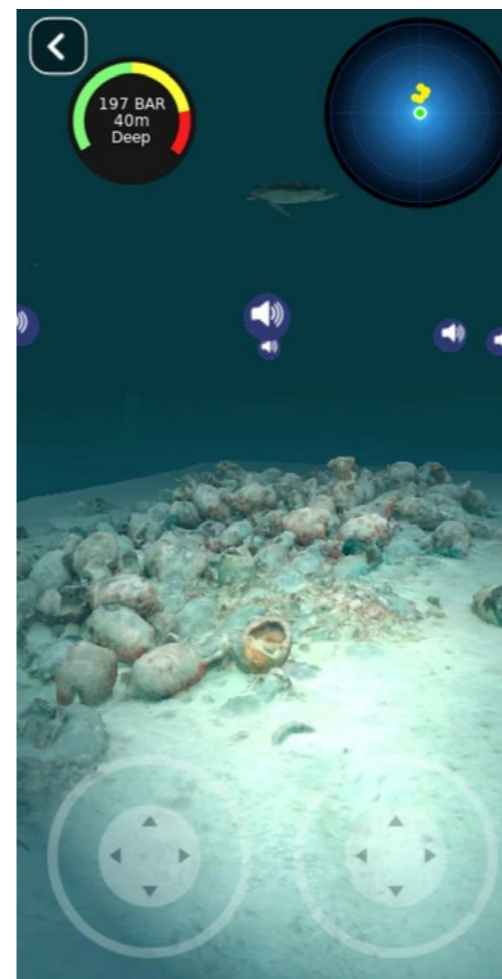
Wrecks4All highlights a number of noteworthy wrecks in the region. Users can virtually dive to the wreck sites to examine them in the present, using the augmented reality (AR) capabilities of the app. The app was developed by the Maritime Faculty in Kotor of the University of Montenegro’s Center for Research, Innovation and Entrepreneurship, under the auspices of a project entitled, “Protection of underwater heritage through digitization and valorization as a novel tourist offer”—Wrecks4All.

The Wrecks4All initiative intends to continue to develop

this cutting-edge tourism product based on the region’s underwater cultural legacy in the Eastern Adriatic. Many actual shipwrecks and other underwater heritage monuments may be found in the project area, and these attractions are well-known to tourists, especially among the scuba diving community. As part of the cross-border program of cooperation, virtual reality showrooms to showcase the wrecks were also opened in Kotor, Mostar and Split.

The app is available on Google Play and the Apple App Store. ■

SOURCE: UNIVERSITY OF MONTENEGRO



Screenshots from the Wrecks4All app, which was developed by the Maritime Faculty in Kotor of the University of Montenegro’s Center for Research, Innovation and Entrepreneurship

UNIVERSITY OF MONTENEGRO / PRESS RELEASE



North Sulawesi's

Lembeh & Bangka

UW Photography Safari in Indonesia

*Text and photos
by Scott Bennett*

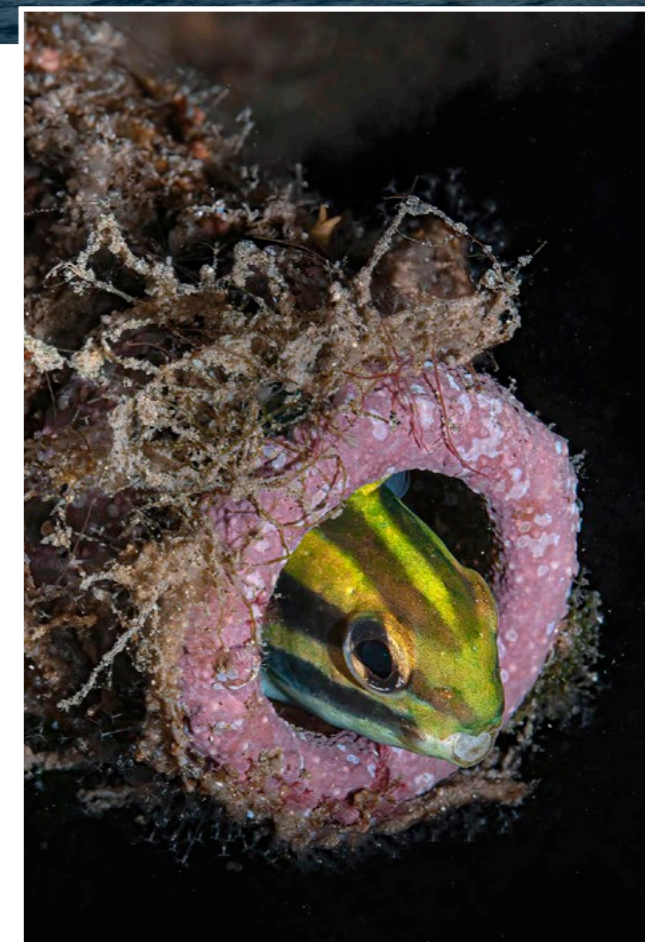


View of Lembeh Strait (above); Striped fang blenny in a bottle (right) and pair of Coleman shrimp on fire urchin (previous page) at Lembeh Strait

When it comes to diving, Indonesia has no shortage of bucket-list worthy destinations, boasting some of the most biologically diverse tropical reefs and critter sites in the world. For the macro photographer, North Sulawesi's Lembeh Strait is the proverbial Holy Grail. To the uninitiated, prowling a featureless expanse of sand may border on the uninged, but critter enthusiasts will beg to differ, as Lembeh's environs are home to a dizzying array of the weird and wonderful. Scott Bennett has the story.

I first visited way back in 2004 after a liveaboard trip to Raja Ampat with the legendary Michael Aw. He and some others opted to extend the trip with a few days at Lembeh Resort. Armed with my first housing for an SLR camera, I was eager for more diving. How could I refuse?

The experience was magical! With more than 90 dive sites to choose from, I saw and photographed creatures I did not even know existed. The only problem? The housing was for a film camera and the subjects per dive far exceeded the images per roll of film. Right then and there, I knew a return visit with a digital camera was imperative. I managed to return in 2006 for a few days with a housing for a Nikon D200. This time,



The tiny *H. barigbati* pygmy seahorse (1-2 cm long) on gorgonian at Bangka, Indonesia





View of Lembeh Strait (above); Dive boats at Lembeh Resort (top right); Mt. Klabat (left); Bungalow walkway at Lembeh Resort (right)

dive show was announced. One of the exhibitors was Lembeh Resort, which was advertising its "Critters at Lembeh" workshop slated for January 2022. I signed up in a heartbeat. After all, the pandemic would be over

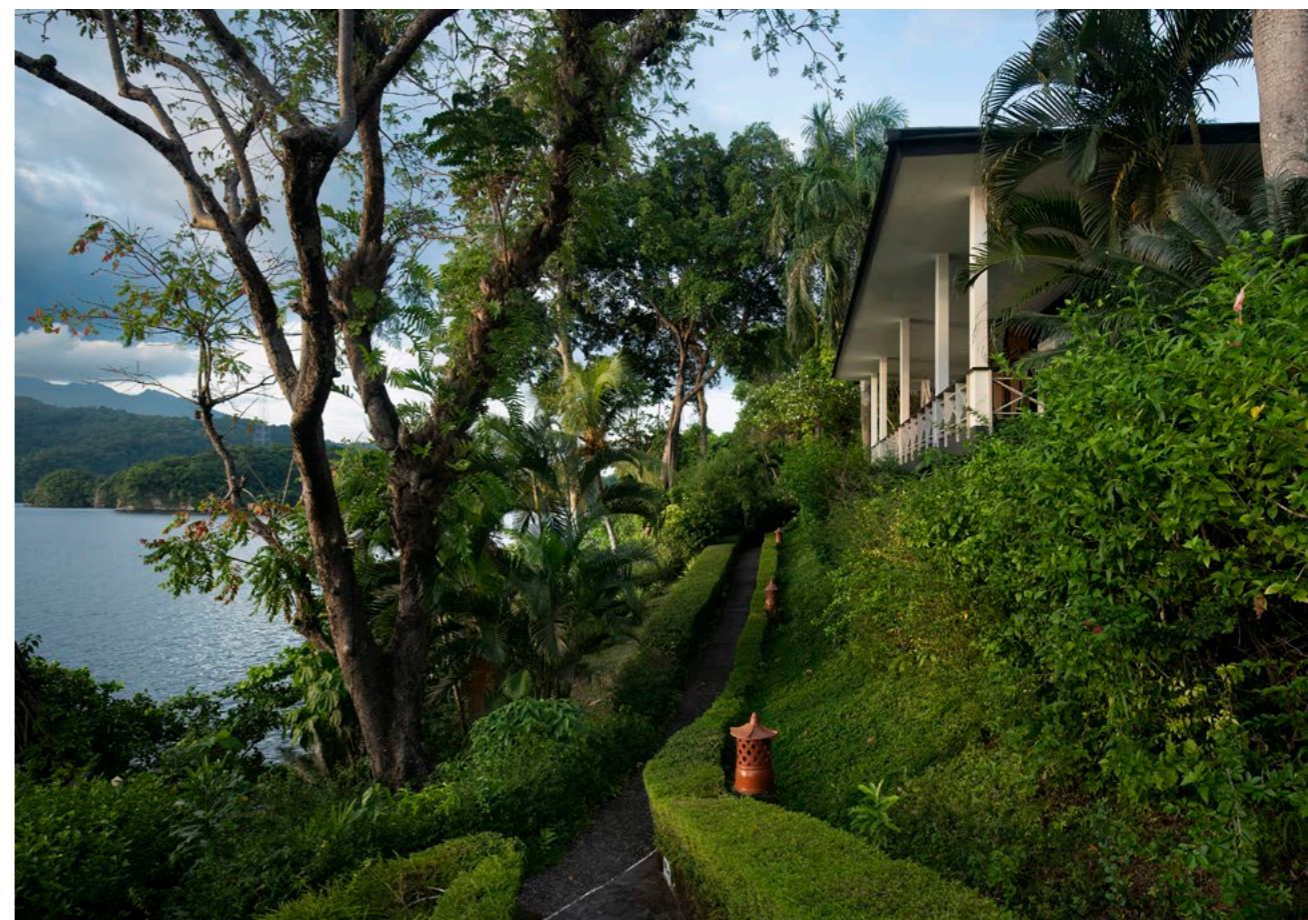
before then, right? *Right???*

So much for optimism. By late 2021, Indonesia had yet to open to international tourism and the workshop was delayed until January 2023. It seemed the day would never come, but by late 2022, the borders were opened, and the workshop was on!

Getting there

From my home in Toronto, a trip to Indonesia is no easy jaunt. To break up the trip, I stopped in Singapore for a few days before continuing on to Manado. Going through Customs was quick, and I collected my luggage and headed outside to meet my transfer to the resort. The drive to the jetty in Bitung was a lot faster, courtesy of a new expressway, effectively halving the travel time to 90 minutes. Motoring across the channel to the resort, everything looked as I remembered but with one difference. The natural arch on one of the islands had collapsed only months before my arrival, a sobering reminder of nature's impermanence.

Arriving at the resort, I was greeted by guest relations manager Tarkan Sever. After two years of trading



I could shoot as many images as I wanted per dive. It was now official; I was hooked on macro!

Sadly, it would be a number of years before my next visit. I had been thinking about it, but then 2020 rolled around, and we all know what happened next. In November, after months in lockdown, an online





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Photography workshop's daily schedule (left); Mototi octopus (above); Red-margined glossodoris nudibranch (centre); Tryon's risbecia nudibranch (far right); *Halgerda batangas* laying eggs (bottom right)



centre operated by Backscatter, with a wide variety of products for sale. This would prove to be a godsend, but more on that later.

I was then taken (by Tarkan) to my accommodation, a luxury hillside bungalow I was sharing with another participant. Encircled by luxurious tropical vegetation, it featured a bedroom, sitting room, open bathroom, and stunning views overlooking the strait. On the opposite shore, the volcanic peaks of Mt Tongkoko and Mt Klabat dominated the landscape. The latter, at 1,995m, is Sulawesi's tallest peak.

Photo workshop

With everything unpacked, I examined the printout of the week's schedule.

The daily activities would be intense: Breakfast starting at 6:15 a.m., followed by a half-hour seminar at 7:00 a.m., then followed by a two-tank dive departing at 8:00 a.m. Back by noon, lunch would follow at 12:30 p.m., another seminar at 1:30 p.m. followed by a third dive at 2:15 p.m. From 5:30 to 7:00 p.m., the instructors would be on hand in the main lounge for processing questions, with participants urged to bring their laptops. After dinner at 7:00 p.m. came an image critique on the lounge TV at 8:00 p.m. After that, it was time to ready camera gear for the next morning, followed by bed. Repeat for the ensuing week!

With that in mind, I collected my gear and headed for the camera

room to set up. At Lembeh Resort, photography is king, evidenced by the bright and spacious camera room. Each station featured ample space for equipment assembly, along with an abundance of plugs for battery charging. Twenty-four-hour electricity was an added bonus.

My photo gear consisted of a Nikon D850 camera in a Seacam housing with twin Inon Z-330 strobes. I brought along two macro lenses: a Sigma 105mm and a Nikon 60mm. Kit assembled, I set out for the lounge to meet the workshop's three instructors: Erin Quigley and Joel and Jennifer Penner.

Erin Quigley is an Adobe ACE certified expert in Adobe Photoshop and Lightroom. An award-winning under-

emails, it was great to finally put a face to the name. After a welcome drink, I had a quick tour of the resort.

It was an odd sensation; I had been here before, but everything was unfamiliar. Many upgrades had been made over the years, with many rooms being totally refurbished. The only thing I recognised was the pool! There was also a fully equipped photo



Starry blenny (above) and whip coral goby (left) at Lembeh Strait

water photographer and editor, she is also the creator of GoAskErin.com, providing one-on-one instruction, custom video tutorials and post-production resources developed specifically for underwater photographers.

Accomplished underwater photographers and videographers Joel and Jennifer run Newmediasoup, a Central California-based multimedia design company providing digital design, corporate video, photography, consulting and marketing solutions.

I was one of the last to arrive, with everyone already having done a day's diving. The group was predominantly from the

United States, with participants from Canada (me included), the United Kingdom and the Netherlands. Within two hours of my arrival, the entire staff knew my name, putting me at a distinct disadvantage as I forget names in five minutes. After dinner, I called it an early night. With the schedule ahead, I suspected sleep would be a rare commodity.

Diving

Finally, after more than two years, the workshop's first day had arrived! After breakfast, we watched "Rules of the Muck," a presentation about general photo etiquette and procedures



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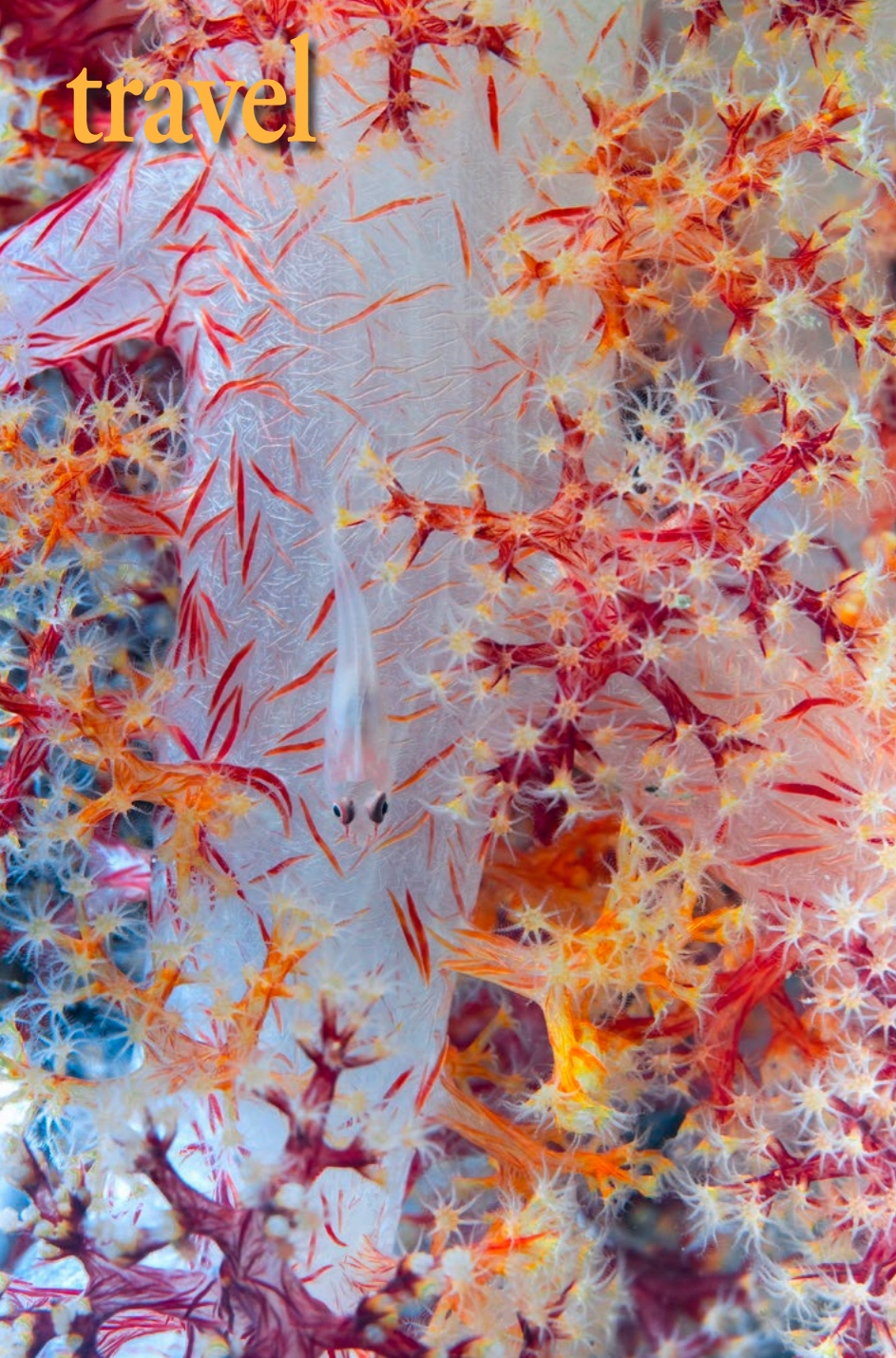


Red Sea BLUE FORCE 2



Maldives BLUE FORCE 3

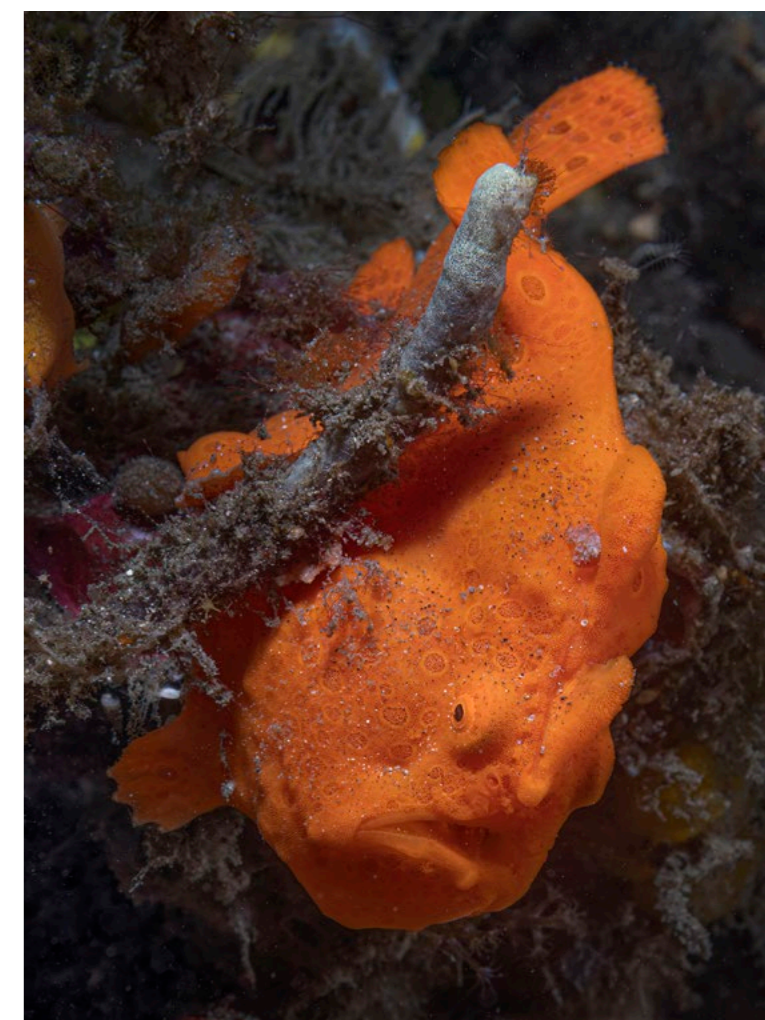
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Soft coral goby (left); Tozuma shrimp (above), dwarf scorpionfish (top right), painted frogfish (bottom right), yellow filefish (right), robust ghost pipefish (bottom left) at Kapal Indah, Lembeh Strait

during a muck dive. Lembeh Resort must have the biggest staff I have ever seen at a dive resort, numbering around 90 personnel. Many worked in the dive centre, either as guides, boat crew or doing dive gear preparation. For those wanting to be spoilt rotten, this was the place. Literally, everything was done for you, from readying and rinsing gear to carrying cameras to the boat.

The three dive boats took a maximum of eight guests, and each visited a different site, ensuring a lack of crowding. My boat was the Moana for most of the week, with Opo and Jeffry as our guides. Despite the large number of dive resorts in the area, there was never any competition, as only one group could dive one site at a time. Underwater, dive etiquette prevailed, ensuring everyone had a chance to photograph a subject, especially if it was one that was coveted by all.



Kapal Indah. The morning began at Kapal Indah, named after the wreck of a large fishing trawler resting upright on the sandy bottom at 30m. We did not even get that far when a myriad of critters appeared from the get-go. You know it is going to be a good week when your first critter is a flamboyant cuttlefish. Leisurely trundling across the sand, it allowed ample opportunity for everyone to get some shots.





Ornate ghost pipefish (above); Juvenile Kuiters dragonet, one of the smallest fish in the sea (left)

Tandurusa. After our interval, our second dive was at Tandurusa, translated as “deer horns” and named after the nearby village. Typical of Lembeh sites, it featured a gentle slope of gentle sand and rubble. Here, we photographed pygmy pipehorse, yellow filefish, dwarf scorpionfish, brown gobies and serpent pteraeolidia nudibranchs (called dragon nudibranchs by the guides). Opo wrote, “Shaun the Sheep nudibranch,” on his slate. I could not even see it but aimed my camera where I thought it was. I did capture it but calling it “small” in the image was an understatement!

After lunch and a presentation on Module Workflow by Erin, it was time for our final dive.

Tanjung Kusu-Kusu. Tanjung Kusu-Kusu is named for the tall grass growing on the cape near the site, with “Tanjung” meaning “cape” and “Kusu-Kusu” meaning “wild grass”. Along with familiar characters such as flatworms, thorny seahorse, commensal shrimp and whip coral gobies, there were some real surprises. Hiding under an overhang was a comet, a species I had never seen before. Amazingly, it came out into the open and I got the image.

Then, Opo indicated something on the sand, which I initially thought was a miniscule nudibranch. Even with my 105mm lens, it was a mere blip in the frame. Back at the resort, I discovered it was a Kuiters dragonet, one of the world’s smallest

The critter parade continued, with painted frogfish, an anemone with commensal shrimp, thorny seahorse, robust ghost pipefish and whip coral gobies following in rapid succession. Opo’s spotting proved exemplary, pointing out a tozeuma shrimp on an orange sponge I surely would have missed. With hour-long dives the norm, it was great having time to experiment with different exposures and strobe positions.



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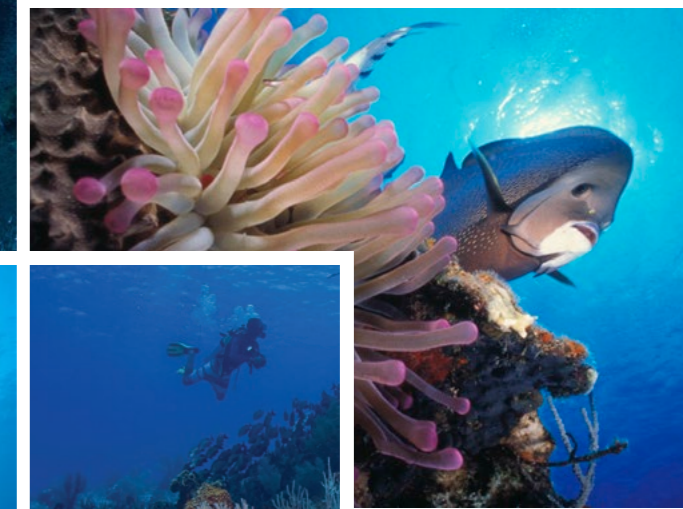
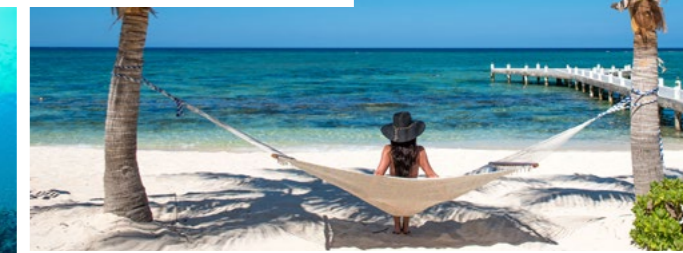
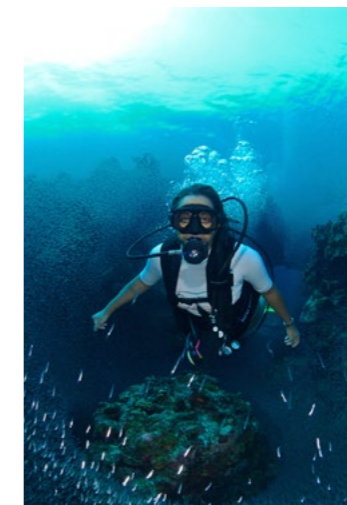
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Cockatoo waspfish at ROJOS dive site (top left); Bubble doral shrimp (above); Bullock's hypselodoris nudibranch (left); *Glossodoris* sp. nudibranch laying eggs (far left)



fish species. I could not wait to see what the rest of the week had in store!

A plethora of species

With eight days of diving, a description of each site and the critters within would require a novel's worth of text. Many of the Lembeh stalwarts appeared, along with species I had never encountered before. No repeat dive was ever the same, as the critters moved about, sometimes vanishing in mere hours. Every site provided wonder-

ful photo opportunities, but several were standouts. Some, such as Critter Hunt, Retak Larry, Slow Poke and Aer Bajo, I had visited on previous trips, but the majority were new to me.

Trying out new equipment

Workshop participants were allowed to borrow equipment from the resort's photo centre to try out. I was eager to use a snoot for spotlight effects, something I had never done before. Signing it out in advance, I discovered a minor hiccup. The Backscatter mini strobe with snoot attachment had an optical connection, while my Seacam housing had electrical only.

Happily, there was a solution. I set the mini strobe to slave in manual mode, so my primary strobe would fire it. I just had to be careful aiming the primary strobe at the mini strobe and not illuminate my subject.

Kareko Pasar. As it turned out, our dive site had the perfect subject to try it on. Kareko Pasar was home to fire urchins harbouring Coleman shrimp, one of my favourite subjects. It did not take too long to find an urchin with a resident pair. Aiming the snooted strobe proved tricky at first, as maneuvering it to spotlight the subject took some practice. After a few attempts, I got an image I was very happy with.

Other notables included a white-eyed moray, male banded pipefish with eggs, commensal shrimp, hermit crab and various nudibranchs. A large *Glossodoris* laying eggs was a standout.

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Blue-ringed octopus (above); Wonderpus (top left); Girdled glossodorid nudibranch (centre); Bobbit worm (far left)

ROJOS. Fifteen minutes from the resort, ROJOS is named for the Lembeh Resort dive guides and crew that discovered it: Ronald, Opo, Joni, Ona and Salmon. And it was a good thing they did! Subjects included coconut

octopus, Napoleon snake eel, dwarf scorpionfish, *Halgerda batangas* nudibranchs, robust ghost pipefish, cockatoo wasp-fish, common lionfish, juvenile cube boxfish and a decorator crab carrying a jellyfish.

Kareko Batu. My week's undisputed highlight was a dive at Kareko Batu. I christened it "the octopus dive," as four octopus species made an appearance. First was a coconut octopus half-buried in the sand, followed by a mototi octopus, another species I had never seen before. An inconspicuous brown at first, it turned bright yellow—the two iridescent blue rings warning

of its venomous punch. Moments later, Opo found a wonderpus octopus! Striped and delicate, it glided across the sand, its tentacles gently flailing as it settled. Although the subject was small, I needed a wider coverage with ample depth of field and my 60mm lens did the trick. We stayed with it for over 10 minutes and I photographed to my heart's content. Just then Joel appeared, and I happily yielded so he could shoot some video. A few metres away, a

long-armed octopus appeared. Incredibly, all four were in an area under 10 square metres! And if that wasn't enough, a huge Bobbitt worm foraged out in the open, disturbing a Napoleon snake eel, which promptly exited its burrow. I even managed a shot of the two together. Seriously, what are the odds of *that*? Oh, and did I mention there were cuttlefish? **Pintu Colada.** However, there was one notable critter on my wish list: the blue-ringed octopus. In three decades of diving, I had yet to see one. Well, Pintu





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Giant mantis shrimp (top left); Magnificent chromodoris (top centre inset); Barramundi cod (top right); Banggai cardinalfish (right)



Colada delivered! The little blue-ringed octopus at this site also proved especially compliant, allowing a close approach for photos. When it flashed its blue rings, I kept a safe distance. One does not want to enrage one of the most venomous creatures in the sea! Although the octopus stole the show, plenty of subjects vied for my camera's attention, including margined *Glossodoris*, giant mantis shrimp and striped fang blenny.

Nudi Falls. Not all of Lembeh's sites are on volcanic sand. Only seven minutes from the resort was Nudi Falls, one of

my favourite sites from previous trips. Featuring a small wall packed with colourful sponges and nudibranchs in only a few metres of water, it is named after the fact that the bubbles from divers' tanks sometimes cause nudibranchs to fall off the wall above and drift down. At around 18m, a sea fan is home to a Bargibant's (pygmy) seahorse (*Hippocampus bargibanti*).

Here, we were presented with a photographic dilemma: harlequin shrimp or pygmy seahorse? As both were deep at different parts of the site, it was one or the other.

Harlequin shrimp, please! Plunging in, there was plenty to photograph en route. A white humpback scorpionfish postured, while farther down, we encountered a pair of harlequin shrimps.

The wall was stunning, adorned with an astonishing array of corals and sponges. A snowflake moray peered from a crevice, while a barramundi cod, elegantly attired in white with black spots, allowed a close approach.

I also photographed Banggai cardinalfish for the first time on the trip. Originating from Sulawesi's Banggai Island,

legend has it that a bag of aquarium-bound specimens was accidentally released into the strait. They have proliferated since and can now be seen alongside anemonefish. Interlopers or not, they are undeniably striking and great photo subjects.

Culinary delights

A highlight of every day was mealtime. The food was a culinary adventure, featuring a mixture of local and international dishes. Several nights had themes, such as Thai or Indonesian. Although breakfast and lunch featured a buffet,



CLOCKWISE: Humpback scorpionfish; Comet; Zebra lionfish; Stargazer snake eel; Ornate pipefish

dinner was à la carte, with several choices, which were preordered during lunch. A good thing too, as a daily three-meal buffet would ensure the button on my pants taking out someone's eye.

Blackwater diving

One day, Joel presented a session on blackwater diving and announced we would have the opportunity to try it. Blackwater diving is essentially a night dive, but rather than exploring a reef by torchlight, it concentrates on creatures attracted from the deep by means of a high-powered light source. The prospect of diving at night in open water with no discernible bottom was daunting, especially while carrying camera gear. Nevertheless, new experiences are good things and I decided to give it a shot.

At dusk, our intrepid group of six set out, with excitement and apprehension. As we were mostly newbies, it would not be a true blackwater dive. Instead, it would be a "bonfire dive," with a floodlight on a stand set up on the bottom at around 18m and turned on. After around 15 minutes, the light would attract a variety of planktonic creatures, including fish larvae, jellyfish, worms, octopus and salps. Joel had suggested to use a 60mm lens.

Initially, all I could see was a snowstorm of miniscule creatures and struggled to focus. Instead, I finned to the bottom, where I found some zebra and dwarf lionfish hunting. A nearby family of blacksaddle anemonefish crowded their host, their docile demeanour a welcome relief from their almost comical daytime aggression.

Joel pointed out several transparent creatures, but hovering in mid-water while trying to focus on such small subjects was extremely challenging. At the very end, I was rewarded with an image of a minute larval octopus. Although I said "never again" at the conclusion, the experience has since grown on me, and I am eager for another go.

Photo seminars

The remainder of the week followed a similar pattern. The photo seminars proved both educational and inspiring, with technical topics in the morning and Lightroom techniques in the afternoon. Joel and Jennifer covered photo techniques, while Erin dazzled with her Lightroom skills. Ensuing topics included Composition, Abstracts, Snooting, Creative Backgrounds and

Super Macro, with live equipment demonstrations also displayed on the lounge's big screen.

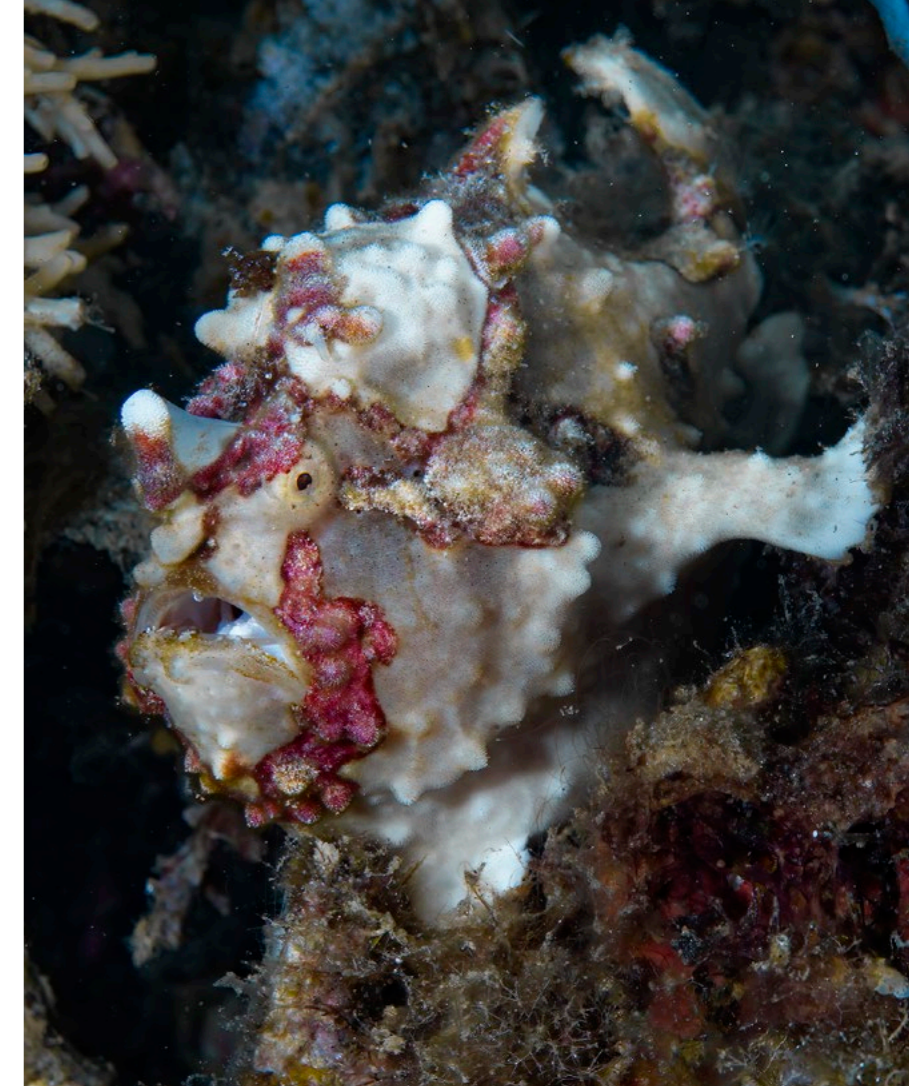
Afternoon Lightroom sessions included Module Workflow, Backscatter and Water Replacement and Masking Magic. One of my favourites was the ominously named Advanced Dark Arts with Macro, featuring advanced compositing and masking techniques. Erin demonstrated things I did not even know were possible. The masking capabilities in Camera Raw were far more sophisticated than I imagined. Information overload was the order of the day; it was impossible to remember everything. Fortunately, as workshop participants, we could join Erin's Lightroom Boot Camp Facebook page, where heaps of additional info could be found.

Every day, one of the instructors

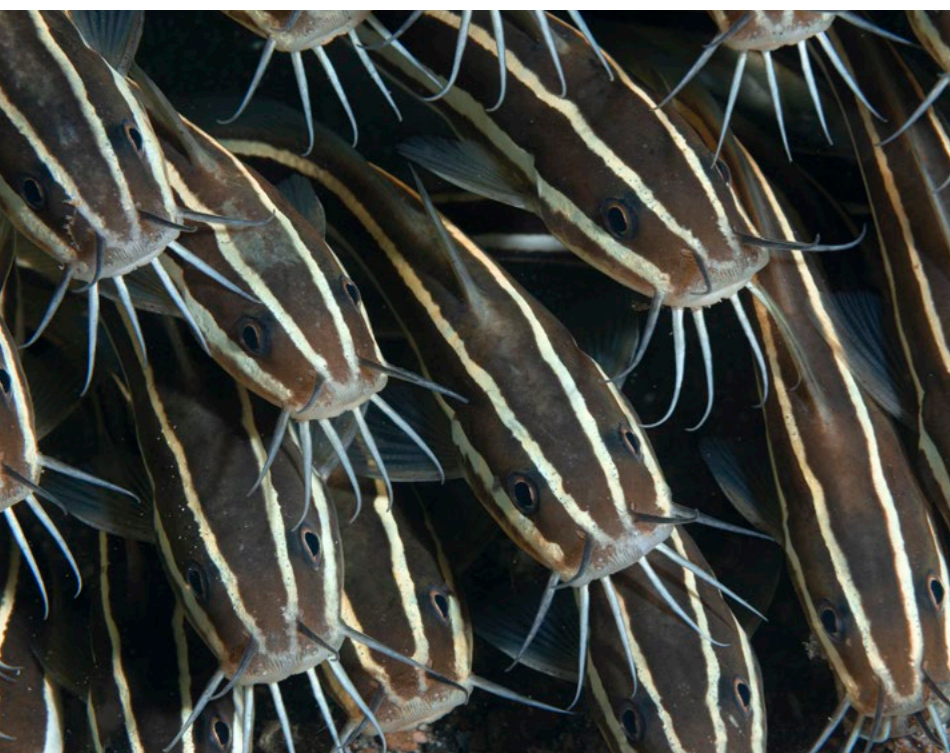
would come along on each dive boat, alternating as the week progressed. Once aboard, I marvelled at the camera equipment on display. I thought my equipment was big; Erin's kit for shooting video was immense, adorned with a hodgepodge of strobes, spotting lights, and attachments reminiscent of the Mars rover. One morning, everyone assembled their camera equipment to pose for a group photo. The monetary value on display was gobsmacking, likely exceeding the GNP of some small countries.

Flooding

As any photographer on a dive trip can confirm, the absolute worst-case scenario is a flooded housing. Well, you can now add me to that list. On a return trip to Nudi Falls, I was determined and eager to see the pygmy



Striped catfish (lower left); Hairy frogfish (left); Tiger shrimp at Pulau Abadi (above); Warty frogfish at Pante Abo (right)



seahorse. Descending to 18m and with the sea fan in sight, I suddenly heard beeping; I was horrified to discover it was my housing's moisture detector! Holding the housing port face-down, we beat a hasty retreat for the boat. The safety stop seemed

determine where the leak was. With six diving days left on my trip, the prospect of a defunct camera system was unpleasant to say the least! Fortunately, it was Joel to the rescue.

If there was any place for this to occur, I could not think of a better

to last an eternity!

Once on board, I opened the housing and braced for the worst. Miraculously, despite having water inside, the camera and electronics remained intact! Once the other divers were back, I was dropped at the resort, so I could fully assess the situation. After several dunks in the rinse tank, I could see water was getting in, but I could not

one than a resort with a professional photo centre and a professional photographer. Upon examination, he concluded that the culprit was an improperly greased O-ring on the port. When I bought the housing, I did not have a vacuum system installed. As luck would have it, Joel had one left in stock that fit my housing. Ten minutes later, I was good to go!

However, by this point, moisture had gotten in around the circuit board, causing my strobes to go haywire when fired. It was Joel to the rescue again. He gave me some silica gel packets, which we placed around the circuit board and sealed the housing for the night. The following morning, the strobes worked perfectly, giving a worst-case scenario a best-case conclusion. Thank you, Joel!

Pulau Abadi. It was then time to put my housing to the test. Our first dive was at Pulau Abadi, and I was definitely on edge. Despite the new vacuum pump, I half expected the alarm to go off at any moment. Happily,

everything worked perfectly, and I could once again focus on photography. A good thing too, as there was a plethora of critters to shoot. Tiger shrimp were the star attraction, along with striped catfish, peacock mantis shrimp, ribbon eels and plenty of nudibranchs.

Frogfish

For the workshop's final days, we visited some new sites as well as revisited a few others including Bianca, Pulau Abadi, Serena Besar, Kareko Pasar and Kareko Batu. One of Lembah's most endearing subjects must be the frogfish. Boasting a mélange of shapes, colours and sizes, we found them at many of the sites. Painted, warty and hairy frogfish were common, especially the latter which were routinely encountered lumbering across the substrate.

Makawide 2. One day, another group discovered a rhinopias at Makawide 2, and we practically begged for a visit there! It was a paddle-flap scorpionfish

and was at nearly 30m, necessitating it to be the first dive of the morning. To ensure everyone had an opportunity, photographers were taken down one at a time, while the rest remained in shallower waters to preserve air and bottom time. Not wanting to stress the poor creature, I took a few images and ascended to continue the dive.

Magic Rock & Pante Abo. The workshop was now officially over but I had opted for an extra day before departure. While others opted for a wide-angle techniques' extension, I continued shooting macro. Magic Rock revealed spiny devilfish, saddleback snake eel and flamboyant cuttlefish eggs, while Pante Abo produced warty frogfish, giant mantis shrimp, soft coral goby and starry blenny. Fish identification was challenging, as each book or website had a different name for many species!



Tangkoko National Park (above); Orb-weaver spider (top right); Draco flying lizard (top centre); Juvenile tarsier (centre); Paddle-flap scorpionfish (top left); Metallic shrimp goby (far left)

Topside excursions

With all the amazing diving on hand, it was easy to overlook the area's land-based attractions. Before leaving home, I prearranged a land tour to the Tangkoko National Park to see some local wildlife. I had done this tour way back in 2004 and was eager for a return visit. After lunch, six of us went on the tour. Although the distance was not far, it took a few hours to get there, courtesy of the winding roads and rugged terrain.

Encompassing more than 8,700

hectares, Tangkoko is shrouded with dense forest and home to many unique animal species including tarsiers, crested macaque, bear cuscus (a species of arboreal marsupial), maleo birds and hornbills. From the park headquarters, we met our guide and set out on our four-hour walk into the park's interior.

Lush tropical vegetation ran riot in the humid conditions. Vines and creepers encircled the trees, their giant buttress roots gripping the thin soil. Our guide pointed out a massive orb-weaver spider and some colourful beetles, while above on a branch, a

Draco flying lizard sat motionless.

Sadly, the crested macaques remained elusive, offering us only the briefest of glimpses through the dense foliage. However, we were rewarded with a juvenile tarsier that had just emerged from a tree. Diminutive primates with huge saucer eyes, they spend the day asleep in hollow trees but emerge at dusk to feed on insects. This was one groggy tarsier; impossibly cute, it was a real-life baby Yoda! Surprisingly, we also managed to see a pair of bear cuscus high in a tree, something I had missed on my first visit.

Feast and photo presentation

We made it back just in time for a

much-needed shower before dinner. For everyone's final night, the kitchen staff outdid themselves, preparing a full-on Indonesian feast, including a BBQ with a half dozen varieties of satay. After dinner, we had a final presentation featuring everyone's work. Each participant submitted six images, which were all shown on the lounge's big screen.

It was not just the quality of the images that was captivating; it was the sheer variety of species and behaviours on display. More than once, I found myself thinking, "Where did they see *that*?!"—as there were plenty of critters I missed entirely. That means, I have to come back.

Spoilt for choice

Sadly, my final day at Lembeh had arrived. However, there is so much more to North Sulawesi than critters, and I was eager to shoot some wide-angle before flying home. The only dilemma was where?

With only a few days available before flying home, I could not even come close to doing everything I wanted. As it turns out, Murex has two resorts in North Sulawesi: one on Bunaken and the other on Bangka Island. As they also operate Lembeh Resort's Dive Centre, they arranged everything for me before leaving home. It was a tough choice, but I settled on Bangka, as I had visited Bunaken on my previous visit.



Bluestripe snapper (above); Lush coral garden (top right) and sponges (left) at Sahaung Reef at Bangka; Loch's chromodoris nudibranch on ascidian (right)



I originally planned on one dive before departing, but discovered fellow workshop participant Bjarni was also travelling to Bangka and we were sharing the transfer. As he was doing a second dive, that settled it. I just *had* to do one more. At Lembeh, it is very hard to stop! There was an added bonus; after my last dive, I did not even have to disassemble my housing.

Bangka

After lunch, we said our goodbyes as our gear was loaded onto the boat for the short trip to the mainland. From there, it was several hours by car to the jetty, followed by a 20-minute boat trip. Although it rained en route, conditions cleared just as we arrived at the jetty. Upon arrival, I could see that Bangka was very different to Lembeh. Instead of black sand, Bangka's beach was

white and fringed with coconut palms. The resort boasted a relaxed tropical vibe, the perfect conclusion to the workshop's intense schedule. As there was no jetty, shoes had to be removed in order to disembark. I did not wear them again for my entire stay.

I was then shown to my beachfront cottage. Traditionally styled with timber construction, it featured a veranda, king-size bed with mosquito-netting and an indoor-outdoor bathroom. From the beach, I could just discern the distant tip of Lembeh Island, while the lounge/dining area was a short stroll away. As it was low season, there were only a few other guests, and most were slated to depart the following day. Watching the glorious tropical sunset, little did I know it would be the last of the trip. Then again it was the rainy season, which I would happily

trade for a Toronto winter any day!

The next morning, conditions may have been gloomy, but I was pumped and ready for some wide-angle photography! Along with Bjarni and myself, there was only one other diver plus our guide, a young fellow named Fikli Lalenoh. Bangka Island has 21 dive sites, along with a few on the neighbouring islands of Gangga and Talise.



Tiga Batu. We began at Tiga Batu and after a week of volcanic sand, the profusion of corals nearly came as a shock! Various species could

be found, including sea fans, black coraland tubastrea (sun) corals. As there was a bit of current, the polyps were open and feeding. Sponges





N. Sulawesi



CLOCKWISE: *H. pontohi* pygmy seahorse; Loch's chromodoris nudibranch; Gorgonian sea fan; Miller's nembrotha nudibranch; Orangutan crab

were equally prolific, including some impressive elephant ear and barrel sponges. This was a serious wide-angle site and I was grateful for my 15mm fisheye lens!

Demak. After our surface interval, we visited Demak, on the other side of the island from the resort. Equally impressive reefs could be seen, with plenty of anemones with their resident clownfish. One bommie sheltered a school of yellow sweepers, as a nearby coral was traversed by a tangle of tiny sea cucumbers.

Everywhere, small reef fish pulsed with wild abandon.

Busabora 1. After lunch, I switched to macro as we would be searching for Pontoh's pygmy seahorses (*Hippocampus pontohi*) at Busabora 1! After the Nudi Falls "incident" at Lembeh, I was thrilled for another opportunity. Unfortunately, something of a comedy of errors ensued. We stopped at a large boulder and Fikli pointed at something. Bjarni started photographing, but I was baffled. "Why are we stopping here; I want

to see the pygmies!" I thought with indignation. It turned out the indiscernible "somethings" were actually the seahorses! Arrgh!!

Sahaung 1. By the following morning, the wind and surf had picked up, which impacted where we could visit. It was too rough to dive the resort's house reef and we could not cross to the mainland, but there were plenty of excellent options close by. One of the best was Sahaung 1, a site I had visited 17 years earlier while staying on neigh-

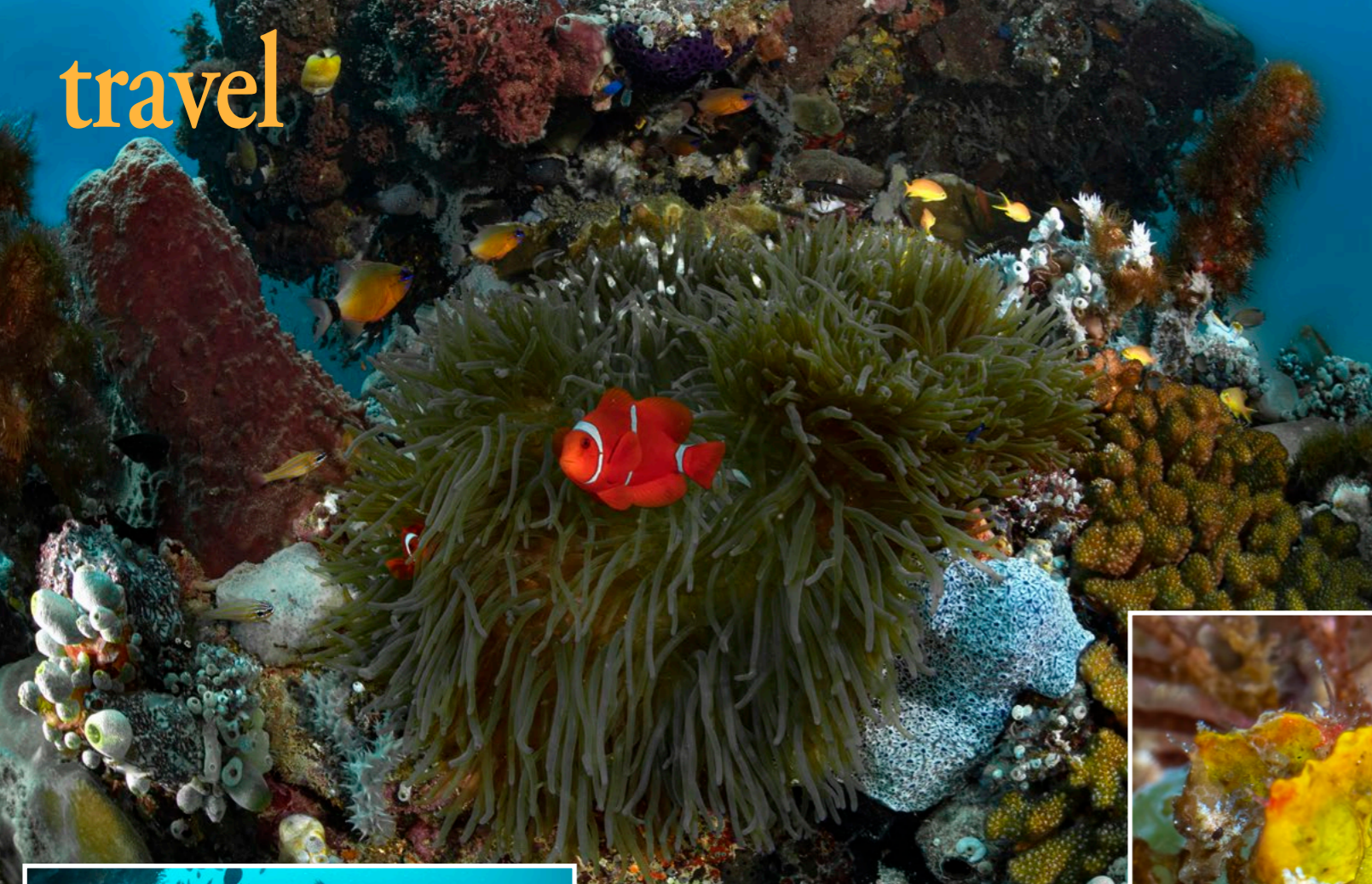
bouring Gangga Island. Happily, it was as good as I remembered!

Featuring a series of underwater boulders and pinnacles that scarcely break the surface, the area offers two dives on separate pinnacles ranging from 5 to 35m. We submerged at Sahaung 1 and upon descent, I did not know where to look! The corals were spectacular, especially the soft corals, cloaking the pinnacle with vibrant swathes of orange. Enconced beneath a table coral, whitetip reef sharks snoozed, while schooling fish included bluestripe

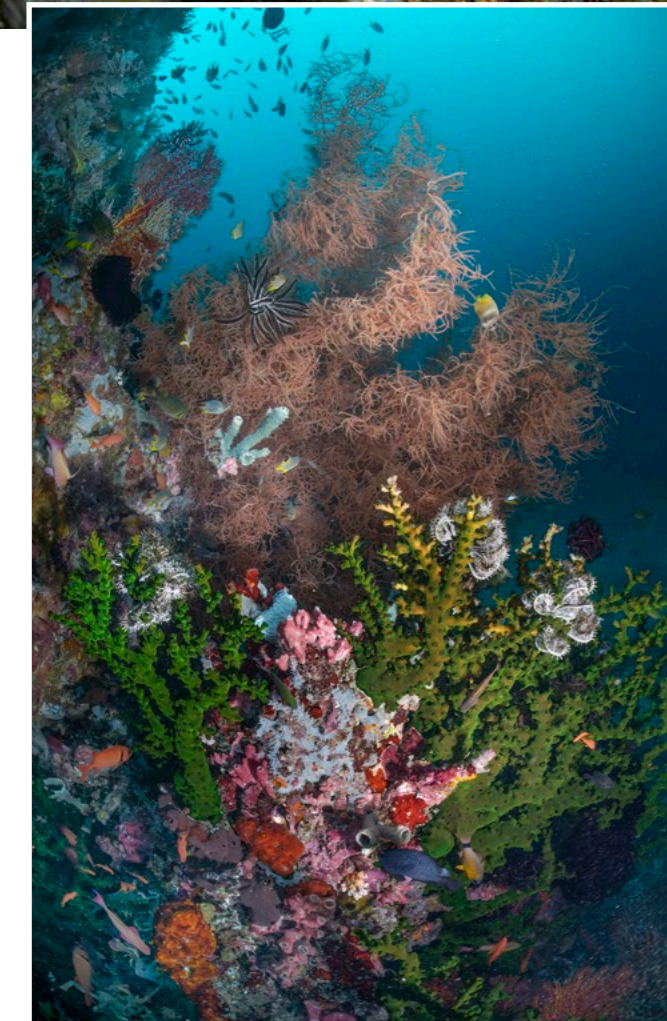
snappers, fusiliers and rainbow runners. An hour was not nearly enough, and I hoped we could come back.

Batu Puikang. The second dive at Batu Puikang to search for *H. bargibanti* seahorses proved equally unsuccessful. We did find them, but the surge was too great. That, combined with their maddening habit of turning away from cameras, made photography an impossibility.

Busabora 1. We then returned to Busabora 1 but were not able to



H. pontohi pygmy seahorse pair (centre); Spine-cheek anemonefish (top left); Scenes from Tiga Batu Reef (top right, right, lower left and far left)



locate the *H. pontohi* pygmy seahorses at all. At this point, I started thinking I had a seahorse curse! At least there were scorpionfish, orangutan crabs and nudibranchs to photograph, so the dive was enjoyable.

Second chances

Unfortunately, Bjarni had his flight

cancelled and had to leave a day earlier than planned. As a result, I had the entire resort to myself! My final day would be one of second chances. First, we revisited Sahaung 1 to photograph a *H. bargibanti* in a sea fan at 20m. Success!

For my final dive, Fikli asked if I wanted to try again for the *H. pontohi* seahorses at Busabora 1. Yes, please! We proceeded straight to the boulder and found them right away. I could not believe how small they were. As they moved constantly, maintaining focus was challenging, complicated by the fact I was using a diopter. Persistence paid off and I got my images. A perfect conclusion to an extraordinary trip.

Afterthoughts

Heading back to Manado for my flight home, I was already missing North Sulawesi. It had been an amazing two weeks, with a great mix of macro and wide-angle photography. For serious macro enthusiasts, the workshop was an experience I cannot recommend highly enough. Being in such an extraordinary location while learning new techniques was truly inspiring. Now that my housing is secure with a new vacuum pump, I will just have to come back to photograph everything I missed. I suspect that may take a few more trips... ■



Associate editor Scott Bennett is a widely published underwater photographer and dive travel writer based in Toronto, Canada, covering the Caribbean, Mediterranean, Red Sea, Europe, Africa, Southeast Asia, Oceania, and South and East Pacific. See more of his stories at: xray-mag.com/Contributors/Scott-Bennett

Green Island

Dive into Taiwan, Part 6

Text by Simon Pridmore
Photos by Kyo Liu





Green Island, known in Taiwan as Ludao, lives up to its name (above); Sap-sucking slug (previous page); Diver in the caverns at the Dabaisha dive site (top right)

Green Island is considered Taiwan's diving heartland by local divers, and hence, it is an essential rite of passage to do a dive trip there. Now, divers from abroad are discovering the joys of its beautiful underwater realm. Simon Pridmore gives us an inside look.

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 last in a series of six arti-

cles, 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, culture, countryside, cities, food and lifestyle to give readers a fully immersive experience—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.

Green Island (Ludao)

Until comparatively recently, Green Island (Ludao), an extinct volcano at the edge of the Pacific Ocean just off the Taitung coast, was a place of death, darkness and despair, a place

where very few travelled willingly and from which many never returned. For more than four decades following the arrival in Taiwan of the Republic of China Government in 1949, Green Island was known primarily as a penal colony, designed to incarcerate and re-educate enemies of the regime.

Today, it has been transformed, principally by the sport of scuba diving, into a place of light and life. Green Island is Taiwan's diving heartland and for Taiwanese divers, a trip there is an essential rite of passage. It offers the most sophisticated services in Taiwan for experienced sport divers, with plenty of high-quality dive boats and expert crews. Here are some key dive sites around Green Island.

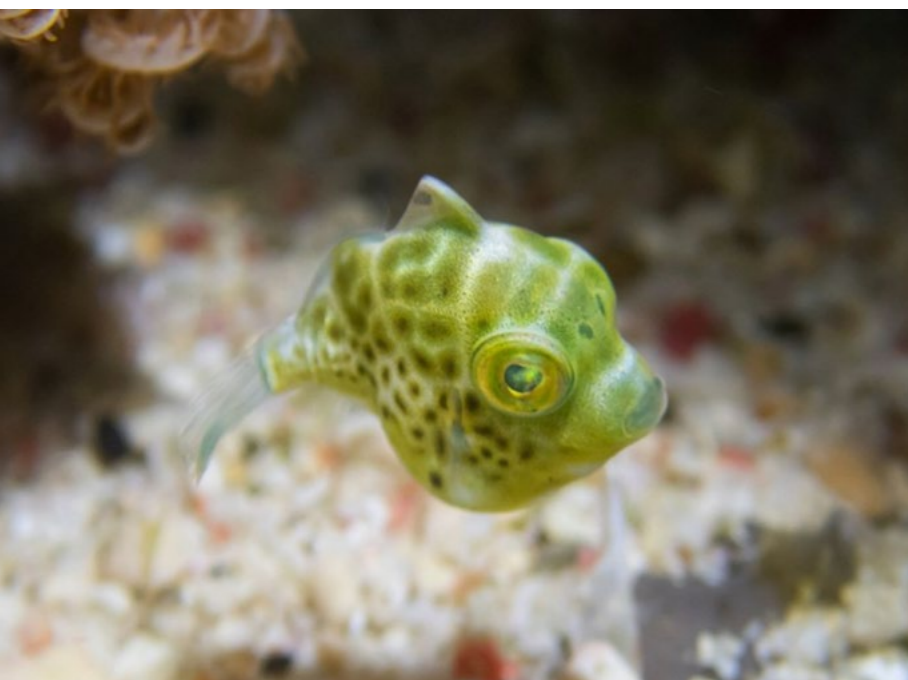


SOPIE HOSTYN

Map of Taiwan



Green Island



Goatfish at steel reef (above); World-class diving services are found on Green Island (top right); Kyo Liu's fabulous photo of a tiny baby green mimic filefish (left)

Southwest Green Island

Shilang Beach. A huge number of young Taiwanese get their first experience of snorkeling and scuba

rises from the waiting throng, poised to record the significant moments. In the sea, massed groups of snorkelers, clinging to rubber rings, outnumber

diving on Green Island's Shilang Beach. It is quite a sight to see a hundred or more people lined up in ranks on the beach in identical wetsuits, excited at the prospect of their first glimpse of the world beneath the waves. The chatter factor is high, and a small forest of selfie sticks

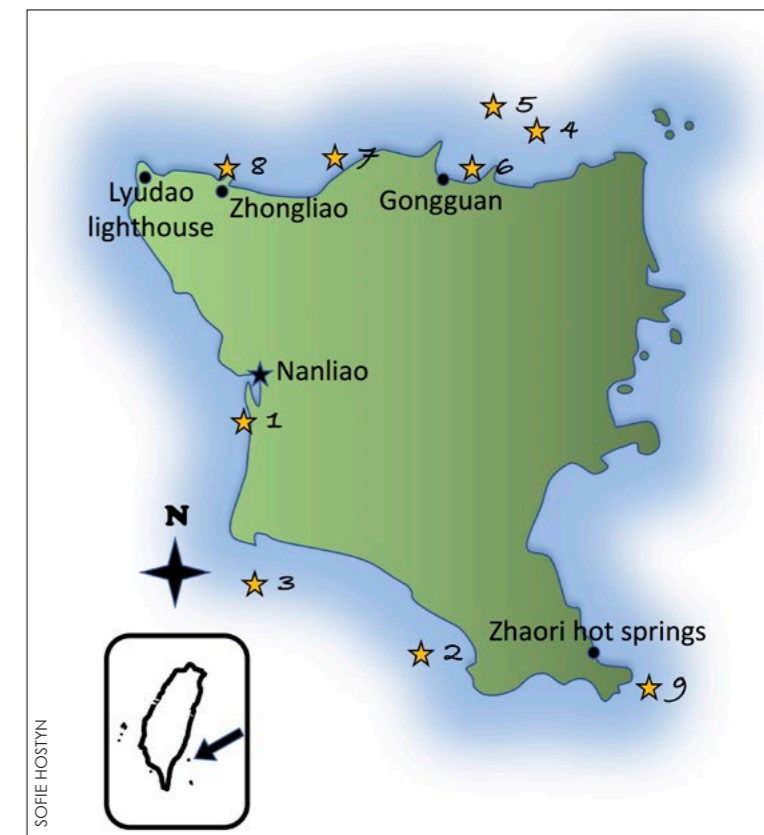
the smaller teams of divers swimming around a few metres below them. Shilang is much more than just a beach dive for new bugs, however. The bay is huge, so there is plenty of room for more experienced divers too. If you take a boat out of Nanliao harbour and drop in a little way out to sea, the crowds will not bother you at all. In the slightly deeper parts of the bay, you will find healthy corals, more fish life and probably a few sea snakes too.

This being Taiwan, keep your eyes peeled for small stuff among the rocks and in the sand and you will not be disappointed. There are plenty of nudibranchs around, and Shilang is where underwater photographer Kyo Liu took a fabulous

image of a tiny green mimic filefish close to a small stand of xenia coral.

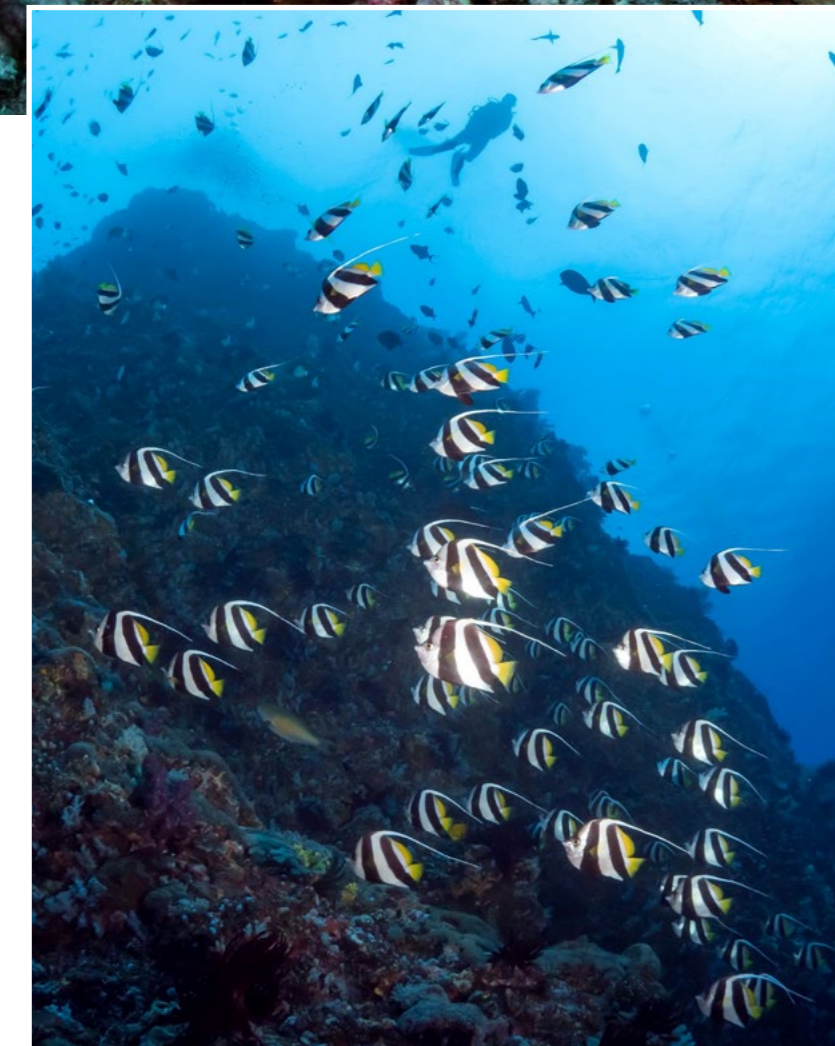
Steel Reef. Farther out, at a depth of 30m or so, you will find Steel Reef, a series of metal cubes dropped onto the seabed in 2004 as a fish aggregation device. The cubes are now almost completely covered in corals, barnacles, sponges and sea squirts, and are home to batfish, goatfish, bluefin trevally, wrasse and parrotfish. The fish aggregation concept has worked. It is an excellent site for photographers wanting to shoot images of schooling fish.

Dabaisha. Beyond the promontory at the southern end of Shilang is another sandy bay called Dabaisha,



Map of Green Island in Taiwan

SOFIE HOSTYN



Diver with soft corals at Green Island (above); Diver in the caverns at Dabaisha (top right); Distinctive lava feature at Chicken Reef (right)

which features some gorgeous topography in the form of a mini mountain range of pinnacles, festooned in soft corals in every pastel shade imaginable.

A Dabaisha shore dive typically ends among a maze of shallow coral canyons. There are caverns to explore here, filled with schools of copper sweepers. In several places, the roof of a cavern has collapsed, creating a chimney to the surface, and when the sun is high in the sky, a shaft of light shines down through the reef, illuminating the darkness and surprising the sweepers, which swirl around you, the sunlight sparkling off their scales.

Chicken Reef. Farther out to sea is Chicken Reef, which fea-

tures a couple of spectacular, contorted lava monoliths, one (as you may have guessed) shaped like a chicken's head, while the other looks like a crocodile with its mouth wide open.

Out here, beyond the protection of the coast, there is usually a good current running, so this is a dive where the drop has to be executed perfectly to get the divers onto the seabed at just the right place. You need to enter the water far enough upstream to give you plenty of time to make a comfortable drifting descent onto the site. On a moving boat in a moving sea, it is tough to get the drop just right, but the Green Island dive boat crews are real experts and never fail to impress.



Bannerfish around pinnacle at Green Island





Soldier fish at One Line Sky (above); *Dendronotus nudibranch* (top right)



In the presence of a current, the soft corals clinging to the rocks extend themselves fully to catch the nutrients borne past them by the fast-moving water. This causes the reefscape to explode in colour like an underwater fireworks show. From the shelter of the bommies, beneath the strangely shaped pinnacles, you will see fusiliers, rainbow runners, unicornfish, surgeons, spotted trevallies, blue-lined snappers, yellow goatfish and bannerfish. Around you, tall pale whip corals bend, shake and shimmer with the force of the flow, like stands of young bamboo in a strong wind.

Meanwhile, all over the reef, smaller fish dart and dodge, adding to the action and lending further dabs of colour to the scene. Leopard wrasse and lemonpeel angelfish, purple anthias, span-gled emperorfish, blue-sided

wrasse, Johnston damselfish, Watanabe angelfish and orangetail filefish compete for the divers' attention, as if saying "take a picture of me!" Chicken Reef is an excellent dive. Put it at the top of your list of must-dos.

North Green Island Grand Canyon & One Line Sky.

The best dives in the north of Green Island are on several tall pinnacles rising to the surface or very close to the surface from depths well beyond normal scuba diving reach. Typical of these are Grand Canyon and One Line Sky, both wonderful dives around current-swept undersea mountains.

Grand Canyon has a large ravine cut into it, while One Line Sky features a swim-through that begins horizontally, then becomes almost vertical and ends in a nar-

row restriction that just allows one (slim) diver to pass through without touching the sides. From inside, just as you emerge, you look up and all you see is a sliver of sunlight ahead. One Line Sky (Yi Xian Tian) is a Chinese phrase normally used by trekkers and climbers to describe a very narrow passage between huge rock faces on either side, where the sky is only visible via a very thin crack.

Every rock surface is painted in brightly coloured soft corals and armies of small reef fish swarm over the sunlit upper reaches of the pinnacles. Deeper down, scarlet soldierfish and big-eyes squeeze themselves into and out of small fissures in the rock. For bigger fish like passing tuna or mackerel, it is worth keeping an eye on what is happening out in the blue. And what a blue it is!



DIVE OPERATORS

- Green Island Dive
greenisland-dive.com
- Lang Hai Scuba Diving Center
facebook.com/LangHaiSDC
- Blue Safari Dive Centre
blue-safari.com.tw
- Ah Hsi Diving Club
facebook.com/ahsidingclub
- Safety Stop
facebook.com/safetystop092
- Islands Dive
taiwanislandsdive.com
- Green Island Adventures
greenislandadventures.com
- Green Island Bay Diving Center & Resort
gibresort.com

This is the deep, dark, rich hue of the Kuroshio in all its glory.

Gongguanbi & Chaikou. If you are looking for small creatures, the northern coast has a number of highly rewarding sites. The best of these are Gongguanbi (which translates as “Mansion Nose”) in the east, and the Chaikou snorkeling area in the centre and Zhongliao Port, which lies just 500m from the Green Island lighthouse in the west. These are all shore dives with entries of varying degrees of difficulty (Zhongliao Port is the easiest). Prizes you may find on an underwater treasure hunt in the north of Green Island include Coleman’s pygmy seahorses (*Hippocampus colemani*) and Pontoh’s pygmy seahorses (*Hippocampus pontohi*). Look out also for sap-sucking slugs such as the *Costasiella kuroshi-*

mae (notice the name) nicknamed “Shaun the Sheep”, the black and gold *Cyerce nigricans*, bobtail squids, boxer crabs, harlequin shrimp and the gorgeous *Hydatina physis* sea snail.

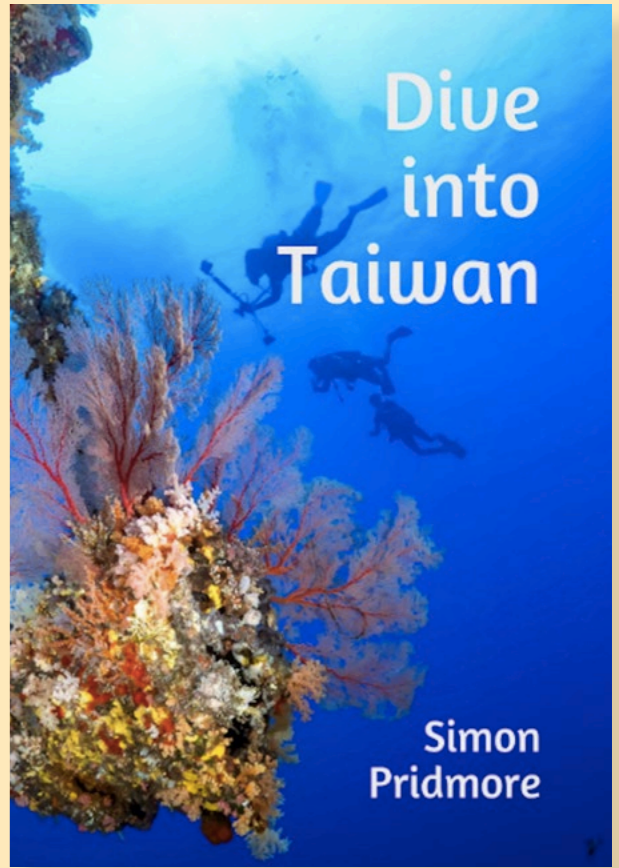
Southeast Green Island Gun Shui Bi. The site that brought Green Island to the attention of the international diving community some years ago lies off the southeastern corner, straight out to sea from the hot springs at Zhaori. It is called Gun Shui Bi and it became famous because, in January and February each year, schooling scalloped hammerhead sharks can be found there at scuba diving depths. The site is in the open ocean and strong currents and high seas are common during the winter months. The hammerheads like cool water, so the chillier it is, the shallower they come, although they rarely come

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.

Anenomefish heaven at Green Island (left)

closer to the surface than 24m or so. When the water in the shallows is warmer, the school stays deep, below the oceanic thermocline and way beyond sport diving range.

Yonaguni. The southern Japanese island of Yonaguni—which is the next big rock to the north and closer to Green Island than Taipei (so not very far, if you are a hammerhead shark)—has a similar and more famous dive site.

For divers, both local and coming from afar, Green Island is a gem of a location, where divers of all levels can experience the quintessential underwater realm of Taiwan. To learn more, read *Dive into Taiwan*, which is available in paperback and e-book on Amazon, Apple, Kobo and other bookshops online worldwide. ■

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.

Southern Madagascar

Text and photos by
Pierre Constant

Cave Diving in the Mikea Forest





The beautiful Mikea coast, north of Mangily (above); Entrance to “Gargantua” cave (top left); Flock of great crested terns (bottom left) and red-tailed tropicbird (right) at Nosy Ve Island; Bottle baobab, *Andansonia rubrostipa*, Belomotra plateau (previous page)



This is a story about a “cave man” in paradise. OK, you smile, that is a good start, as this tale will certainly whet your appetite. Pierre Constant shares his adventure diving the caves of the Mikea Forest in South Madagascar.

My compulsive relationship to Madagascar has been a steady affair of the heart for the past 30 years. In 2012, curiosity brought me to explore the sinkholes of the Great South. I devoted my time to investigating various sites on the Mahafaly Plateau

to the south of Tulear. From my experience of cave diving in South Australia, I understood that caves and sinkholes, connected to underground rivers, were a source of unexpected finds—such as fossils of extinct prehistoric animals. I assumed Madagascar would certainly yield such a bounty of hidden treasures, as was the case in Brazil or Mexico.

Following the break-up of Gondwana, Madagascar separated from Africa 130 million years ago in the Jurassic period. A vast sedimentary basin had been formed between the island and the African mainland. This explained the pres-

ence of significant limestone deposits on the western coast of Madagascar, from the “tsingy” (karst badlands) of Ankarana in the north to the tsingy of Bemaraha near Morondava and all the way to the south of the Great Island.

Like a gold digger who found a lucky streak, I kept coming back. The lure of the Great South and its enchanting spiny forest, together with the discov-



Bottle baobabs on the Belomotra Plateau (above); Octopus tree, *Didiera madagascariensis*, in Mikea Forest (top left inset); On a ledge in "Gargantua" cave was a skull of the extinct horned crocodile, *Voay robustus*, which lived in the Late Pleistocene to Holocene (right).

ery of sinkholes—locally known as "aven" or "dolines"—had me hooked over the years.

Back in 2011, I explored the region of Itampolo. In 2012, the sinkholes of Tsimanampetsotse National Park fascinated me. There, I had discovered skulls and the skeleton of an extinct dwarf horned crocodile (*Voay robustus*). This reptile had appeared in the Holocene (11,700 years ago) on the southwestern coast of Madagascar.

Finding fossils and remains

Diving Binabe Cave, located north of Onilahy River near Sarudrano, I found the femur of

a dwarf hippopotamus (*Hippopotamus lemerlei*) in the sediment, at a depth of 25m. Scientists of the French National Centre for Scientific Research (CNRS) at the Museum of Natural History in Paris dated the bone with carbon-14 and proclaimed it to be 1,400 years old.

A few months later, in a remote sinkhole of the Mahafaly Plateau, I fell upon the lower jaw of a dwarf hippo—a species that became extinct due to human predation (hunting) as early as the 7th



century. Discovering it was incredibly exciting, of course. Soon after, the fossil site of Tsimanampetsotse was closed by the Malagasy authorities following abuse and piracy by some unscrupulous people in search of loot and profit. A very saddening fact, indeed.

In September 2015, I ventured into new territory: the Belomotra Plateau, north of

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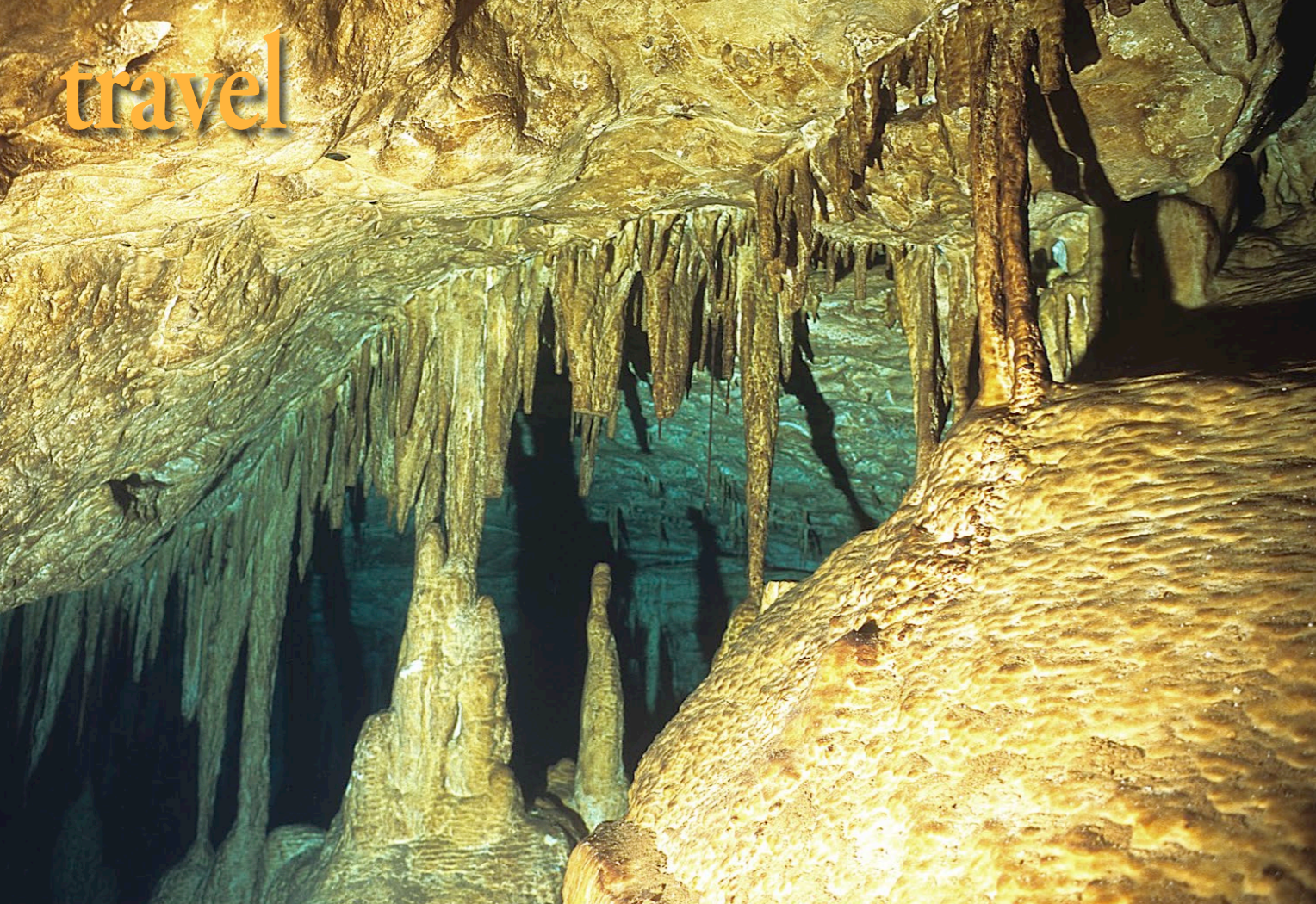
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View of "Ali Baba" cave on descent underwater between stalactites (left); Blind cave fish, *Typhleotris pauliani*, "Ali Baba" cave (above); Double pillar under a shower of stalactites (bottom left) and stalagmite resembling a common stinkhorn mushroom, *Phallus impudicus* (below), in main chamber of "Ali Baba" cave



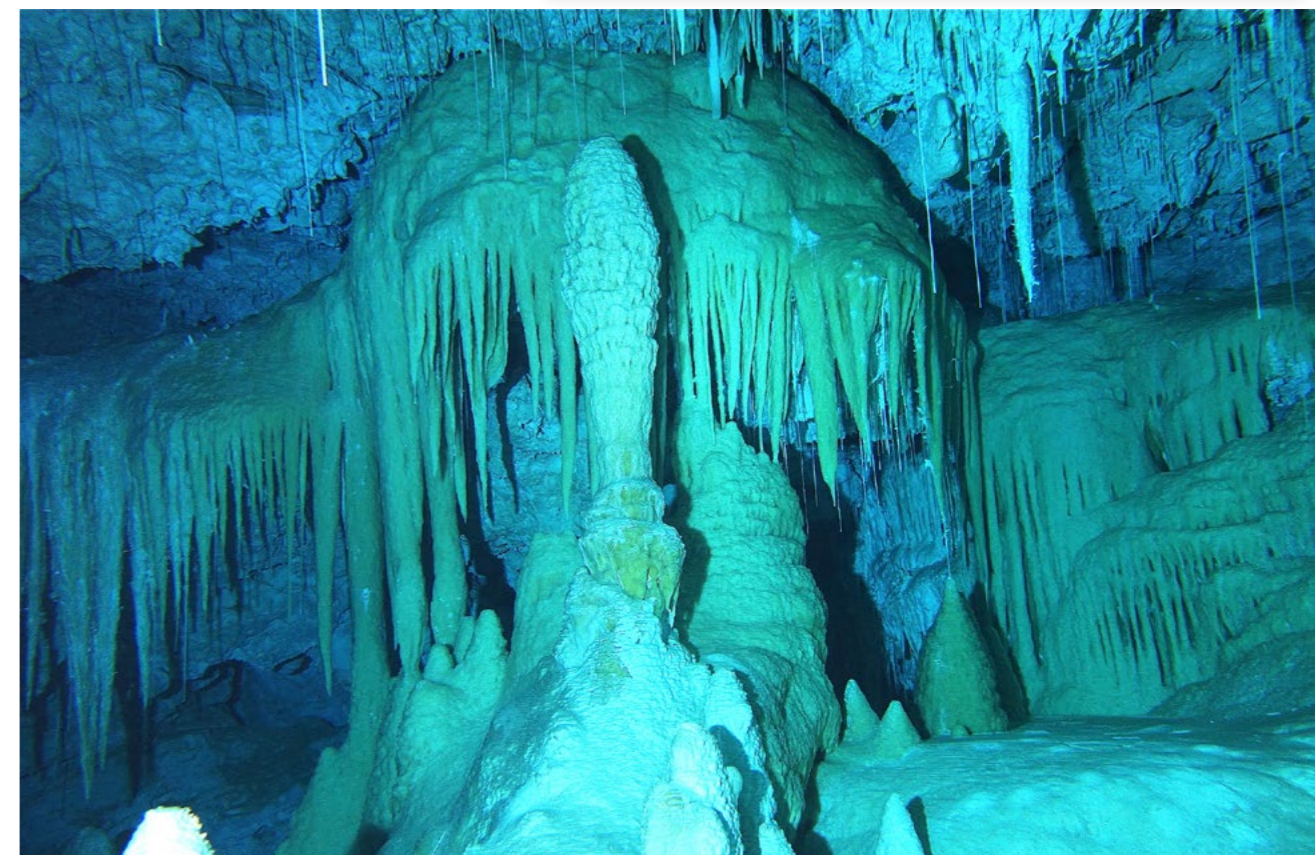
Tulear. A karstic environment in the Eocene limestone (56MA to 34MA), hidden in the Mikea Forest. The area supports species like arid, spiny bushes of *Euphorbia sp.*, *Alluaudia sp.*, and *Didiereaceae sp.* (octopus trees), as well as giant *Pachypodium* succulent plants and enormous baobabs, such as *Adansonia za*, *Adansonia rubrostipa* (bottle baobab) and *Adansonia grandidieri*—amazing endemic plants from southern Madagascar.

Only accessible with a sturdy 4x4 (four-wheel-drive vehicle)—because the trails were rough and very sandy—this God-forsaken region was home to an indigenous tribe surviving in the wild: the Mikea people. They knew about the existence of caves and waterholes, where they had gone from time immemorial in search of water and bats, upon which they fed. Without their help, I would have been unable to proceed with my explorations.

For some time, businessmen from Tulear prospected there, looking for bat guano in dry caves. This was exploited for a number of years that saw a local work force loading trucks with big bags of guano. I had checked some of these caves, only to find little water or no water at all—a bitter frustration, considering the distances it took to get there and the tough walks under a scorching sun.

"Ali Baba" cave

In 2015, fate turned positive, when I heard about a magnificent cave, which I instinctively named "Ali Baba" cave. It was a fair walk into the Mikea Forest, on a reddish sandy trail, carrying dive equipment. Hardly noticeable at all was a lentil-shaped opening in the bedrock, which was a portal into the underground. One had to duck under an uncomfortable and narrow passage with a low ceiling. A slippery slope in the pitch darkness,



with loose rocks, opened into a fascinating chamber with stalactites, stalagmites and "dantesque" pillars.

There, 15m to 20m below ground, I marvelled at a subterranean lake with more pillars—a cryptic cathedral. The

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Curtain of stalactites and pillars in main tunnel (above), Mikea porter "Same" waiting for my exit out of the water (far right), and blind cave fish (right) in "Ali Baba" cave; The author exploring a chimney hole down to a deep chamber, before a dive (top right)

air was stale, hot and humid—so aggressive that one would sweat profusely. Breathing was even difficult. Bats fluttered about in the darkness. Cockroaches crept everywhere on the damp guano floor. It felt like a sauna.

Diving

Double-checking my dive equipment carefully, I handed my head lamp to the Mikea guide. "Just turn on the light upon my return," I said, slipping into the water. For the first 5m to 7m of depth, endemic white blind fish (*Typhleotris pauliani*) survived on bat guano. The clear water had

a balmy 28°C temperature.

At the far end of the lake, the bottom dropped steeply into twisting passages, among stalactites and pillars in golden and brownish colours, against a pastel-green background. The farther I sank, the whiter the limestone became, with outstanding decorations. At a depth of 20m, a restriction forced me to squeeze through, trying not to get stuck, which indeed happened at least once! Then there was another gate, after which the cave opened up in magnificence,

into a snaky tunnel.

The farther I pushed forward, the more I was struck by the beauty of the cave. It was pure fantasy come true. Yet, as a solo diver on a single tank, I had to be realistic about my limitations. Without the shadow of a doubt, I knew it was not the end of it.

Diving "Ali Baba" cave on a couple of occasions in 2016, my exploration went farther into a succession of chambers. In one of those stood what looked like a replica of a stinkhorn mush-

room (*Phallus impudicus*) before a cascade of stalactites. It was such an awesome sight that a morbid thought crossed my mind: Should I have to die one day, I would not mind being in a tomb like this. It was a cryptic paradise, truly hypnotic, far away from the outside world.

Rituals

Fresh revelations from my local host gave me hints about caves in the area, with a new direction for my research. A courtesy

visit to the "fokontany" (a.k.a. the local chief) was compulsory. Somehow, my interests were triggering someone's nose for profit. Some people may want to get "a piece of the pie," so to speak. So, the quieter I could be about my intentions, the better. "But you must pass by Mr. Faazoua for the 'fomba' ritual!" warned my host, Diana, deadly serious. "We do not wish any problems with the community."

A prayer to the cave spirits was to be performed by an obscure

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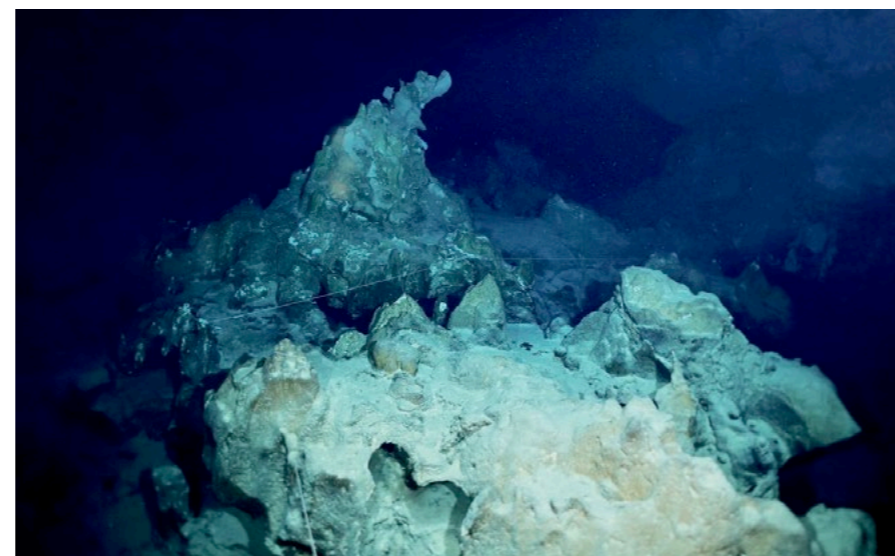
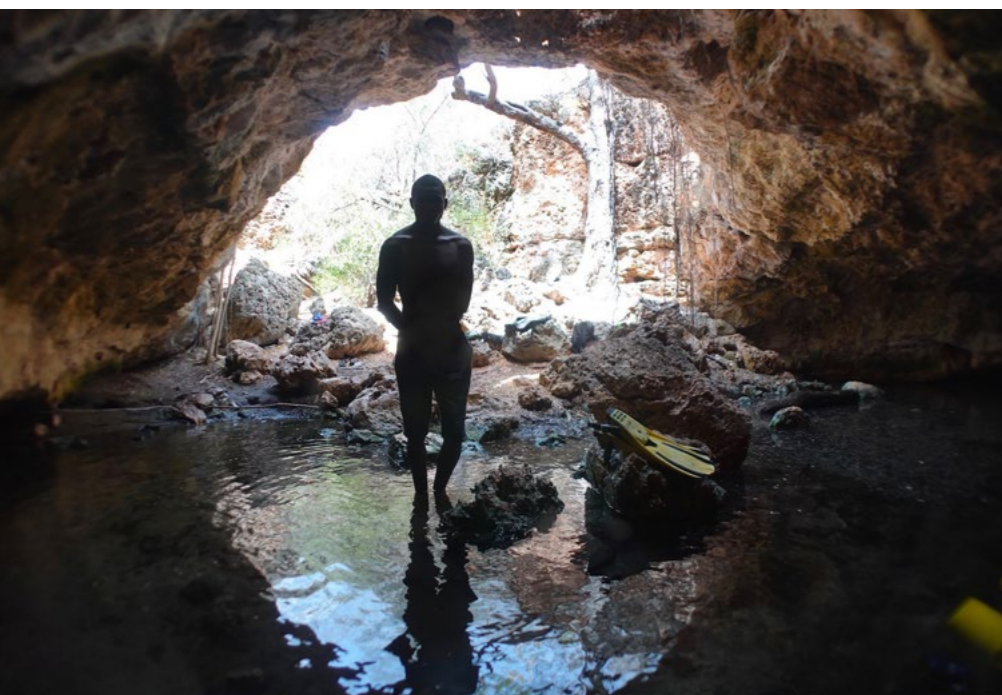
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In "Gargantua" cave, the cross window in the right tunnel after T2, upon turn around, with maximum penetration of 540m (top left); Into the right tunnel after T2, ascending (above); Archway and small columns in right tunnel after T2 (right); The "shark fin" (left) at T2 junction (320m); Silhouette of porter at "Gargantua" cave entrance (far left)



passed the skull and jaws of a dwarf horned crocodile, resting on its side on fine brown silt and grinning with red teeth. The striking colouration was due to the presence of oxides in the water, among which was iron.

A bit farther on was the spinal cord and vertebrae of the reptile. On the side slope below a ledge, my eyes fell upon a full horned crocodile skull, almost totally covered in silt and hardly visible. Finally, in a pit-like hole, the beam of my torch spotted an accumulation of small bones around the remains of a crocodile jaw. These small bones belonged to bats and small lemurs.

sorcerer with hazy eyes. The man was squatting in front of his hut, watching the flies go by, absent-minded. The ritual required a little bottle of rum, a few packs of tobacco and his acceptance to come along for the day. The fellow turned out to be a bit

vice—an issue not to be taken lightly. **"Gargantua" cave** Simply because he was born there, my Mikea guide knew the forest like the palm of his hand. We trekked into the spiny bush, beyond a stand of bao-

babs, to a collapsed sinkhole partially covered by vegetation. A conspicuous depression, ten metres down, opened up rather wide into a stony arch, with hanging roots in front of a gaping mouth of an entrance. I named the site "Gargantua" cave. In the dim light, an underground lake laid still. At its far end, I submerged gently into a long winding tunnel with an oval shape. At a depth of 10m, I



Silver thicket succulent, *Euphorbia stenoclada*, on the limestone coast, north of Tulear (above); Extinct horned crocodile spine (top right), vertebrae (far right) and skull, with open jaw (right)

Crocodile lair

“Gargantua” cave was a crocodile lair in the Holocene times—around 11,700 years ago—when the Nile crocodile had not yet made it to Madagascar. The climate must have been very different then—wet, lush, tropical, and not as arid as now. Such was the case in the late Pliocene. This was a freshwater species, not saline, preferring a habitat away from the coast.

Scientists brought to light the fact that it had functional lingual salt glands, secreting excess salt. Of the Osteolaeminae family, the ancestor originated in Africa in the Miocene. A new species, *Crocodylus anthropophagus* of the Pleistocene, which had similar small horns and a deep snout, was discovered in 2010 in Olduvai Gorge, Tanzania, in tuff formations

dating 1.8 million years old.

A miniature horned crocodile from the Quaternary was also found on Aldabra Atoll in the Seychelles in 2006—meaning to say that the dwarf horned crocodile did cross the 400km wide Mozambique channel on its own. What brought on the extinction of *Voay robustus*, the dwarf horned crocodile of Madagascar, remains anyone’s guess.

The walls of the tunnel were visible on both sides. A restriction appeared at a depth of 14m, under a low ceiling, with a silty bottom. To avoid getting stuck and in fear of a black silt-out, I chose wisely to turn around... “Another time,” my inner voice said.

On the way back to the 4x4, some Mikea men were wandering about. They showed me another spot and took me off the trail and into the

bush. A moment later, we stood in front of a star-shaped hole in the white and pink limestone, which plummeted into a black void—a vertical solution pit. Could it open into a chamber below? That was creepy. “How do you expect me to get down there?” I coughed, with an uneasy smile. My guide Same shrugged, amused like a naughty kid.

Returning to Tulear

A year elapsed. In May 2017, the wet season was over, and conditions were dry again. I was thinking that I had to go with twin tanks from now on. In anticipation, I had brought two of my 80 cf Luxfer aluminium tanks in a suitcase, all the way from the Galapagos Islands to Tulear. Available for hire in Madagascar

were only steel tanks, which were stubby, impractical and too heavy for double-tank dives. Backmount diving was not an option, since there was no way I could squeeze through restrictions with that configuration. The viable alternative was sidemount. With that in mind, I signed up for a Full Cave and Sidemount course in Yucatán (Mexico).

Back in hot Tulear, I was as excited as a little kid, with my brand-new X-Deep harness, Maxflex hoses and the lot. My yellow helmet—to support a backup light—made me look like a middle-aged clown on a crusade. With the four-wheel-drive all packed, we headed off.

The first stop was one hour away. A new tar road meandered along the seashore over rolling sand dunes overlooking fringing turquoise green lagoons, where colourful Vezo sailing canoes drifted timelessly in the breeze. Postcard perfect.

I wanted to fill the Luxfer tanks and hire some steel tanks as well, but I was in for a devastating surprise. The aluminium tank was already connected to an old rusty compressor in the backyard of a beach house, when “puff!”—I heard the hissing sound of air escaping the valve.

Blistering barnacles! it wasn’t the O-ring, but the burst disk, now useless. No replacement could be found anywhere. No aluminium tanks either. My “sidemount” plan was falling apart, abruptly. It would have to be a single-tank dive again...





In "Gargantua" cave: Oval window in right tunnel (above), after T2 (420m); Skull of extinct horned crocodile, with oxidated red teeth (top centre); The endemic white-browed owl, *Ninox superciliaris* (centre inset); Submerged tree roots at the end of the cave's lake (right); Entrance to the left tunnel from T2 to T3, at a depth of 22m (left)

After a long day on sandy dirt trails, the Mikea guide welcomed me with a big smile. For the sake of sanity, I chose to avoid the village chief, and bypass the mad sorcerer, who might cast me the evil eye.

Revisiting "Gargantua" cave

Plan One was to dive "Gargantua" cave and negotiate the low ceiling restriction. I managed successfully by slipping through sideways. The tunnel widened up dramatically, with a conspicuous bend to the left, and reached a T-junction, where it sharply split into two branches.

Depth was now 17.4m. I took a right turn for another 20m or so, and

gazed at a stubby stalagmite, before another bend to the left. The ongoing tunnel was large enough for a train to go through. We called it off for now. Maximum dive time was 54 minutes.

On a successive dive, I explored a side tunnel, with a flattened neck, on the right of the "Gargantua" cave entrance. It was a silty chamber, where I soon laid eyes on more bones and a crocodile's lower jaw, with a femur delicately resting inside! There were some blind cave fish, which were blue and black in colour.

At the end of the day, it felt good to be back in the comfort of a cosy bungalow—at peace with nature. Facing the Mozambique Channel,

with a "sundowner" in hand, one could not help but reflect on the cave experience.

Cave diving solo

As a solo cave diver, you need to have guts, because you cannot rely 100 percent on self-confidence. To put it bluntly, you are on your own in the dark. You cannot depend on the emotional support of a dive buddy or get assistance in a tricky situation—i.e., lack of air, getting stuck or ultimately getting lost. You need to be fully aware of your equipment's reliability, control your breathing, remain calm under any circumstances, and trust that everything will go well.

It is an instinctive feeling to be afraid of the dark, to not go into holes. The farther you venture away from the entrance, the hairier it will be to return, should an emergency arise. Subconsciously, playing with your life does scare the hell out of you. Somehow, as if pulled by a magnetic force, you still go for it, for the adrenaline rush. Like a drug, it fuels your imagination.

Deep down, you are wild at heart, an explorer to the core. This is what you crave to push your limits. You set yourself apart, as a free spirit, to evolve into an unknown dimension. Sure, your desire is to bring back images, as a coveted prize, to prove



A 10m rope ladder descends to a deep chamber (left), dagger-like stalactites and helictites (above), guide and porter at the cave entrance (top centre), and Dumeril's boa, *Acrantophis dumerili* (centre), in "Ali Baba" cave

Vezo sailing canoe on the Mikea coast (above)

ing glass (in Lewis Carroll's *Alice in Wonderland*), it is a window into palaeontology, a peephole into life as it once was—a living museum of natural history. It is accessible to the chosen few who dare to pass the threshold of fear. "You are mad!" I am often told. "Controlled folly," I would say, in correction.

Revisiting "Ali Baba" cave

In the early hours of the next morning, a Malagasy suimanga (sunbird) came by, collecting the pollen of a hibiscus flower. The day started out bright, and the sun promised to be hot. It would be "Ali Baba" cave again today. My resolution was to go

as far as possible, beyond my previous record, on a single tank.

With a last breath of fresh air, I bowed down under the humbling, lentil-shaped gateway to the "sauna" of the cave. Steel tank on his back, the porter followed suit. With my headlamp already low on power, I switched to the back-up torch on the helmet.

Holy smokes! A 1.5m long snake appeared on the slope right in front of me. Endemic to southern Madagascar, it was a magnificent Dumeril's ground boa (*Acrantophis dumerili*), which sat stoically in wait to ambush passing bats. It was reddish-brown and silver in colour, with a diamond-shaped pattern on its sides and back. The boa remained oblivious to our presence, and we proceeded swiftly downhill.

I submerged, following the same route downhill, squeezing through the restriction, passing by the bulbous-headed, missile shape of the stinkhorn mushroom-like stalagmite, with a long extravagant overhang of stalactites behind it. The main tunnel looked like a capharnaum (mess) of broken rocks.

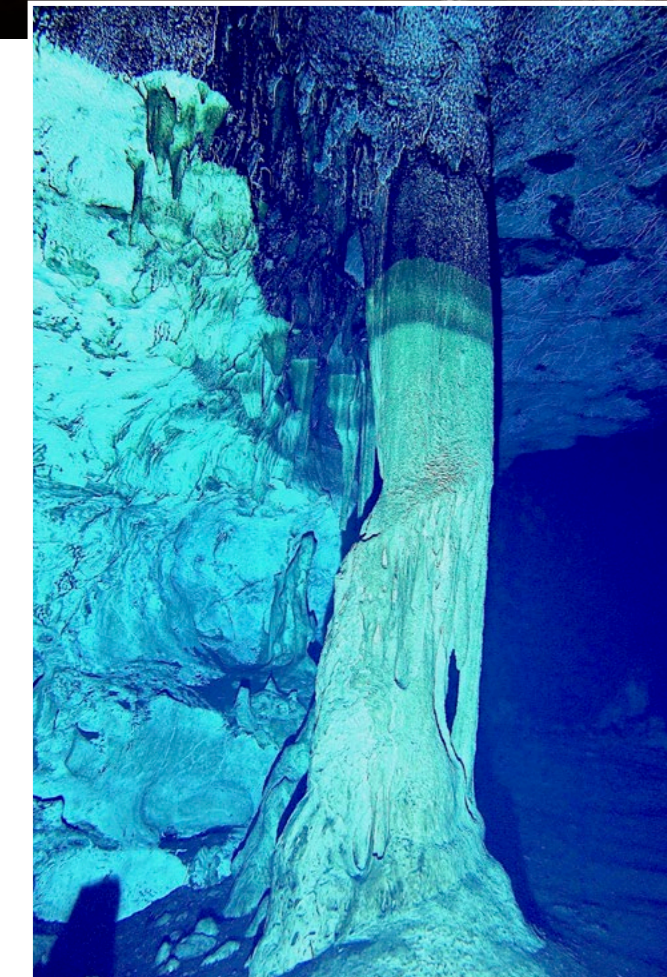
Beyond the great curtain of "organ pipes," hanging above the round window of the cave, I proceeded farther, through a couple of restrictions, until I stumbled upon a dead end, where I found a small, rounded chamber displaying ripple marks in the sediment. To my surprise, the way stopped here, at a depth of 24.5m, just 19 minutes after I had started the dive. My pressure gauge indicated it was time to turn around.

On the way back, I froze in awe before an amazing double pillar above a "fountain" of stalactites under an incredible ceiling full of helictites, all in white and bluish hues. Back in the lake chamber with its albino-white cave fish, I was filled with inner peace from the achievement of the day. At the 5m deco stop, a blind fish approached, staring at me with its vestigial eyes. Surrounded by "dantesque" pillars, Same turned on his light as I surfaced, glad to see me back and ready for help. Before exiting, I saw a baby Dumeril's ground boa slithering on the rubble slope. Fresh air was a blessing.

Big clouds drifted in the blue sky over the weathered karst plateau covered with *Euphorbia stenoclada* trees (silver thicket), with their thick spiny

to yourself and others that you are not dreaming.

Although hidden from view, the cave is real—a fantastic world frozen in darkness, which tells the story of geological times. Millions of years in the making, it is just mind-blowing. As in Alice's look-



Cave entrance (above), extinct horned crocodile skull on a ledge (top right), and tall pillar inside right tunnel (left) in "Gargantua" cave; Zebra stalagmites in side tunnel with dead end, inside "Gargantua" cave (right)

leaves. A parched land under the sun, it was. Making a stop by the well, the porter and driver went to recover a rather heavy, homemade rope ladder, which needed to be carried with a long stick on the shoulders.

The night before, my host had suggested that I should use it to explore the star-shaped hole discovered in the bush one year ago. "It is 9m long; that should do," he reckoned. I referred to this star-shaped hole as the "Pit Hole."

Last dive at "Gargantua" cave

The goal was now to explore the right branch of the tunnel after the T-junction. The camera would help me record the timings, through photos of key points, which would aid in figuring out the time that elapsed

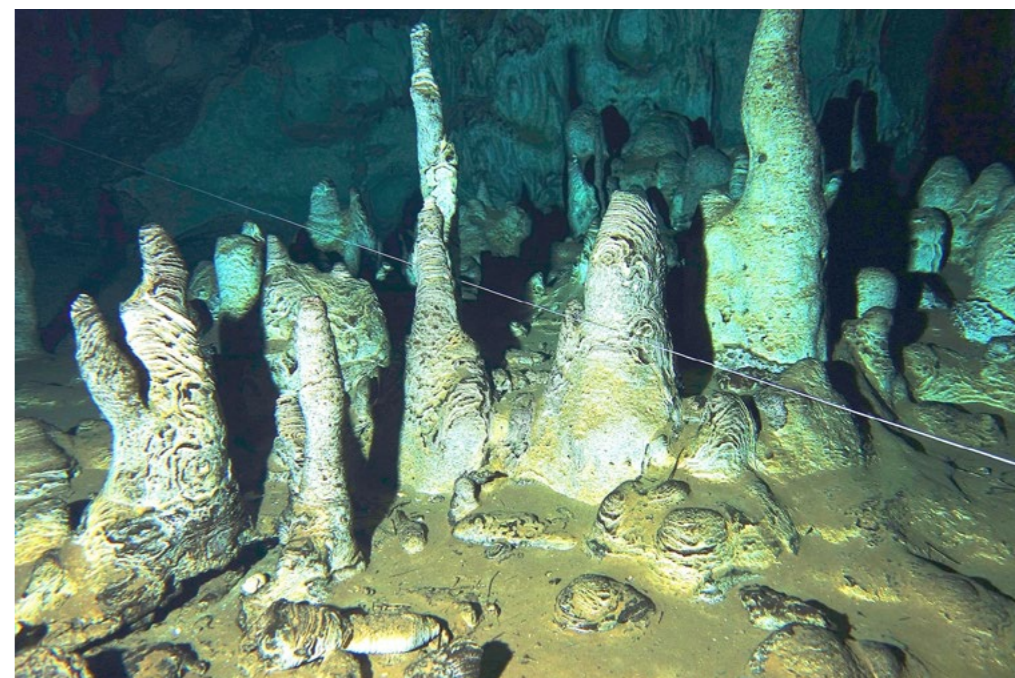
between all the landmarks and the total dive time. Practical. The low restriction was negotiated in 10 minutes, the T-junction in 14 minutes.

Onwards, the right tunnel was big and oval-shaped. A funny stalagmite with a rhino horn appeared on my right, then a gigantic pillar rose to my left. It was maybe 10m tall. High up, it displayed conspicuous markings left by former water levels, with two dark bands, which reflected extensive periods when the cave lake had a pocket of air above it. The hot humid air had cooked the limestone to nearly black in colour.

Overcoming a short thumb-like stalagmite with two watermarks, the beam of light from my torch revealed an apparent dead end. Somehow, the way led onwards

through a funnel-like restriction. With 120 bars left, the voice of wisdom in my head dictated a turn around. Cave depth was now 18 metres.

Upon return, I had a glimpse, on the left side of the line, of an adjacent tunnel branching to the left, which I did not notice earlier. Thinking I was on the right track, I boldly went forward. A cluster of ornate stalagmites appeared, with zebra-like markings. Suddenly,



I came to a dead end in a round chamber. Stupor!

The manometer indicating 90 bars, I was overwhelmed by fear. Exerting mental control of my breathing, I





Vezo fisher village on the Mikea coast (top left); Bottle baobab with fungus patterns (top right); Red-tailed tropicbird landing at Nosy Ve Island (right); Vezo fisherman (left)

in order. The torchlight revealed two huge, winged crocodile vertebrae on the side slope. My inner voice whispering: "Next time, sidemount, by all means." Thrilled by the feat of the day, I swam leisurely into the shallows of the lake, towards the pale blue light of the twilight zone...

Following explorations

I returned in 2018, using a "side-mount" configuration for the first time in "Gargantua" cave. Exploring the left tunnel after T1, I reached T2

and ventured a bit farther, beyond a "shark fin"-like stalagmite, into a tunnel on the right. However, as I made it back into the shallows of the safety stop, I could not deflate the wing properly and found myself stuck to the ceiling. I had to crawl my way back towards the exit lake! A bad joke indeed. Later, I figured out that I had to deflate the wing from the lower back side and not with the front purge.

In 2019, I experienced a dramatic event. I flooded my camera housing on my first dive and that was the end of it. Maybe it was the curse of the cave spirits?

Then, the Covid-19 pandemic arrived. Madagascar was closed for two years. I resumed my exploration

in October 2022, rather anxious, considering my former misfortune. My fears were overcome with courage; I pushed into the left tunnel after T2, at 22m. Eventually, I reached T3 through a canyon that would have been 30m deep at least, but I did not descend.

From the original research of early explorers, I am fully aware that the cave system has at least 5km of passages, going in all directions. Although I did my TDI Stage and DPV courses in Yucatán in 2020, I am not foolish enough to venture beyond my capacity and experience as a solo diver. The sole purpose of my dives being underwater photography, I need my two hands. Therefore, I am strictly limited to a sidemount sys-



tem. "Hard core" maybe, or even an "idiot" to some, I am definitely not a daredevil... ■

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



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Waterproof Duffel Bag

Years of testing and material sourcing went into developing this tough 840D TPU-coated nylon, 100-liter duffel bag, which can take "almost any beating from sharp rocks, concrete piers and boat decks," according to the Swedish dive equipment manufacturer.

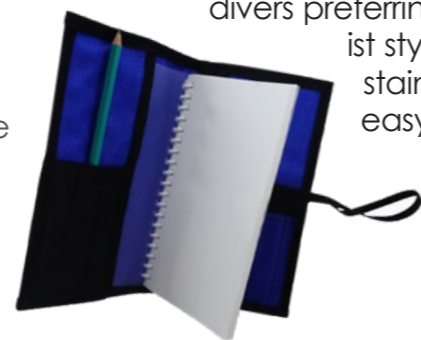
The seams are high frequency welded from the bottom up to the corrosion free MAX #10 plastic coil zippers, which are 100% waterproof, making sure no seawater gets in or out of the bag. Quick draining via the large drain valve removes any excess water. An extra-wide lid provides a good overview and easy access to your gear. With its adjustable padded handles, which can be removed for flight check-in, the bag can be carried as a backpack, which is handy for longer walks to and from a dive site. A dive computer can be stored in the internal pocket made of shock-absorbing 3D mesh material. Easy to clean and dry, it measures 80x46x35cm. Waterproof.eu



Adventures Edition of Peregrine dive computer

Shearwater has announced the new Adventures Edition of its popular Peregrine dive computer, in two color combinations: light and dark. The light model sports coral reef-inspired white and silver foam colors, with ocean teal accents; and the dark model is a wreck and cavern-inspired steel gray, with sporty orange accents. Comes with color-coded ballistic nylon cases, for easy packing in a gear bag. Features include a new wet-suit-length strap for better streamlining on the wrist in warmer waters; accent colour set of strap retainers; additional strap colour-matched set for customization; colored shock cords to keep things tight for drysuit divers preferring a more minimalist style; tactile, polished

stainless steel buttons, easy to use even with gloves; best-in-class



customizable full-color display; wireless charging; Bluetooth connectivity for seamless data transfer; and user-friendly navigation via intuitive adaptive menus. shearwater.com



Oceanic recalls BCDs with QLR4 weight pockets

The handle for the weight pockets in Oceanics OceanPro, Excursion, Hera BCD range can break during use. If this happens, the user cannot dump weight pockets in an emergency, which poses a drowning hazard. The recalled devices include the following models: Oceanic OceanPro, Oceanic Excursion, and Oceanic Hera with serial numbers: 608262 through 695909, 1170357 through 1180342, 1200001 through 1200070 and 20031001 through 22082698. Only these models in any of these serial number ranges and QLR4 Pocket Handles that DO NOT contain a date code on the underside are included in the recall. The serial number can be found on the product warning label located on cummerbund. Learn more at: oceanicworldwide.com



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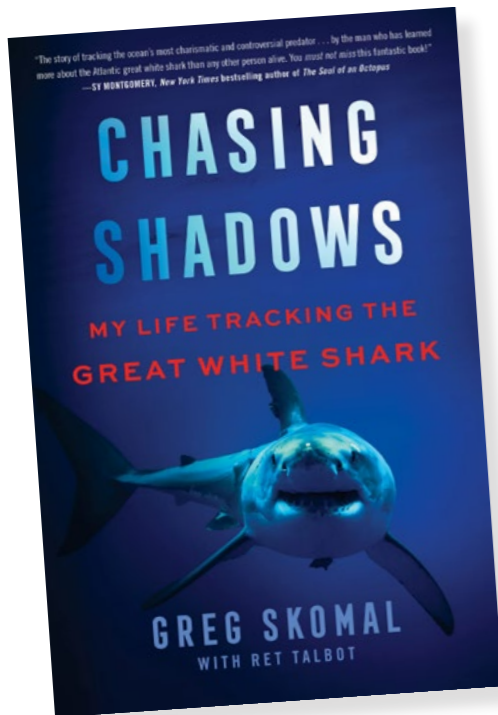
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Edited by
Catherine GS Lim



Sharks

Chasing Shadows: My Life Tracking the Great White Shark, by Greg Skomal, Ret Talbot

This book chronicles the resurgence of great white sharks along the eastern seaboard, at Cape Cod. It explores the intricate dynamics between con-

servation efforts and public sentiment following a tragic shark attack, as well as shark biologist Greg Skomal's dedication to unraveling the mysteries surrounding them. Through his work in tagging, tracking and studying great white sharks, he strives to foster coexistence and appreciation of them.

Publisher: William Morrow
Date: 11 July 2023
Hardcover: 368 pages
ISBN-10: 006309083X
ISBN-13: 978-0063090835

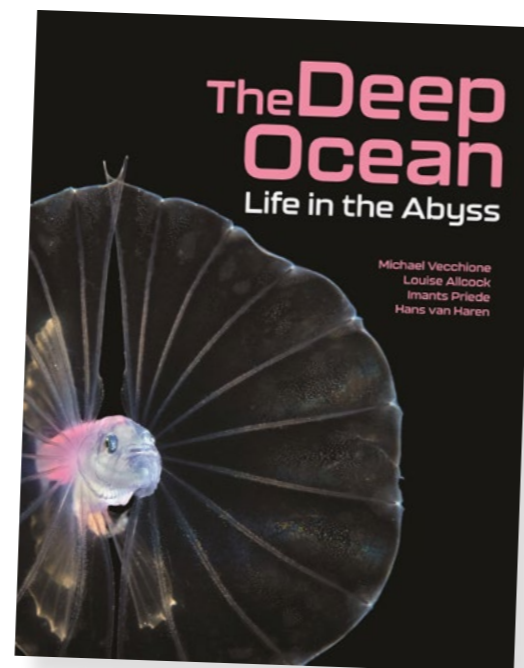


Whales

The Lagoon: Encounters with the Whales of San Ignacio, by James Michael Dorsey

This book takes readers to the San Ignacio Lagoon in Baja, Mexico, where a special connection between humans and gray whales exists. From its origins as a whaling ground to its current status as an environmental sanctuary, the lagoon is a testament to the bond between Man and animal. The author shares captivating tales of encounters with these majestic creatures, shedding light on their unique personalities and remarkable migrations. Amidst environmental threats, the book also highlights the urgent need to preserve these whales and their habitats.

Publisher: Diversion Books
Date: 23 May 2023
Hardcover: 288 pages
ISBN-10: 163576842X
ISBN-13: 978-1635768428

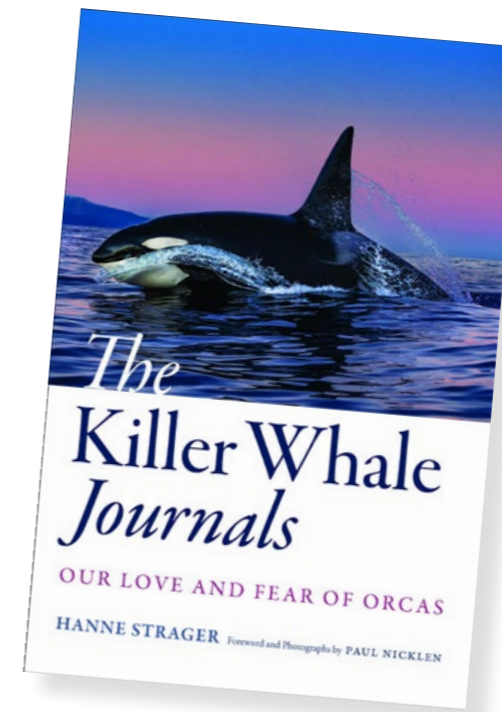


Deep-Water World

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

The deep ocean comprises more than 90 percent of the earth's biosphere. This book, written by world-class scientists, features a wide range of undersea organisms from this realm and describes its various habitats, from continental slopes to hydrothermal vents and abyssal plains. A concise history of deep-sea exploration and an introduction to oceanography are included. The book also discusses humanity's impact on the deep ocean, in the form of fishing, whaling, climate change and acidification. Features stunning photos, illustrations and graphics.

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

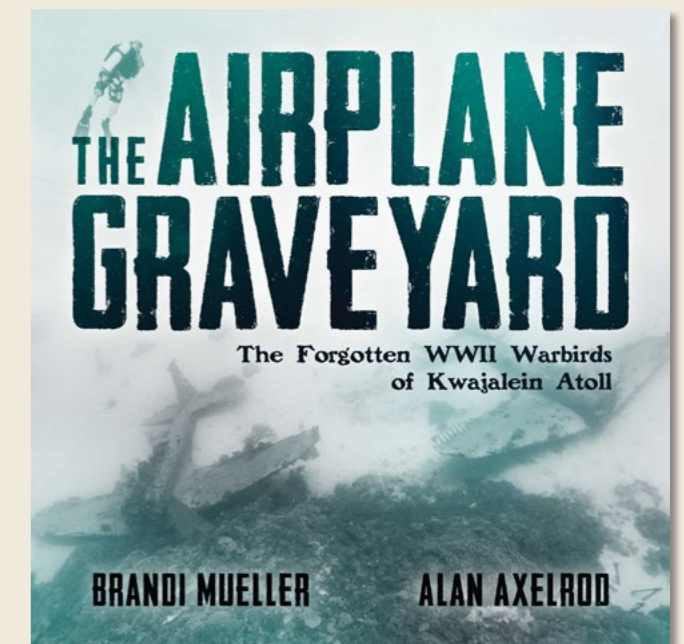


Orcas

The Killer Whale Journals: Our Love and Fear of Orcas, by Hanne Strager, with foreword by Paul Nicklen

This book details the complex relationship between humans and orcas in the wild, bringing the reader to remote corners of the world, from the stormy seas of northern Norway and the fjords above the Arctic Circle to the black market "whale jails" in Russia's Kamchatka. Along the way, we meet characters like First Nations conservationists, Inuit elders and hunters, and Australian Aboriginal whalers. Featuring photographs by nature photographer Paul Nicklen.

Publisher: Johns Hopkins University Press
Date: 11 April 2023
Hardcover: 280 pages
ISBN-10: 1421446227
ISBN-13: 978-1421446226



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**

REVIEW

Review by Peter Symes

Professional underwater photographer Paul Flandinette and marine scientist and underwater photographer Michel Claereboudt take the reader on a breath-taking journey of discovery into Oman's underwater world.

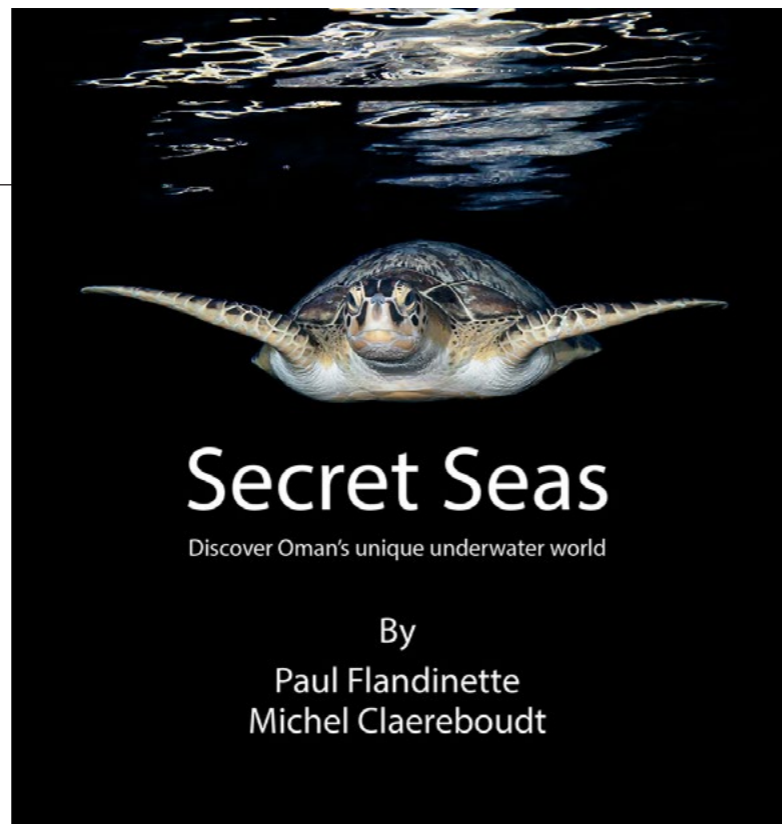
The era of splendidous coffee-table books is not over after all.

True to this classic format, the graphic design is elegant and photographs are given lavish space across the spreads of the book so it can truly showcase the vibrant underwater diversity of Oman.

Many other coffee-table books offer little more in terms of texts than perhaps expansive captions and are thin as regards putting images into a wider context. many are just showing off photographic prowess.

What I appreciate about this book is that it is different. While it is also a photographic showcase, it does cover, in a fair bit of detail, matters such as oceanography and biogeography, reef conservation and turtle sanctuaries.

It also goes into Oman's history, its people and different regions. At least, I felt all the wiser after reading this book. It also made me want



to visit Oman to see for myself but that is another matter.

Publishing Info:
 Hardback 300mm x 240mm
 295 photos
 160 species
 240 pages
 Printed on sustainably sourced
 170 gsm matt art paper
 Common and Latin name indices

For more information, contact:
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opinion

Hypselodoris infucata is a brilliantly colored sea slug that some of our friends have dubbed the “birthday cake nudi.” They range in size from less than 10mm to about 40mm in length.

Text by Simon Pridmore
and Steve Wolborsky
Photos by Steve and MJ Wolborsky

Muck diving on Guam was little known by divers until a few years ago when local residents started posting images online from muck dives. Simon Pridmore and Steve Wolborsky tell the tale.



STEVE WOLBORSKY

Juvenile yellow boxfish (*Ostracion cubicum*)

It's a Small, Small World on Guam

Twenty-five years ago, I opened a dive center in Guam called Professional Sports Divers. This was the first dedicated technical diving

center in the Western Pacific, but we also taught people to dive and took fun divers out to see Guam's reefs and wrecks.

Around the year 2000, I came across the term “muck diving” on a trip to Papua New Guinea and did a couple of wonderful long dives look-

ing for and finding—with the help of sharp-eyed guides—some rare, beautiful little creatures in unusual places, such as ugly patches of sea-



opinion

Harlequin shrimp, *Hymenocera picta* (right); Longnose filefish (*Oxymonacanthus longirostris*), are usually found in and around staghorn corals (below); Robust ghost pipefish, *Solenostomus cyanopterus* (bottom left)



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STEVE WOLBORSKY



Guam

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bed where you would not usually take fun divers. I also saw a pygmy seahorse for the first time. It was a Bargibant's seahorse, of course. At that time, it was the only one anybody had ever found.

On my return to Guam, I had a brief look around to see if similar creatures lived in Guam waters, but it was a fruitless quest, soon abandoned. After all, my main jobs were to run the business and teach people how to dive deep and penetrate shipwrecks safely, not spend hours looking for tiny things that might not even be there.

When I left Guam in 2003, there was still no muck diving there and I never gave it another thought. Over the following 15 years or so, my wife Sofie and I dived all around our new home country of Indonesia, did hundreds of muck dives and saw some astonishing animals.

Then, a couple of years ago,

I started seeing some amazing macro images being posted on Facebook by Guam residents Steve and MJ Wolborsky.

I messaged Steve:

"Where were these taken?" I asked. "Lembeh? Dumaguete?"

"This is Guam," he told me.

I was absolutely stunned.

"Man!" I told him. "We were diving in the wrong places all those years ago."

Then he told me where the pictures were taken and it turns out that we had been diving in all the *right* places, we just didn't have the knowledge then to find these creatures nor the equipment to record them.

Steve and MJ have plenty of both. This is the tale of how they did it and these are their pictures.

I'll let Steve take up the story...

Steve and MJ's story

There are two particular sites



STEVE WOLBORSKY

Boxer or pom pom crab (above); *Roboastra gracilis*, a small nudibranch, around 10 to 12mm long (top right). All nudibranchs are hermaphrodites, possessing male and female genitalia, and pass both sperm and eggs to one another when they mate. The sex organ is on their right sides, so when you find two together, right side to right side like this, they are probably mating.

Octopus cyanea showing its blue coloration, hence the name "cyanea" (right).



STEVE WOLBORSKY

Our first Guam "Shaun the Sheep" sea slug (*Costasiella kuroshimae*), spotted on 13 July 2020 (above); Juvenile *Octopus cyanea* in old-style boxing pose (center); Juvenile warty frogfish (top right); Leaf fish (far left)



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where we have gained considerable experience and knowledge of Guam's tiny underwater world—Piti Channel/Tunnels and Outhouse Beach.

Piti Channel/Tunnels

Near the southern edge of the Piti marine preserve area, the outline of Piti Channel is visible as a dark blue path snaking through beautiful scenery. The channel flows under a road via five tunnels and these tunnels

have been the main object of our exploration.

We started with night dives in the otherwise barren sand channel on the ocean side of the site, which is less than 5m deep in most places, allowing for extended bottom times. It comes alive after dark with shrimp, crabs, eels, octopus, scorpionfish and leaf fish (*Taenianotus triacanthus*). While doing these initial dives, we noticed that the terrain approaching the tunnels became more mixed, with

coral, several species of algae, and more sea life overall.

So, we started to investigate the tunnels more thoroughly, diving mostly during the day and occasionally at night. We developed a classification system, numbering the tunnels from 1 to 5 running east to west, with an ocean side and a shore side for each. This allowed us to quickly compare notes post-dive, e.g., "I saw that nudibranch in tunnel 3, east wall, 1/3 of the way in from the ocean side,

and 1/4 of the way up the wall." The tunnels are all about 4m wide and 4m high, save one that has significant sand berms undulating down its

length.

Each tunnel seems to have a relatively unique ecosystem, with some species occurring only or predomi-



STEVE WOLBORSKY

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The highly photogenic *Glossodoris* nudibranch

Juvenile *Octopus cyanea* making its home in an abandoned bottle (above); The tiny *Costasiella fridae*, a relatively new classification (right)

nantly in one tunnel. Other species are prevalent across the site. The tunnels are encrusted with brilliantly colored corals, coralline algae, plants and sponges (among other things like beer bottles, abandoned underwear, and snorkel gear). Our weather lets us dive most days, so, over time, we have documented seasonal and other time-based changes, as well as significant differences between day and night. To date, we and our dive buddies have identified 99 distinct species of sea slugs and nudibranchs there. This is also so far, the only place in Guam where we have seen harlequin shrimp (*Hymenocera picta*) and pom-pom or boxer crabs (*Lybia tessellata*). We have also seen far more leaf fish and robust ghost pipefish (*Solenostomus cyanopterus*) here than anywhere else.

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 developed, 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 per-

severance, 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**



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Peacock mantis shrimp, *Odontodactylus scyllarus*, with brood of eggs

TOP LEFT TO RIGHT: *Roboastra tentaculata* nudibranch; *Costasiella usagi* (2cm) under *Avrainvillea* leaf; *Costasiella kuroshimae* (1cm)

Our journey of discovery reached an apex when, in July 2020, I noticed an *Avrainvillea* algae leaf in the sand on the ocean side of the channel itself. This leaf is the habitat for *Costasiella* species sap-sucking slugs (sacoglossans), popularly called “Shaun the Sheep” due to their resemblance to the eponymous character from the Wallace and Gromit children’s series. I investigated more in hope than expectation and, to my surprise, discovered a tiny *Costasiella kuroshimae*, my first Shaun on Guam. Since then, we have found multiple species at different sites.

The tunnels house octopus in a large range of sizes, but we’ve only seen one species so far, *Octopus cyanea*. The smaller individuals can be found inside abandoned beer bottles or skittering along the bottom

of the tunnels, especially at night. The tunnels are also the only place we have found frogfish (*Antennarius* sp.) on Guam.

Outhouse Beach

Outhouse Beach sits on the northern arm of Guam’s Apra Harbor, on the Glass Breakwater. It is the go-to site for most local instructors since it has a lot of shallow areas with few obstacles and navigation is simple.

When we started shooting macro there, we found few worthwhile subjects and thought of it just an OK backup site when the tunnels were not dive-able. Then, one day in early 2021, on a whim, rather than going east as usual, we headed west, and, to our delight, found many nudibranchs there that we had never seen before. Since then, for the past two-plus years, we have been diving

Outhouse on average four to five times a week, finding and identifying sea slugs and nudibranchs. As I write, we are up to a total of 63 species. Some, like *Hypselodoris infucata* and *Roboastra tentaculata*, we have found nowhere else on Guam. Plus, we have found and identified at least four species of *Costasiella* slugs.

Outhouse also has a lot of other photo-worthy subjects. It is home to cephalopods like *Octopus cyanea* and the cuttlefish *Sepia latimanus*, as well as superpower crustaceans like the peacock mantis shrimp (*Odontodactylus scyllarus*). We have recently found numerous mouth-brooding cardinalfish such as *Ostorhinchus luteus* and many colonies of tiny skeleton shrimp (*Caprella* spp.), all no wider than a human hair and no longer than 3mm.



Skeleton shrimp, *Caprella* spp. (right); Mouth-brooding yellow cardinalfish, *Ostorhinchus luteus* (center); Broadclub cuttlefish, *Sepia latimanus* (below)



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The only *Goniobranchus kuniei* I have ever seen on Guam was at Outhouse. Some people call it "the Marilyn Monroe nudii" because it often flaps its mantle up, like the famous photo from the film *The Seven-Year Itch*.



STEVE WOLBORSKY



STEVE WOLBORSKY

Putting Guam on the Macro Map

Local dive operators have never promoted the island as a destination for macro and muck diving, but that may change as we discover more potential sites. Inshore areas of Guam's fringing reefs have great potential as a habitat for small creatures and serve as a nursery for juvenile fish

and invertebrates. While the sites are perhaps not as robust in sheer quantity of subjects as their counterparts in the Philippines and Indonesia, they are quite viable and likely to yield many more surprises.

Our exploration continues. ■

Simon Pridmore is the author of the international bestsellers Scuba Fundamental: Start

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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*
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- *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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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.***

marine mammals

Edited by Peter Symes



NOAA / PUBLIC DOMAIN

Male northern elephant seal

Elephant seals sleep and dive at the same time

Northern elephant seals can sleep for less than two hours per day at sea and do so while diving to depths of around 300 metres. Unlike other marine mammals, they enter full REM sleep with accompanying paralysis, but do so at depths below those occupied by their predators.

A new study involving elephant seals fitted with caps similar to those worn by humans in sleep clinics to measure electroencephalographic activity, or brain waves, has revealed the

seals take short naps during deep dives. Unlike other marine mammals, they enter rapid eye movement, or REM, sleep, with accompanying paralysis, but do so at depths below those occupied by their predators.

Sleep spiral

When the seals experience sleep paralysis as they enter REM sleep, they lose control of their posture and continue to spiral down in a corkscrew pattern. The researchers refer to this as a "sleep spiral." Time-depth profiles also revealed seals averaged only two hours of sleep per day for seven months, rivalling the re-

cord for the least sleep among all mammals, as opposed to the 10 hours they catch while snoozing on the beach during the breeding season.

The elephant seals can spend seven or eight months on foraging trips in the North Pacific Ocean and travel for thousands of miles away from land, which led researchers to question how and where the marine mammals sleep in the high seas.

The research marked the first time scientists recorded brain activity in free-ranging wild marine mammals, capturing data from 104 sleep dives. ■

SOURCE: SCIENCE

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marine mammals

Edited by Peter Symes

Why have orcas begun attacking boats?

This year, orcas off the coast of Spain and Portugal have seriously damaged leisure vessels and even sunk three boats and appear to be teaching others to do the same. But why?

So far this year, dozens of orca attacks on vessels have been recorded on Spanish and Portuguese

coasts. In most reported cases, orcas are biting, bending and breaking off the rudders of sailboats.

In one instance reported by Reuters, orcas smashed into a sailboat off the southern coast of Spain, puncturing its hull and damaging its rudder. Spanish authorities raced to save the sinking vessel, but it was in such disrepair, it had to be towed ashore.

According to the research group GTOA, which tracks populations of

the Iberian orca sub-species, the incident follows at least 20 interactions this month alone in the Strait of Gibraltar where the attacks seem to be concentrated and where the orcas congregate in the spring and summer.

According to research published in the journal *Marine Mammal Science* in June 2022, reports of violent interactions with orcas off the Iberian coast began in May 2020 and are becoming increasingly common.

The orcas are doing this on purpose, of course, we don't know the origin or the motivation, but defensive behaviour based on trauma, as the origin of all this, gains more strength for us every day.

— Alfredo López Fernandez, University of Aveiro

Normally, orcas are not considered dangerous to humans, so why are they now behaving like this?

Theories

Scientists do not have enough information to know the real reason behind the attacks yet, but they have two leading theories.

The first theory speculates that some expression of normal behaviour has taken a twist such as either being simply playful or that the orcas, for some reason, have begun using the boats to teach their young how to hunt. Smaller orcas have been seen imitating the adult ones, so teaching and passing on skills to the younger ones undoubtedly plays a role.

The other theory is that some traumatic event, such as being injured by fishing vessels or gear, or a collision with a boat, may have triggered a change in the behaviour of one orca, which the rest of the population has learned to imitate. The popular press has even described it as "revenge."

With only 39 orcas counted in 2011, the Iberian orca subpopulation is considered critically endangered by the International Union for Conservation of Nature. If this situation continues or intensifies, it could become a real concern for the mariners' safety and a conservation issue for this endangered subpopulation of orcas. ■

SOURCES: PHYS.ORG, LIVESCIENCE



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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



The sap-sucking sea slug *Elysia cf. marginata* is able to regrow its entire body.

Text and photos by
Wesley Oosthuizen

A vegetarian sap-sucking sea slug that can regrow its entire body? Underwater photographer Wesley Oosthuizen takes a closer look at this curious little marine critter.

Autotomy, the shedding of body parts, is a well-known phenomenon in the animal kingdom. However, this does not diminish its significance as a topic of discussion. The fact is, we still have much to learn, and the scientists who uncover and share their findings on these matters deserve our admiration. Their discoveries are truly astounding and worth exploring, leaving us to ponder the potential innovations that may arise from understanding how these animals accomplish such feats.

Let's consider the sacoglossan sap-sucking sea slug, *Elysia cf. marginata*. At first glance, it may appear to be a simple creature, but it is truly remarkable. While it is commonly referred to as the solar-powered nudibranch, it is

more accurately labeled as the solar-powered sacoglossan. The distinction lies in the fact that nudibranchs are carnivores, while sacoglossan slugs are vegetarians. Both are sea slugs, and while using the name sea slug for

either is acceptable, it is best to avoid referring to a nudibranch as a sacoglossan, and vice versa. It is similar to calling a leopard a tiger—they are both cats, but not the same species.

You might be wondering why I am

highlighting this particular slug and suggesting that there is something more significant to learn about it, compared to the previous sacoglossan I wrote about in **issue #116**—the butterfly sacoglossan. Well, *Elysia cf.*

marginata, also known as the “leaf slug,” operates on a completely different level from the butterfly sacoglossan. This remarkable creature has the ability to regrow its entire body even after its head has been



The Leaf Slug

Elysia cf. marginata

Chloroplasts inside the leaf slug's body are thought to aid the species' ability to regenerate and stay alive even while lacking internal organs; Pair of leaf slugs on algae (below). They feed on green algae and can grow from 3 to 8cm long.

severed. What is even more astonishing is that it can achieve this without possessing internal organs such as a heart or stomach.

Regeneration and age

A study published in the journal *Current Biology* reveals that the success rate of the slug's regeneration depends on its age. Older individuals subjected to the study's test did not survive. However, if the slug was young enough, the wound healed rapidly, and within hours, it resumed consuming algae without a heart or stomach. Within seven days, it had

regrown its heart, and within 20 days, its body was fully restored.

You may wonder if the severed body had grown a new head; well, the answer is no. Nevertheless, it is remarkable to learn that the bodies themselves did not immediately die but remained active and responsive to touch. This state persisted for several days to months before the bodies started to shrink, turn pale (due to chloroplast loss), and eventually decompose. The beating heart remained visible until the body had fully decomposed.



Chloroplasts

Scientists believe that *Elysia cf. marginata*'s ability to regrow its entire body, even in the absence of a heart, is attributed to the presence of chloroplasts inside its body. These chloroplasts aid in regeneration and keep the slug alive despite the absence of internal organs. It is truly mind-boggling, almost like a plotline from a superhero movie—except that this is a slug, and it does not save

anyone, at least not yet.

This discovery has caused a stir in the scientific community, with a general consensus that there are likely other sacoglossans capable of similar feats. In fact, another slug called *Elysia atroviridis* has already been found to possess this regenerative ability.

There is still much to be unveiled, and we have barely scratched the surface of what these incredible slugs can do. Only time will reveal

the next wonders scientists will uncover in the fascinating world of sacoglossans. ■ SOURCES: INVERSE.COM, CELL.COM, WIKIPEDIA.ORG

Wesley Oosthuizen is an internationally published professional underwater photographer, originally from East London, South Africa, who is now based in Taiwan, where he founded a production company. For more information, visit: [facebook.com/WJOart](https://www.facebook.com/WJOart)

Edited by Peter Symes



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New shark species discovered off Australia

Apristurus ovicorrugatus, a new species of deepwater catshark, is described from north-western Australia. A team of ichthyologists has discovered the new species after identifying unique egg cases found in two Australian museums.

Most sharks give birth to live young, but a few species, known as oviparous sharks, lay eggs. The new species could be identified because researchers noticed something interesting about its egg cases, pouches that attach to a surface in the ocean and hold onto a fertilized shark eggs as it develops.

The egg cases, which had unique T-shaped ridges along their length ridges, had only been found in one other shark species and was unique among egg-laying sharks in Australia. They were also unique in that they had been found attached to coral.

White eyes

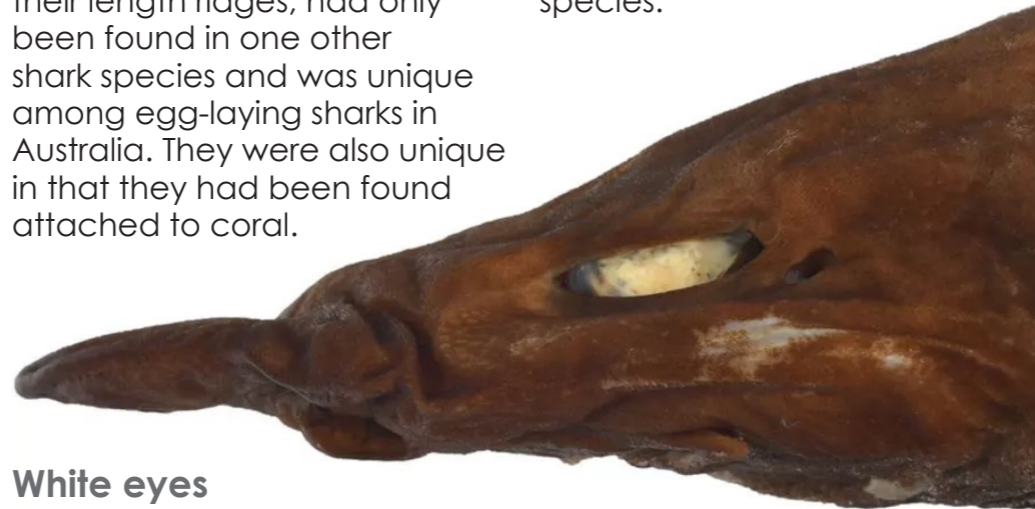
The demon catshark *Apristurus ovicorrugatus* is a deepwater shark that has a distinctive white iris, which is a rare feature for deepwater sharks, which normally have very dark eyes—either dark green or just black eyes.

This characteristic could help to establish links between similar species, as it must have evolved for some particu-

lar reason, not just within one species, but within a group of species.

The new species of catshark has shiny white irises, which is unusual of a deep-sea species.

Demon sharks like *A. ovicorrugatus* are also known as ghost sharks, a group of deep-sea catsharks from the family *Scyliohinidae*. The *Apristurus* is one of the most diverse shark genera known to science, with this latest addition bringing the known number of species to 40. ■
SOURCE: FISH BIOLOGY



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The distinctive T-shaped ridges of the egg are unique to this species of demon catshark.

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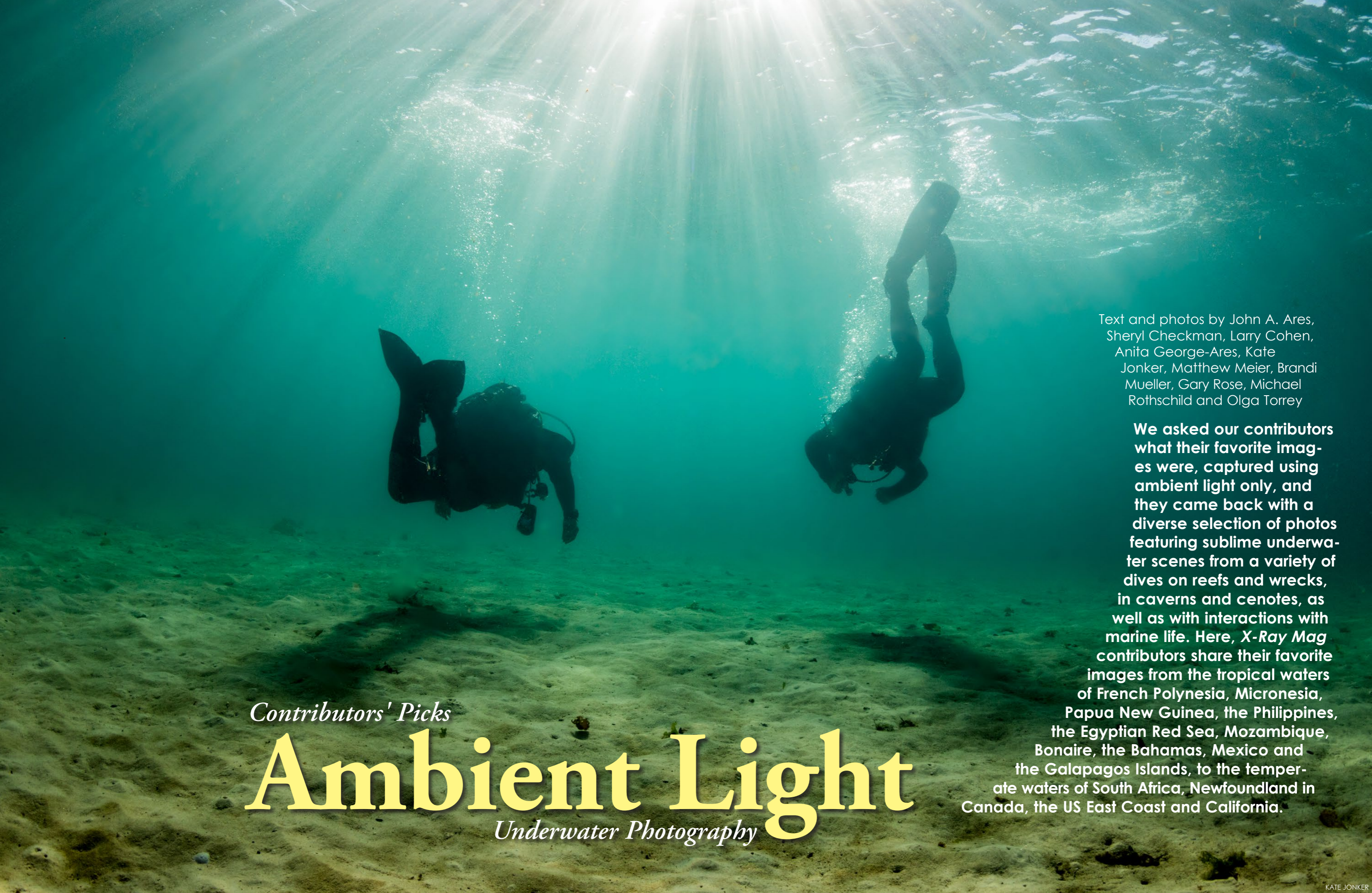
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Photo : Dominique BARRAY

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Text and photos by John A. Ares, 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 images were, captured using ambient light only, and they came back with a diverse selection of photos featuring sublime underwater scenes from a variety of dives on reefs and wrecks, in caverns and cenotes, as well as with interactions with marine life. Here, *X-Ray Mag* contributors share their favorite images from the tropical waters of French Polynesia, Micronesia, Papua New Guinea, the Philippines, the Egyptian Red Sea, Mozambique, Bonaire, the Bahamas, Mexico and the Galapagos Islands, to the temperate waters of South Africa, Newfoundland in Canada, the US East Coast and California.

Contributors' Picks

Ambient Light

Underwater Photography



Using Ambient Light in UW photos

Text and photos by Kate Jonker

When I first began my journey as an underwater photographer, I spent a year using the natural light from the sun as my sole light source. I soon realised that ambient light can be a powerful tool to create stunning and dramatic images.

One of my absolute favourite places to experiment with ambient light is in kelp forests. These underwater forests are a treasure trove of natural light that filters through the leaves and creates a

beautifully natural effect. (See Photo 1)

Another great way to harness the power of ambient light is during the golden hour. This special time just before sunset or just after sunrise creates warm and soft lighting that can transform your images with a beautiful, dappled effect (Photo 2). It's like adding a golden touch to your photographs.

St John's Caves in the Red Sea offer yet another perfect opportunity to use ambient light (Photo 3). The dark and mysterious caves create a moody atmosphere, and the beams of light that filter through the cracks in the roof

are simply breath-taking.

Lastly, using ambient light to create sun rays is one of my favourite techniques in underwater photography. The best time to capture these stunning rays of light is when the sea is calm and flat. The result is a dramatic and ethereal atmosphere that perfectly captures the beauty of the underwater world (Photo 4 on previous page).

I have learnt that ambient light can

be a powerful way to create stunning and dramatic images underwater. By understanding how to use ambient light in different underwater environments, photographers can capture the magic and beauty of the ocean in a truly unique and transformative way. Visit: katejonker.com

Photo 1. (above) Using ambient light in kelp forests adds a beautifully natural effect to your images. A-Frame dive site, Simon's Town, South Africa. Gear: Canon Powershot S95 camera, Ikelite housing. Exposure: ISO 100, f/8, 1/60s

Photo 2. (left) Taking photos during the golden hour can add a warm glow to your images. Shag Rock, Northern Red Sea, Egypt. Gear: Canon Powershot S95 camera, Ikelite housing. Exposure: ISO 100, f/8, 1/60s

Photo 3. (top left) Using light beams that filter through the roofs of caves can create a stunning effect. St John's Caves, Southern Red Sea, Egypt. Gear: Canon EOS 7D Mark II camera, Tokina 10-17mm fisheye lens, Sea&Sea housing. Exposure: ISO 500, f/8, 1/50s

Photo 4. (previous page) Capturing the sun's rays when the surface of the water is calm and flat can add a whole new dimension to your images. Long Beach, Simon's Town, South Africa. Gear: Canon EOS 7D Mark II camera, Tokina 10-17mm fisheye lens, Sea&Sea housing. Exposure: ISO 160, f/11, 1/200s



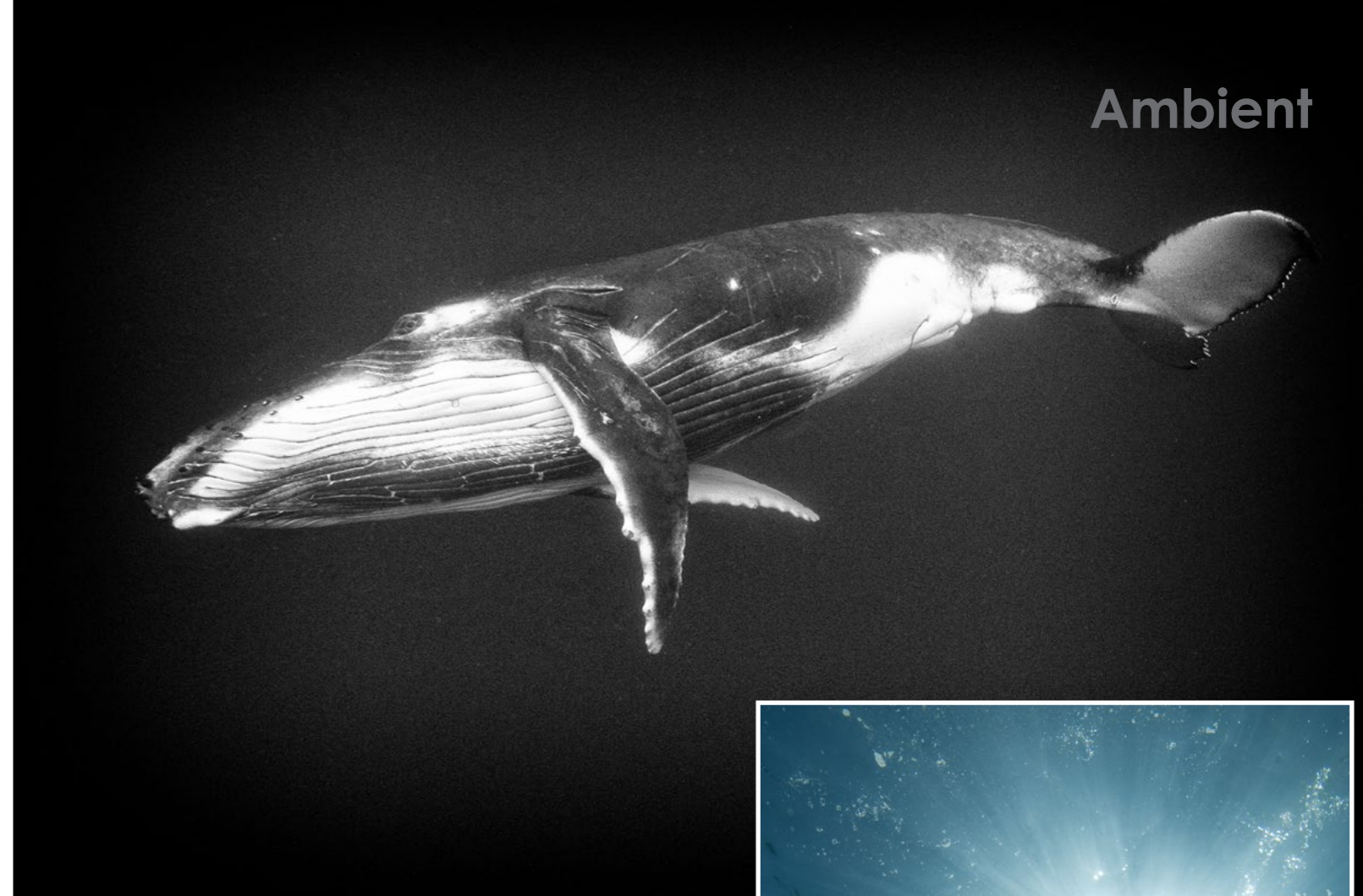


Photo 3. (top left) Whale shark with fisherman, Oslob, Cebu Island, Philippines. Gear: Canon 10D camera, Canon EF-S 10-18mm f/4.5-5.6 IS STM lens at 10mm, Ikelite housing, available light. Exposure: ISO 100, f/8, 1/500s; Photo 4. (top right) Humpback whale, Moorea, French Polynesia. Gear: Canon Rebel SL1 camera, Canon EF-S 10-18mm f/4.5-5.6 IS STM lens at 10mm, Ikelite housing, available light. Exposure: ISO 3200, f/14, 1/320s

Small to Gigantic Beings

Text and photos by John A. Ares

Many photos of mine recently published in this *Contributors' Picks* article series were taken with ambient light, but the following have not been seen before in this magazine.

Photo 1 shows a backlit California sea lion playing at Los Islotes, La Paz, Mexico. This was part of a series of images. As I rotated in the water, the backlit image required that I point the strobes away from the subject. Strobes would have produced a photo with an entirely different character.

The shrimp in Photo 2 was actually shot in an aquarium in San Antonio, Texas. The light was at the top and slightly behind the subject. It worked well with the semi-translucent shrimp. The photo was taken with a point-and-shoot

camera set on "macro," held close to the glass to prevent reflections.

The split shot of the whale shark in Photo 3 was taken in Oslob on Cebu Island in the Philippines. The whale sharks there were being fed shrimp by the fisherman in the outrigger at the surface. This was a snorkeling-only site, unless you were staying at one of the local hotels. In the photo, you can see some scuba divers below. While there is always controversy when people interact with animals, the whale sharks here did not appear to be harmed, nor did they stay very long.

Photo 4 shows a female humpback whale calf in Moorea, French Polynesia. Environmental police there required that one enter the water hundreds of yards away and snorkel towards the mother and calf. Strobes and scuba were not allowed. In postproduction, the photo was converted to black and white using Nik Silver Efex Pro2 software. Visit: JohnAres.com

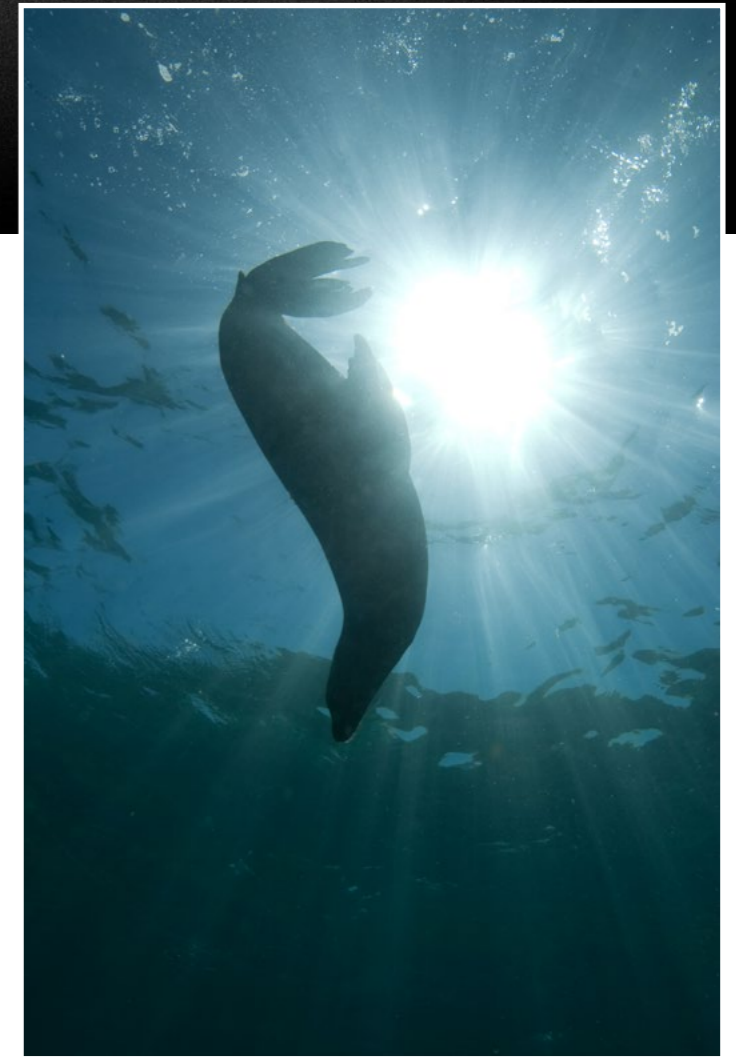


Photo 1. California sea lion, Los Islotes, La Paz, Mexico. Gear: Canon Rebel SL1 camera, Sigma 11-18mm lens at 15mm, Ikelite housing, available light. Exposure: ISO 1600, f/14, 1/200s;

Photo 2. Shrimp, San Antonio Aquarium, Texas, USA. Gear: Canon Powershot G9 camera, 7.4-44.4 2.8 lens at 7.4mm, available light. Exposure: ISO 400, f/2.8, 1/15s





In the Shallows

Text and photos by Sheryl Checkman

This topic was a bit of a challenge for me since it was hard to find underwater photos where I did not use my strobes. I chose to show some recent photos that I took while snorkeling in Mozambique last spring for this feature.

In Mozambique, on our way to dive Manta Bay, we were on the lookout for whale sharks. We got lucky and slipped into the water with our snorkels and cameras to get up close with these giants of the sea.

On another day, we took a day off from diving to go on a boat excursion

in Inhambane, where I had the opportunity to snorkel in what appeared to be a breeding ground for various species. There, I was able to photograph a seahorse, out in the open, resting on the sand, basking in the dappled sunlight, as well as a tiny juvenile lionfish tucked in among the coral and rock. This area was all quite shallow, so the lionfish's red stripes and white body were still vibrant, even to the naked eye.

At depth, we needed our strobes to bring out the colors in our photographs. Red disappears first, at less than 15ft, followed by orange (25ft), yellow (35ft), green (65ft), and finally, blue at around 200ft. Visit: [Instagram.com/sherylcheckman](https://www.instagram.com/sherylcheckman)

Whale shark, seen while snorkeling in Mozambique (above). Gear: Olympus OMD EM5 Mark II camera, Olympus M.9-18mm f/4.0-5.6 lens at 10mm. Exposure: ISO 500, f/4.2, 1/30s

Baby lionfish, found on a snorkeling dive in Mozambique (top right). Gear: Olympus TG5 camera at 18mm. Exposure: ISO 100, f/6.3, 1/250s

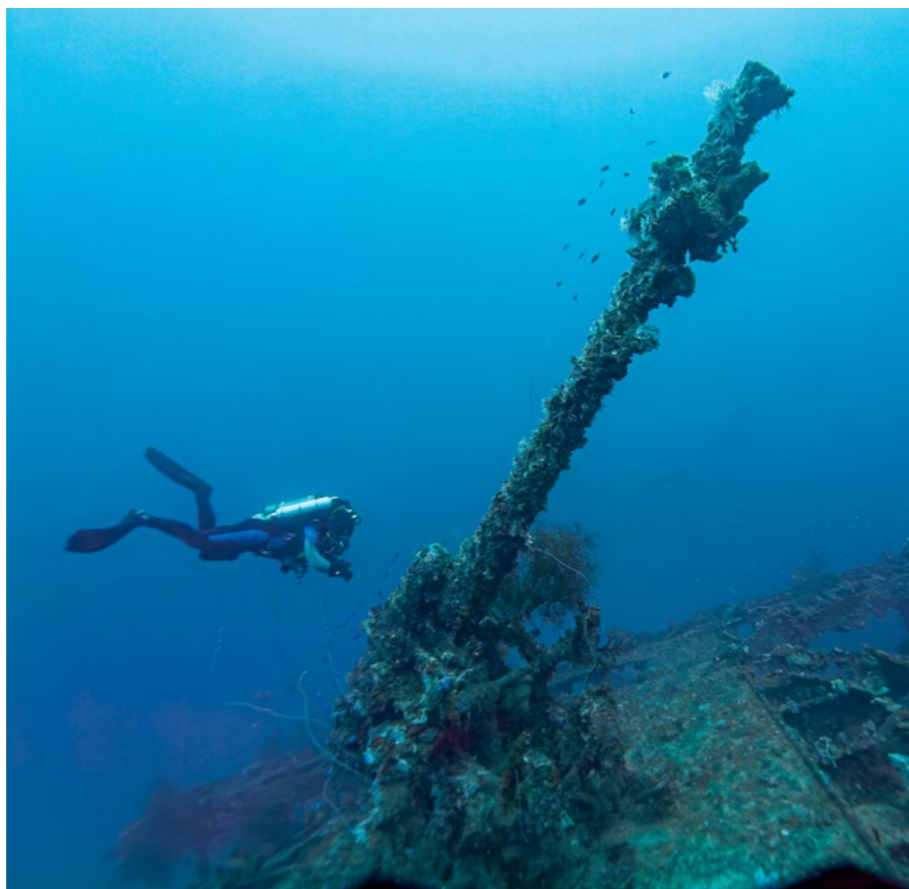
Seahorse spotted while snorkeling in Mozambique (right). Gear: Olympus TG5 camera at 11.78mm. Exposure: ISO 100, f/5.0, 1/640s



Photo 1. (bottom image) *Aikoku Maru* stern gun, Chuuk Lagoon, Micronesia. Gear: Olympus E-620 camera, Olympus 7-14mm lens, Olympus housing. Exposure: ISO 400, f/5.6, 1/30s.

Photo 2. (top right) *Amagisan Maru* bow gun, Chuuk Lagoon, Micronesia. Gear: Olympus E-620 camera, Olympus 7-14mm lens, Olympus housing. Exposure: ISO 400, f/4, 1/30s

Photo 3. (top left) Ha-Go tank on the deck of the *San Francisco Maru*, Chuuk Lagoon, Micronesia. Gear: Olympus E-620 camera, Olympus 7-14mm lens, Olympus housing. Exposure: ISO 400, f/4, 1/15s



Majestic Wrecks

Text and photos by Larry Cohen

Most of my underwater photography involves using strobes or continuous light. However, I often shoot images with ambient light when documenting shipwrecks. For example, in Chuuk Lagoon, wide-angle photos look natural and pleasing, having a blue cast.

The stern gun on the *Aikoku*

Maru (Photo 1) and the bow gun on the *Amagisan Maru* (Photo 2) are majestic because of their size. Shooting from a low angle emphasizes the size of the guns. Adding a diver to the composition adds scale so the viewer knows how large the guns are. The photographs taken with strobes did not capture the feeling I had seeing these significant artifacts, but the ambient light photos captured the mood.

The *San Francisco Maru* was a freighter, and its deck sits in 165ft (50m) of water (Photo 3). On the deck are two Japanese light-type 95 Ha-Go tanks. These tiny tanks are an excellent photo subject when including a diver for scale. Having the diver point a dive light at the subject draws the viewer's eye to the tank. Visit: liquidimagesuw.com



Photo 2. (above) Humpback whale calf, Moorea, French Polynesia. Gear: Canon EOS Rebel SL1 camera, Canon EF-S 10-18mm f/4.5-5.6 IS STM lens at 18mm, Ikelite housing, available light. Exposure: ISO 1600, f/20, 1/200s

Light Au Naturel

Text and photos by Anita George-Ares, PhD

I took this image of the great white shark from a cage (Photo 1). The clear waters of Guadalupe Island provided great opportunities for available light photography. Guadalupe Island is now closed to all tourism including cage diving with sharks. The image was converted to black and white using Nik Silver Efex Pro 2 software.

I left the boat, which was a couple of miles offshore of Moorea, and snorkeled on the surface. The humpback whale calf (Photo 2) had just taken a breath at the surface and was headed down to join her mother waiting



in the depths. The dappled sunlight created a beautiful pattern on the calf's back.

At Oslob, local fishermen in outriggers dispense small shrimp to resident and transient whale sharks. In Photo 3, a whale shark feeds at the surface. A few long-jawed mackerel

ANITA GEORGE-ARES

Photo 1. (bottom right) Great white shark, Guadalupe Island, Mexico. Gear: Canon EOS Digital Rebel XT camera, Canon EF-S 10-22mm f/3.5-4.5 USM lens at 22mm, Ikelite housing, available light. Exposure: ISO 400, f/8, 1/80s

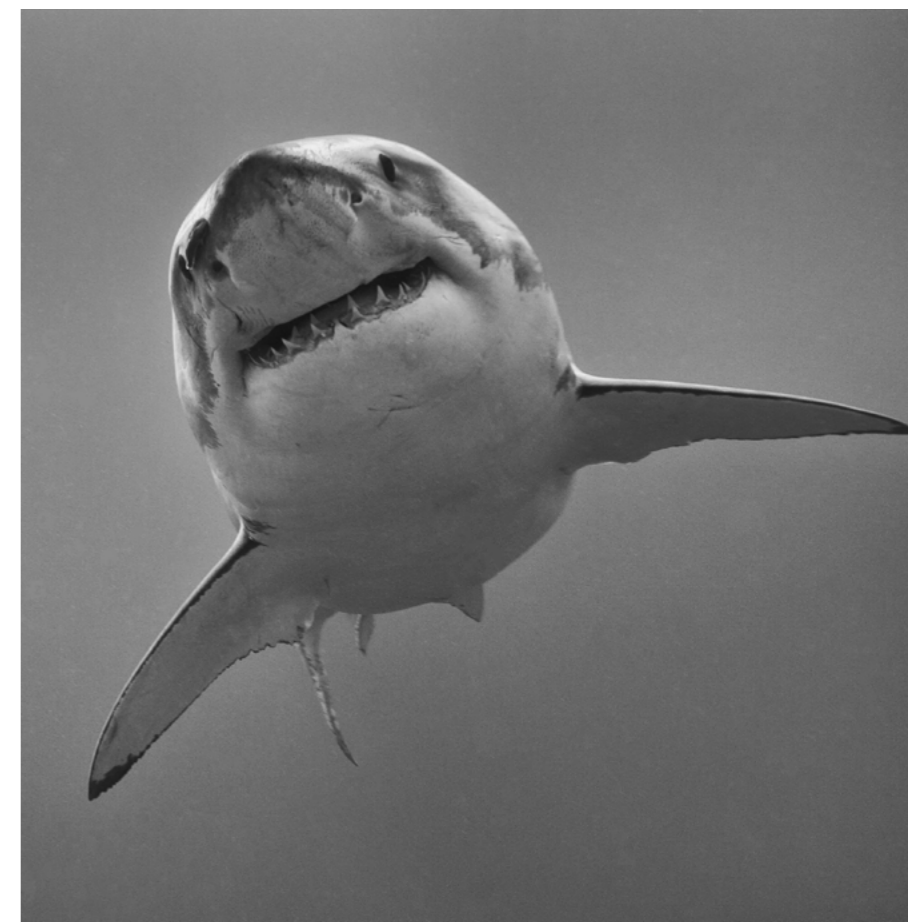
Photo 3. (right) Feeding whale shark, Oslob, Cebu, Philippines. Gear: Canon EOS Digital Rebel XT camera, Canon EF-S 10-22mm f/3.5-4.5 USM lens at 10mm, Ikelite housing, available light. Exposure: ISO 400, f/3.5, 1/500s

Photo 4. (below) Whale shark, Oslob, Cebu, Philippines. Gear: Canon EOS Digital Rebel XT camera, Canon EF-S 10-18mm f/4.5-5.6 IS STM lens at 11mm, Ikelite housing, available light. Exposure: ISO 400, f/4.5, 1/1250s

ANITA GEORGE-ARES



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ANITA GEORGE-ARES

joined the shark in the hopes of getting a meal. In Photo 4, a whale shark swims by on the way to the outrigger boats. The pattern of spots on the shark's back shows up well in the ambient light. Please visit: [facebook.com/profile.php?id=100016947967639](https://www.facebook.com/profile.php?id=100016947967639)





Ambient

Steel pompano clean parasites off the shell of a passing green sea turtle, Santa Fe Island, Galápagos. Gear: Nikon D3 camera, Nikon 24-50mm lens, Subal housing. Exposure: ISO 200, f/5.6, 1/200s



Juvenile bat ray swimming over the shallow sandy bottom, La Jolla Shores, California (above). Gear: Nikon D3 camera, Sigma 15mm fisheye lens, Subal housing. Exposure: ISO 200, f/6.3, 1/160s; Galapagos sea lion pup just under the water's surface near the volcanic rocks of the shoreline, South Plazas Island, Galápagos (top left). Gear: Nikon D3 camera, Nikon 24-50mm lens, Subal housing. Exposure: ISO 200, f/5.6, 1/125s

Practical and Creative

Text and photos by Matthew Meier

There are many reasons to utilize ambient light for underwater photography, ranging from the practical to the creative. Looking through my library, the best practical examples include images of subjects such as whale sharks, whales and shipwrecks that are simply too large to artificially light properly. That list also includes photos created in poor water clarity conditions when added light would manifest more backscatter than was worth attempting to clean up later.

Capturing sunrays in dark caverns or shooting silhouettes against bright backgrounds are creative uses of available light. Another occasion in which I shoot without strobes is while snorkeling, which is both practical and a little lazy, for not wanting to push the added bulk through the water column.

The nice part is that as long as you do not dive down too far, you can still bring back colorful images with a custom white balance adjustment and perhaps a little magic in the HSL panel. All of the photos I selected for this piece were taken while snorkeling in less than 15ft of water, both close to home in San Diego and in far off places such as the Galapagos and French Polynesia. Visit: MatthewMeierphoto.com



Over-under view of juvenile blacktip reef sharks swimming in shallow water, Blue Lagoon, Rangiroa Atoll, French Polynesia. Gear: Nikon D810 camera, Sigma 15mm fisheye lens, Subal housing. Exposure: ISO 200, f/11, 1/400s



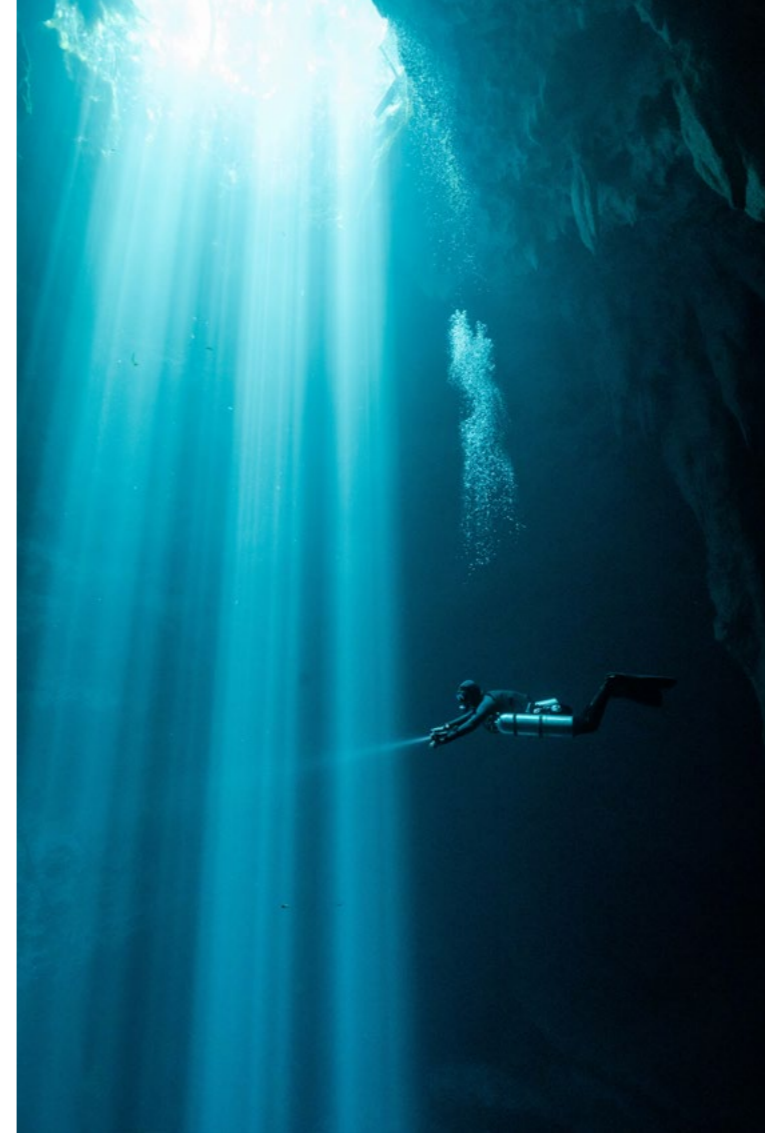
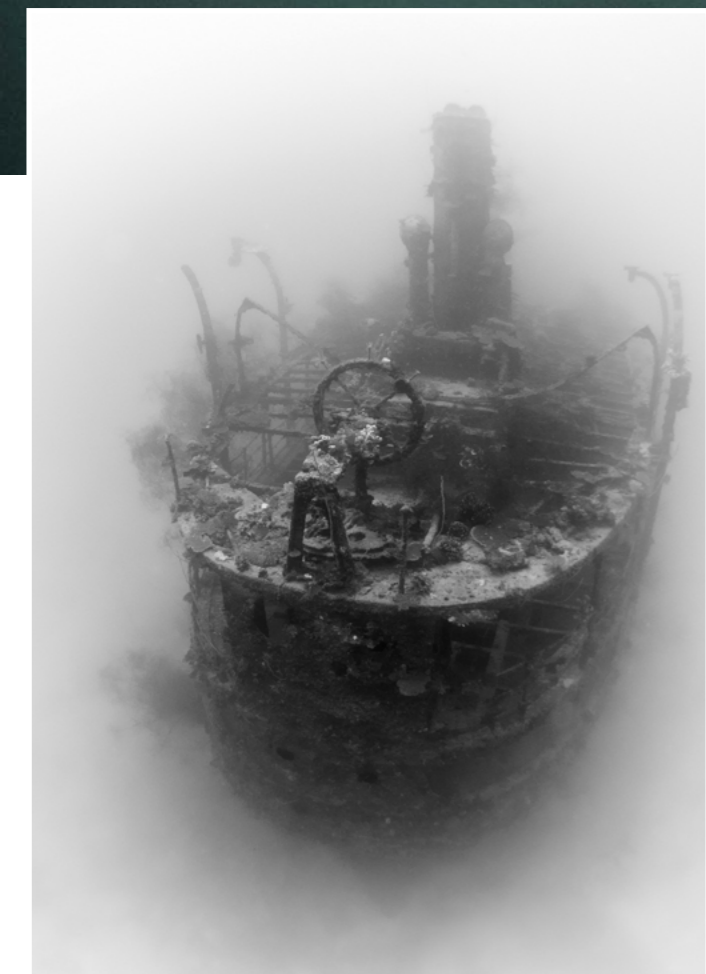


Photo 1. (left) A diver swims into the light in Cenote Azul Ha, Mexico. Gear: Nikon Z7 II camera, 16-35mm lens, Ikelite housing. Exposure: ISO 2500, f/6.3, 1/60s

Photo 2. (far left) Divers appear to be in an enchanted forest in Cenote Angelita, Mexico. Gear: Nikon D850 camera, 8-15mm lens, Ikelite housing. Exposure: ISO 5000, f/5, 1/80s

Photo 3. (bottom left) The Palawan wreck in Kwajalein Atoll, Marshall Islands. Gear: Nikon D7100 camera, 10mm lens, Ikelite housing. Exposure: ISO 320, f/5.6, 1/160s

Photo 4. (below) An Avenger airplane wreck in Kwajalein Atoll, Marshall Islands. Gear: Nikon D750 camera, 10mm lens, Ikelite housing. Exposure: ISO 320, f/13, 1/100s



Caverns and Wrecks

Text and photos by Brandi Mueller

Ambient light is a great way to showcase two of my favorite diving environments: caverns and wrecks. I love to show the vastness of each by getting as far away as possible from the wreck or cavern structure to show a large, wide-angle view of their enormity.

Mexico's cenotes are numerous and each one is different. I love seeing the different rock formations and how collapses over time have allowed light to enter these

otherwise pitch-black environments (Photos 1 and 2).

The WWII wrecks of Kwajalein Atoll have been underwater for almost 80 years, and after all that time, some are still intact. Even with powerful lights, lighting up these massive wrecks or large geological spaces is near-impossible with on-camera lighting, as the lights from the camera would not reach the subject and would only add backscatter to the images. I love to try and bring back images that capture the grandeur of these places, and using ambient light is one of the best ways. (See Photos 3 and 4.) Visit: brandiunderwater.com





Photo 3. (top center) Giant manta ray in silhouette. Choose a subject that there is no mistaking its identity. Exposure: ISO 200, f/16, 1/100s

Photo 4. (top left) Sandbar shark in Snell's window. Capture Snell's Window and plenty of ambient light to illuminate your subject. Exposure: ISO 200, f/11, 1/100s

Photo 5. (top right) Tiger sharks in shallow clear water. Shoot wide angle very close in shallow clear water for large subjects. Exposure: ISO 100, f/8, 1/160s

All photos were taken with Nikon D500 camera, Tokina 10-17mm lens, Nauticam housing. Photo 1. (far right) Surface lemon shark. The sun's rays are broken up by tiny wavelets and create a reticular network of light. Exposure: ISO 200, f/11, 1/200s; Photo 2. (right) Lemon shark abstract. The additional interplay of shadow enhances the feeling of motion and depth. Exposure: ISO 200, f/8, 1/250s

Playing with Ambient Light

Text and photos by Gary Rose, MD

Ambient light is always changing. It changes seasonally, daily, hour-by-hour, second-by-second. It is a joy to play with, and it provides unlimited and often unexpected results. Understanding how to utilize ambient light in its multiple and unlimited forms is a terrific tool in the underwater photographer's toolbox.

One of my favorite times of an entire dive is the end. No, I do not mean when I come out of the water. I am referring to those last few minutes of the ascent, and during the safety stop, when the water clears and the light quality ramps up. This is a time, if you are patient, to catch some of the most dramatic underwater photos. Ambient light includes natural light, and you are just never sure what gifts, or tricks, of lighting are coming your way—especially up near the surface, where the surface texture of the sea and the position of the sun can, and will, provide an endless supply of special effects.

Many of my dives are in the waters off the coast of Jupiter, Florida. Lemon sharks are always there, because we have our resident population of lemon sharks as well as the annual seasonal aggregation of lemon sharks. They are fun and playful during the entire dive and act like excited puppy dogs. They almost always follow us up to the surface, and that is where the magic begins. By breaking one of the cardinal rules of photography—"never shoot down"—I have been able to take some of my most dramatic photographs. As demonstrated in Photo 1, the sun's rays are broken up by tiny wavelets, on the surface, and bathe a lemon shark in a reticular network of light. I recommend shooting lots of photos of this, because there is a lot of rapid three-dimensional movement, and you want to nail the light pattern crisply. In Photo 2, I moved in very close to two lemon sharks to achieve this abstract result. The additional interplay of shadow, from above, enhances the feeling of motion and depth.

One of the classic styles of underwater photography with ambient



light is the opposite of shooting down; instead, one shoots straight up to capture a silhouette. I find that the two most important components of shooting a silhouette is to have a large subject so that there are sharp defining borders, and to shoot a subject that is very recognizable. A silhouette of a fish pretty much looks like a silhouette of most fish. Choose a subject such as a sea turtle, whale, sea lion or, as in Photo 3, a giant manta ray at the surface. There is no mistaking its identity. With its wings spread and visible wave patterns above it, you cannot help but feel that it is flying through the sea.

Another "shooting-up" technique

that I enjoy implementing is to shoot up obliquely. This way, I am able to capture plenty of ambient light to illuminate my subject, as well as capture a very dramatic background of Snell's window with very visible puffy clouds in a blue sky. Photo 4 required a lot of test shots, as I planned the photo and experimented with many camera settings to capture each individual component of this photo.

One of the pleasures of diving offshore at West End, Grand Bahama Island, is the clear and shallow water that is a photographer's dream. In Photo 5, the bright sun clearly lit up these two beautiful tiger sharks in the

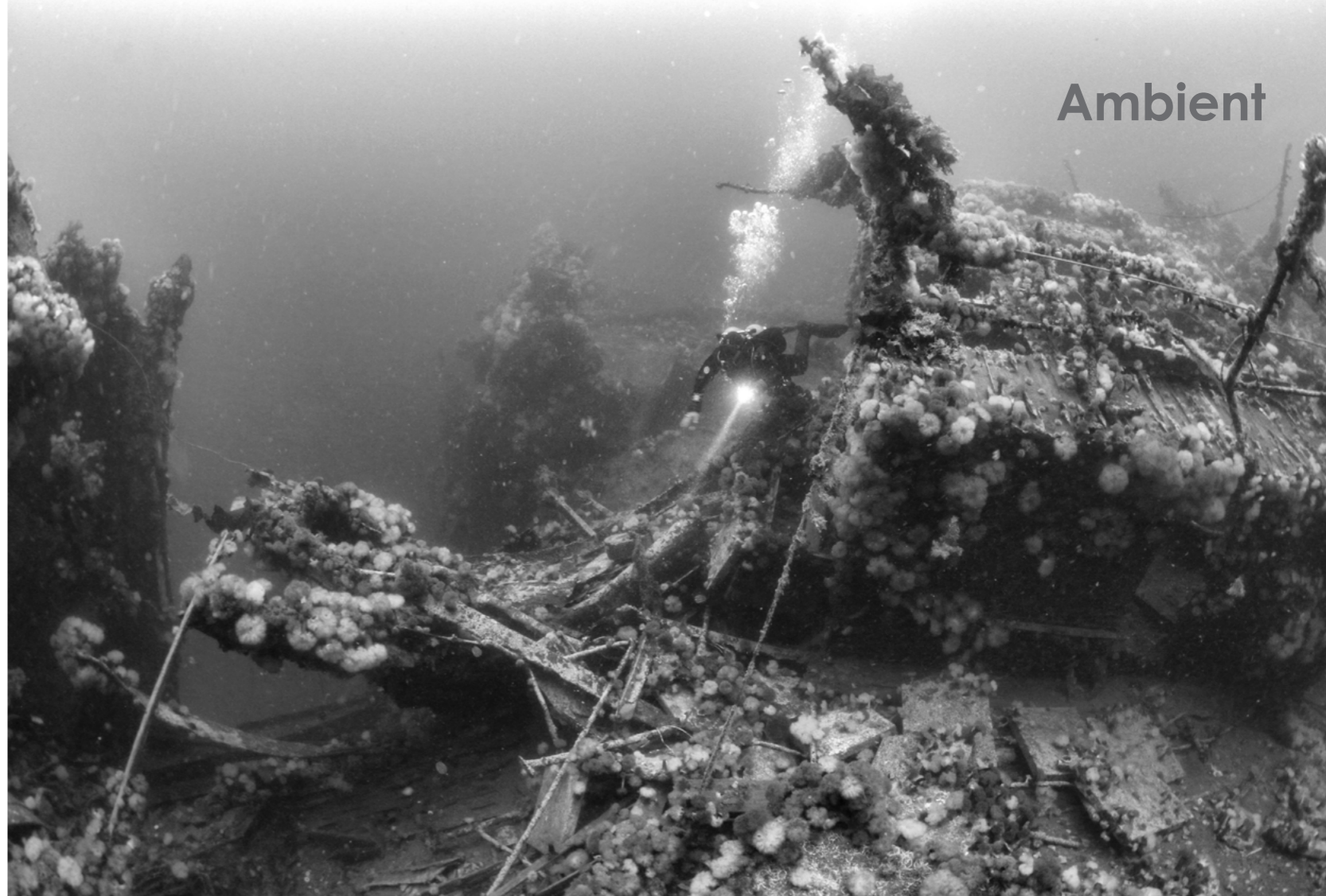


foreground and provided a feeling of warmth and tranquility. The other two tiger sharks (can you find them?) are far enough away that the light has been filtered to a beautiful shade of blue, and it does not distract the viewer's eye away from the main subject in the foreground.

If you have been solely relying on artificial light (torches or strobes) for your underwater photography, then you will have a bit of a trial-and-error period to learn how to capture ambient light in all of its capricious forms. The best part is that every single dive and photo opportunity will be challenging and unique. Visit: garyrosephotos.com



Photo 1. (right) Diver ascending to a dive boat off the New Jersey shore, USA. Gear: GoPro Hero 4 Black action camera, video frame grab



Ambient

Photo 2. (top left) Diver on *Hilma Hooker* wreck, Bonaire, Netherland Antilles. Gear: Canon EOS 7D Mark II camera, Tokina 10-17mm fisheye lens (10mm), Nauticam housing, video frame grab

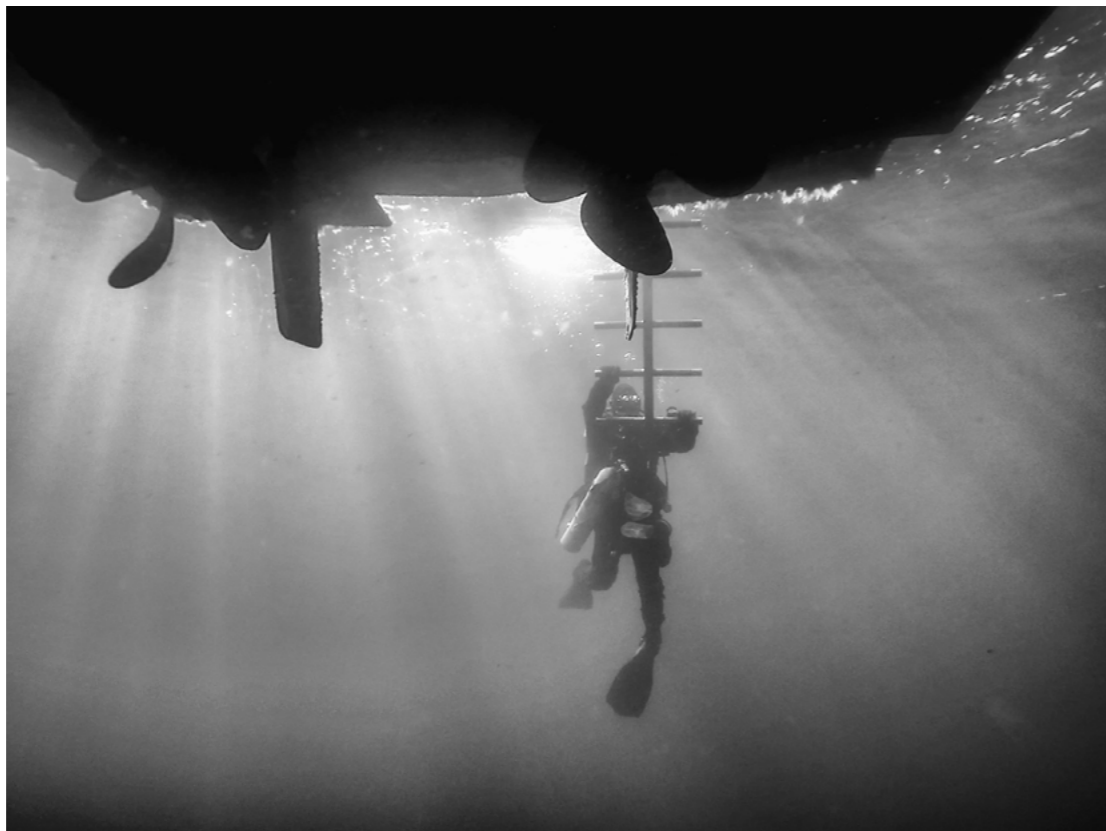


Photo 3. (top right) Diver on the wreck of the *SS Saganaga*, Newfoundland, Canada. Gear: Canon EOS 7D Mark II camera, Tokina 10-17mm fisheye lens (10mm), Nauticam housing. Exposure: ISO 500, f/8, 1/40s

Vast Scenes

Text and photos by Michael Rothschild, MD

Underwater photographers grapple with light, arguably more than our topside colleagues. Light is the number one factor affect-

ing all images (edging out even composition and focus). And we divers shoot through an environment that gobbles up more and more precious photons with every meter we drop below the surface. Eventually, our only hope is to bring artificial “suns” with us into the depths. But in shallow water, a

strong sunbeam can reach down to our subject and illuminate vast scenes, far beyond what we could ever cover with strobes or video lights.

Photo 1 is of a diver returning to the boat, with the bright cathedral rays beckoning him upwards, towards light and air. The second image (Photo 2) is on a shallow wreck—the white sand reflecting the Caribbean sun back upwards, to fill in the details of the diver hovering in angular composition with the ship. The third shot (Photo 3) shows a wide debris field created by a World War II torpedo, which found a ship at anchor. And the fourth one (Photo 4) is a playful aquatic mammal, joyfully cavorting in the pool to let me try my new iPhone housing. Visit: dive.rothschilddesign.com



Photo 4. (above) Freediver in swimming pool. Gear: iPhone 14 Pro in Kraken KRH08 Universal smartphone housing, video frame grab



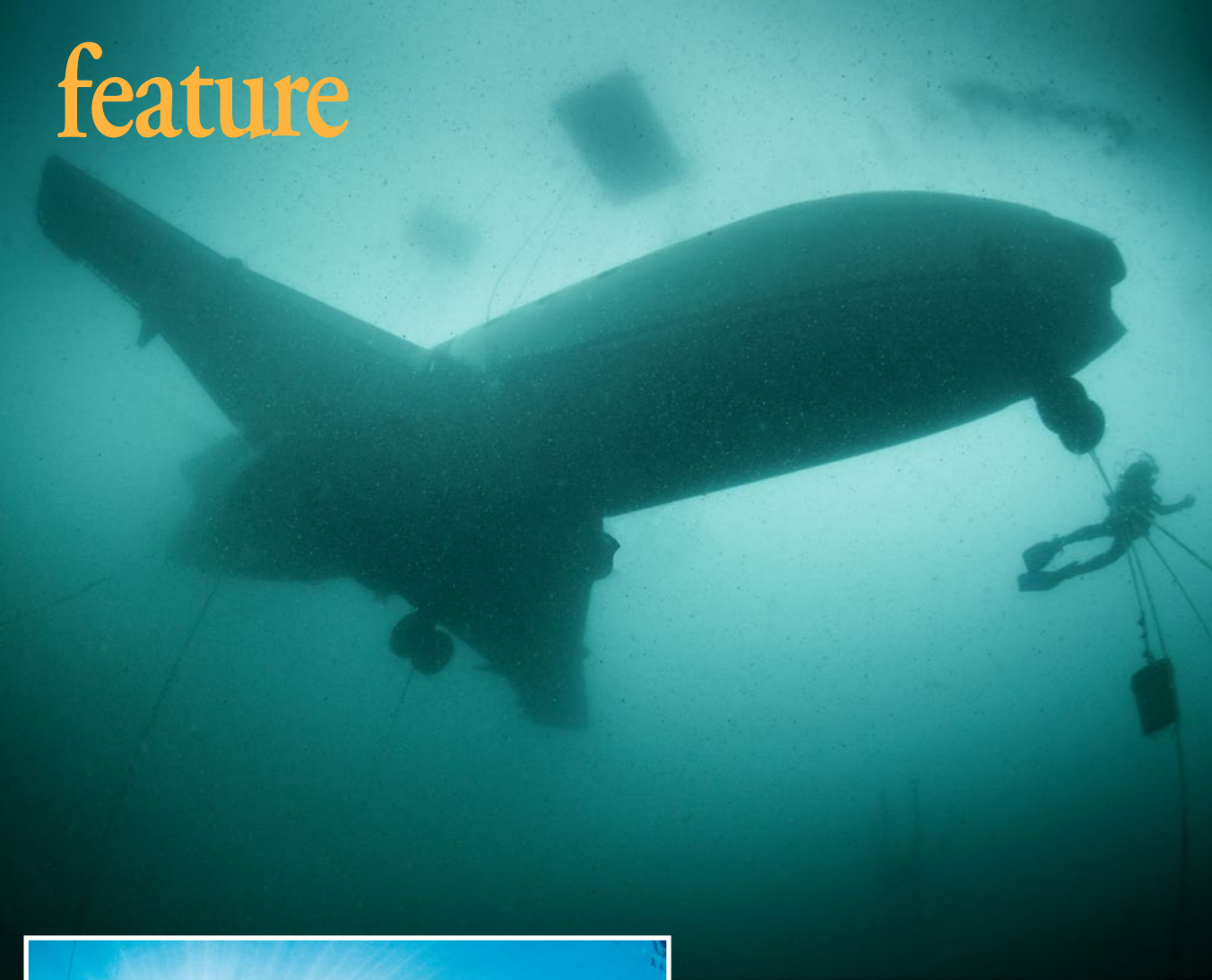


Photo 1. (above) Aircraft Challenger 600 found a new home at Dutch Springs, Pennsylvania, USA. Gear: Olympus OM-D E-M5 camera, Panasonic Lumix G fisheye 8mm f/3.5 lens, Nauticam housing. Exposure: ISO 400, f/5.6, 1/160s



Photo 2. (right) The Boiler is a pinnacle and is the best spot for seeing big animals. Revillagigedo Islands, Mexico. Gear: Olympus OM-D E-M5 camera, Panasonic LUMIX G VARIO 7-14mm f/4 lens, Nauticam housing. Exposure: ISO 400, f/6.3, 1/100s

Photo 3. (bottom left) The liveaboard *M/V FeBrina* awaits returning scuba divers to come back on board. Papua New Guinea. Gear: Olympus OM-D E-M5 camera, Panasonic Lumix G fisheye 8mm f/3.5 lens, Nauticam housing. Exposure: ISO 500, f/11, 1/250s

Photo 4. (above) The wreck of the Cessna aircraft at Dutch Springs, Pennsylvania, USA. Gear: Olympus OM-D E-M5 camera, Panasonic Lumix G fisheye 8mm f/3.5 lens, Nauticam housing. Exposure: ISO 250, f/7.1, 1/50s



Perfect Conditions

Text and photos by Olga Torrey

Ambient light means available light, including sunlight, moonlight and overhead light. In Photo 1, the aircraft Challenger 600 at Dutch Springs was submerged in the middle of March 2018. The water temperature was frigid on the day of the sinking, but the visibility was 50ft. The conditions were perfect for taking photos of the new underwater attraction using ambient light. I used a fisheye

lens to get closer to the subject to reduce the amount of water between the lens and the subject—this increased sharpness. I pointed the camera up to enhance the contrast between the plane and the ambient light above.

The Boiler (Photo 2) is a pinnacle in 250ft of water and is the best spot for seeing giant manta rays and dolphins in the Revillagigedo Islands of Mexico. I saw my first Pacific giant manta ray in 2016 at the Boiler dive site, and the experience was mesmerizing. When I jumped off the

zodiac into the water, I was surprised that I could see the bottom of the pinnacle. The visibility was excellent, and I attempted to show the pinnacle's immense size. I pointed the camera down, using ambient light to define the enormous rock formation.

In 2018, I visited Papua New Guinea, the country I had dreamed of visiting since childhood. My hero, explorer and scientist Nicholai N. Miklouho-Maclay, was the first European to settle among and study the life of the native people. Diving off the liveaboard *M/V FeBrina* (Photo 3),

I used available sunlight to create the image of the vessel with streaming sunrays.

One of my favorite dive destinations near New York City was Dutch Springs in Pennsylvania. The lake had many submerged attractions for divers to explore. For example, the Aircraft Cessna wreck (Photo 4) was in shallow water, with plenty of ambient light. I used my scuba buddies Larry and Gregory to show scale. My models used video lights to add interest to the low-contrast image. Visit: fitimage.nyc



Changing your shooting position in relation to your subject can change the emotional impact of your shot quite a lot.

Text and photos by Cristian Umili
Edited by G. Symes

When immersing ourselves in the underwater world, we experience a flood of emotions—both in relation to the depths and to being in an environment that is not our own, in which we can almost fly. But our encounters with marine life excites us even more, especially with sharks, dolphins and huge shoals of fish, but also small and colorful nudibranchs, or microscopic shrimps. Cristian Umili shares his insights and tips on how to capture emotions in underwater photographs.

Many who start diving, want to share these emotions with family and friends who do not dive, and decide to start taking underwater photographs or videos. For the purposes of this article, I will focus on still photography.

However, it may happen that once we return home from a dive and review our photographs on a monitor, the images do not convey the emotions we felt at that moment they were taken. This might depend

on a multitude of factors: the angle, shooting distance, lighting, composition or a wrong choice of lens.

Shooting a close-up detail of a subject, instead of the whole thing, or using other divers as human

elements in the frame to give a sense of scale, can result in excellent documentary images, but they may not have emotional impact.

When the photographer's shooting position changes, our perceptions of

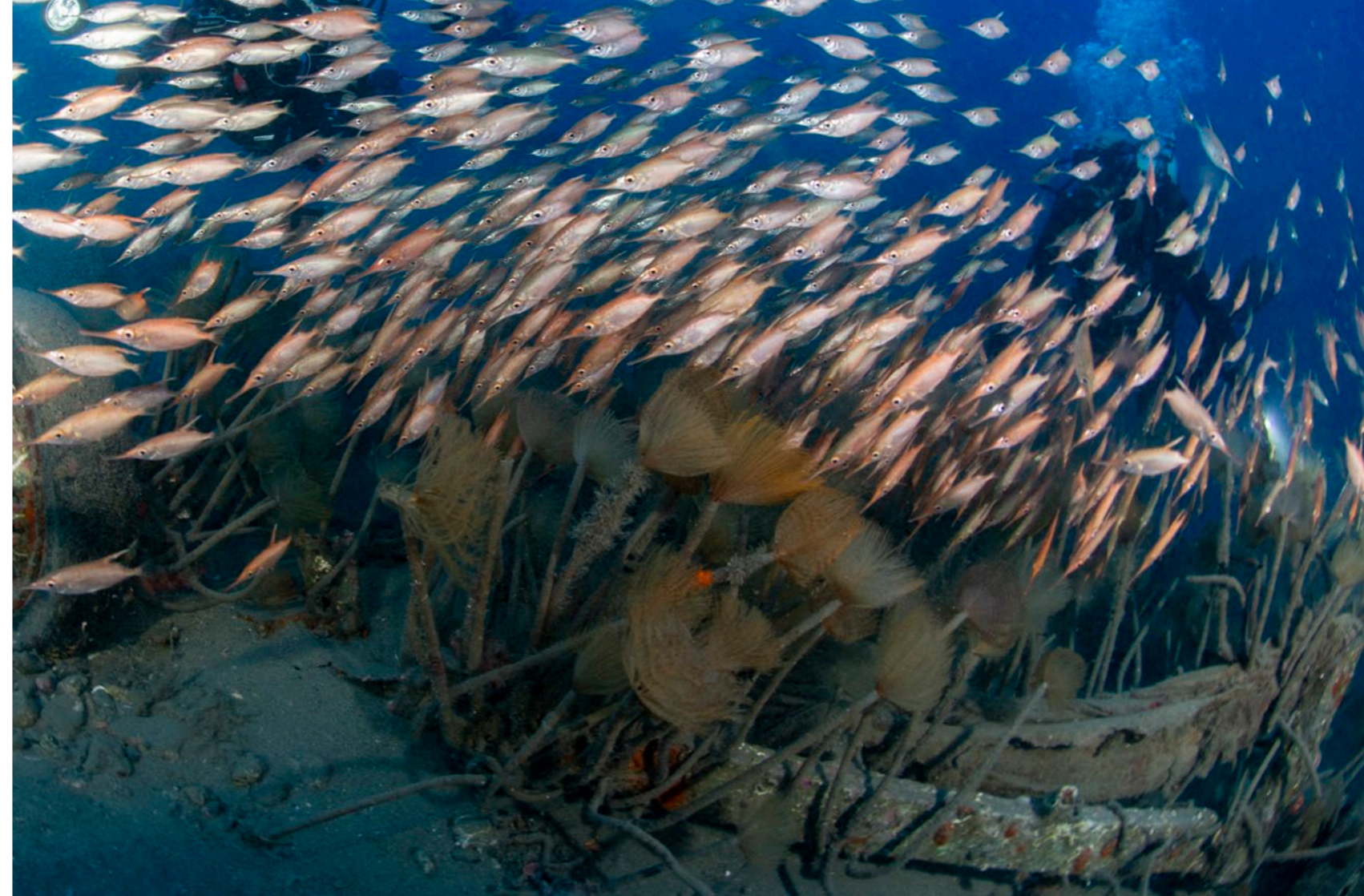
a photo can change a lot. If you are shooting from too far away or too high up, it can result in a photograph that does not convey the emotions that led you to click the shutter in the first place.



Capturing Emotion

in Underwater Photography

In trying to photograph the scene as a whole, you do not get an idea of the emotion one feels during the dive.



By changing the shooting point and managing the lighting in a different way (left), I got an image that conveyed something more, thanks also to the human presence, which allows the viewer to identify with it.

As I got closer (right), I started to capture images that conveyed emotion, because they were closer to the point of view I had during the dive.



The big question

A question one should always ask oneself when taking a shot is, "Why am I about to press the shutter button?" What is it that has struck you about the subject and moved you to decide to take the shot? From here, the photographer should try to control emotions and think about what one can do to make the photograph convey one's emotions, even to people who have never put their heads underwater.

The do-over dive

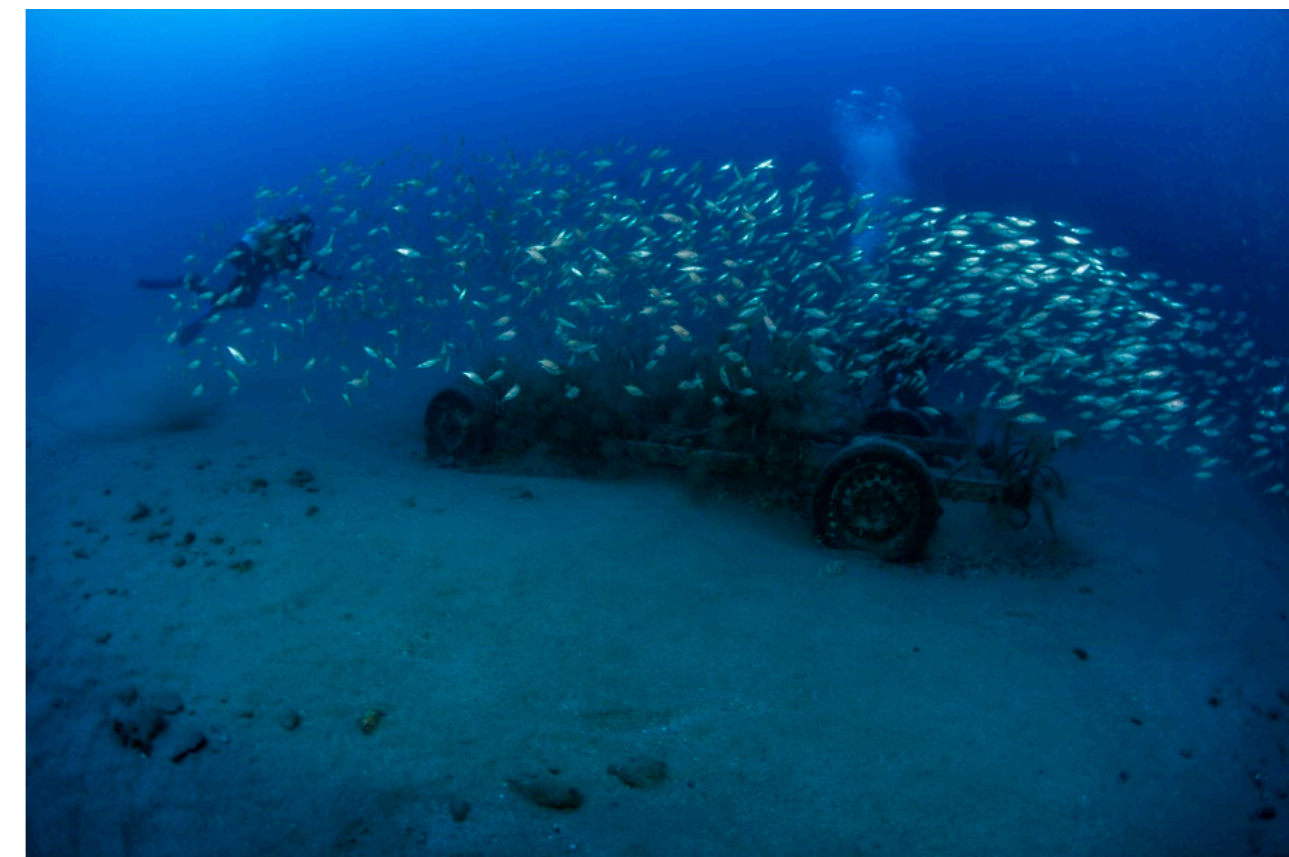
This summer, I happened to dive in a place I did not know. It was on a sandy bottom where there was a trolley for a dinghy transport and a shoal of trumpetfish were all around it. During the first dive at this site, I started shooting,

following my emotions. But then, when I returned topside and had a look at the images on a computer monitor, they did not satisfy me.

I had wasted a lot of time underwater, experimenting with how to get the lighting right, and how to get the right framing for the composition, in order to take a shot that encapsulated the emotion of being there, in the middle of this compelling underwater scene. So, I redid the dive, just to be able to focus on shooting, already knowing what kind of "show" I would find at this dive site.

Direct eye contact

Even if we photograph a fish, we can convey an emotion to whomever views the photograph. Instead of shooting a fish from



This too is not an image that arouses emotion, but it is a documentary image.



The photograph of a fish from the side (right). As beautiful as it is, it does not arouse emotions. However, a head-on photograph of the nose of the fish (above) allows one to “look the fish in the eye,” arousing many more emotions in the viewer.

the side, we can shoot it (head-on) from the nose, where there will be direct eye contact with the fish, and thus, the viewer. Those who view the image will then find themselves looking the fish in the eye, and this will arouse more emotions.

Lens choice

When one makes one's very first night dive, one is usually overwhelmed by emotions, including a sense of fear and bewilderment, but also amazement. Then, with experience, one learns to control these emotions, and as a photographer, transfer them to whomever views the photographs one takes during a night dive.

The lens that best captures the feeling of night diving is the fish-eye lens, with a minidome,



which allows one to get close to a subject while setting it against the blackness of the surrounding water. And, where available, place divers in the background, with their torches on, to emphasize the strange reality of a night dive for those who have never gone underwater.

Emotion



Documentary image (above); Emotional image (top right)

With a wide angle, you can shoot an animal in motion and give the sense of nocturnal immersion, as in this photo of a stingray (right).

Surely, the encounter with a common torpedo, or eyed electric ray (*Torpedo torpedo*), is special, even more so at night (right). However, by shooting in macro, you lose the "feeling" of the thrill of night diving.



On a night dive, a squid is photographed darting away, annoyed by divers, whose lights can be seen in the black-water background.



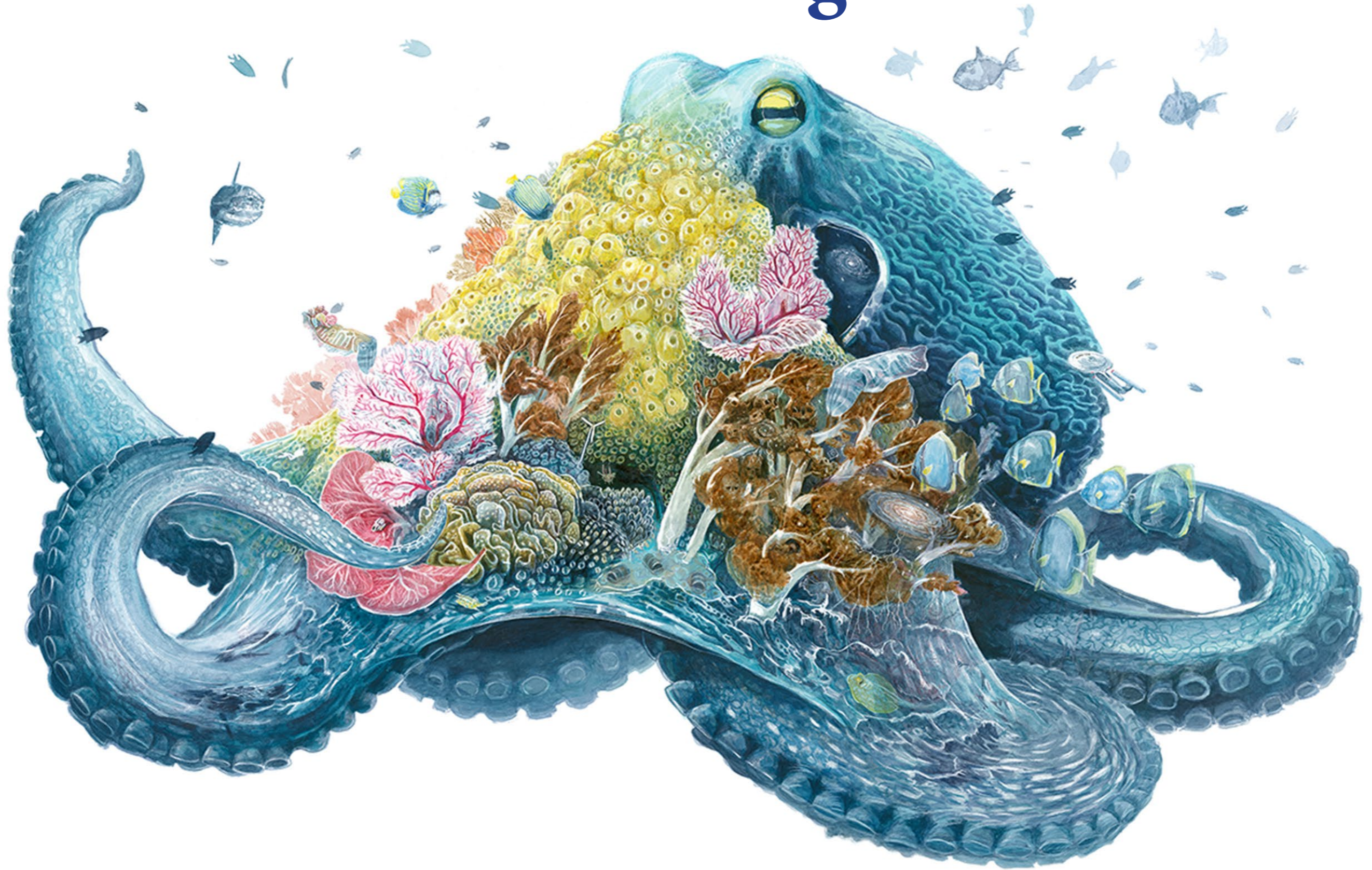
Pair of golden coral shrimp, *Stenopus spinosus*, peep out from under a ledge. Photographed on a night dive.

Final thoughts

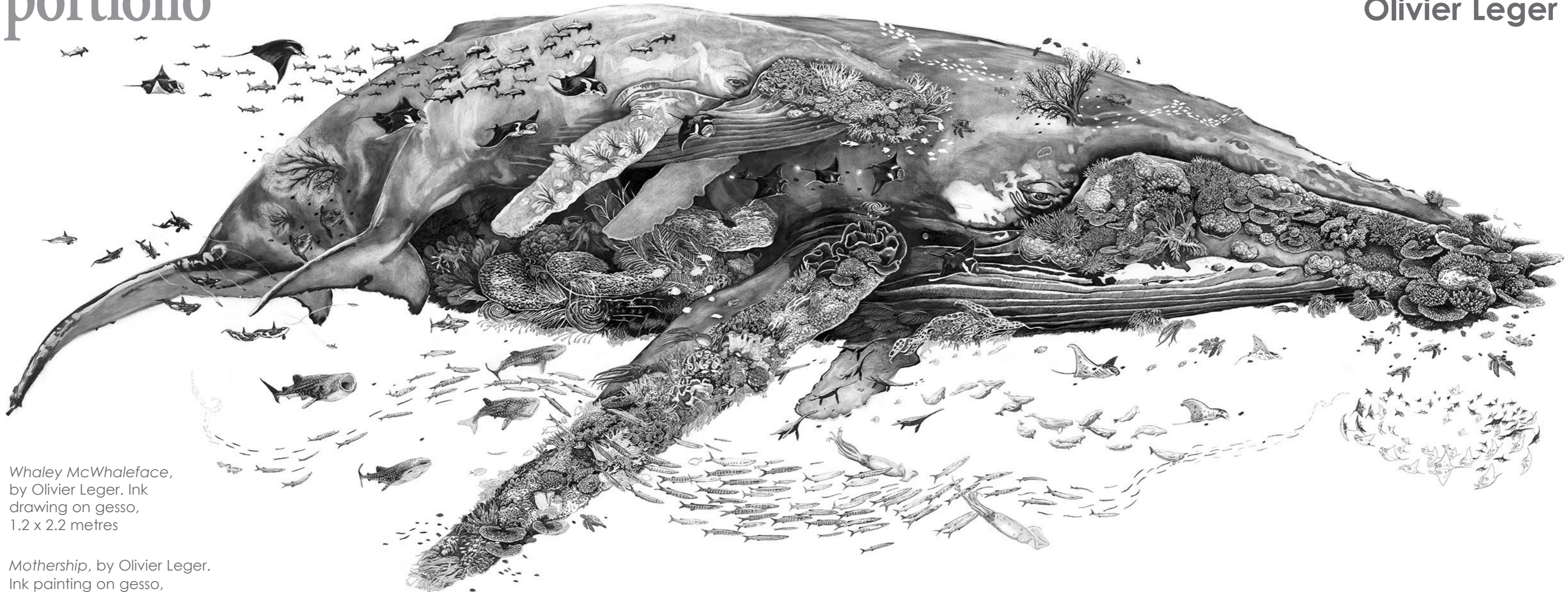
In addition to taking beautiful photographs on a technical and aesthetic level, always try to create emotional images. Try to involve those who will view the photograph and convey to them what you felt in the moment you took the shot. ■

Cristian Umili has been taking underwater photographs since 1990, starting with a Nikonos camera and today with digital reflex cameras. Since 2004, he has been a commercial photographer, with clients such as Seac Sub, Scubapro and Cressi Sub. A member of the Ocean Artist Society, he is represented by Mondadori Portfolio and collaborates with Scubazone. Visit: cristianumili.com.

Olivier Leger



P O R T F O L I O



Whaley McWhaleface, by Olivier Leger. Ink drawing on gesso, 1.2 x 2.2 metres

Mothership, by Olivier Leger. Ink painting on gesso, 60 x 80cm (previous page)



Detail from the artwork, *Whaley McWhaleface*

British artist and avid diver Olivier Leger creates large-scale fineliner pen drawings and colourful ink paintings that celebrate the diversity and interconnectedness of our blue planet, drawing attention to the threats the oceans face. In his highly intricate artworks, viewers will discover marine species such as octopuses, sea turtles and whales carrying living worlds on their backs, giving sanctuary to a diverse range of sea life. X-Ray Mag interviewed the artist to learn more about his creative process and perspectives on the underwater world.

Interview by G. Symes
Images courtesy of Olivier Leger

X-RAY MAG: Tell us about yourself, your background and how you became an artist.

OL: From a young age, I found it easier to explore the world and my ideas through images rather than words. After graduating with a fine arts degree, I found my interest and concern for the natural world finding its way into the drawings I made.

Entering one of my drawings into a local art competition was the catalyst to an unexpected career, and this year, I count myself very fortunate to mark 10 years as a full-time artist.

I work from a home studio in Leicestershire,



To give the viewer a sense of scale, the artist stands with his original artwork, *Whaley McWhaleface*.

Seahorse, by Olivier Leger
(below). Ink drawing on
paper, 70 x 50cm

United Kingdom, and exhibit regularly at art fairs and exhibitions around the country.

X-RAY MAG: Why marine life and underwater themes? How did you come to these themes and how did you develop your style of painting and drawing?

OL: It started with an interest in the interconnectedness of ecosystems and all life on Earth, which over time focussed into a fascination with marine ecology. The more I learnt about life in our oceans, the more it turned my understanding of the world on its head.

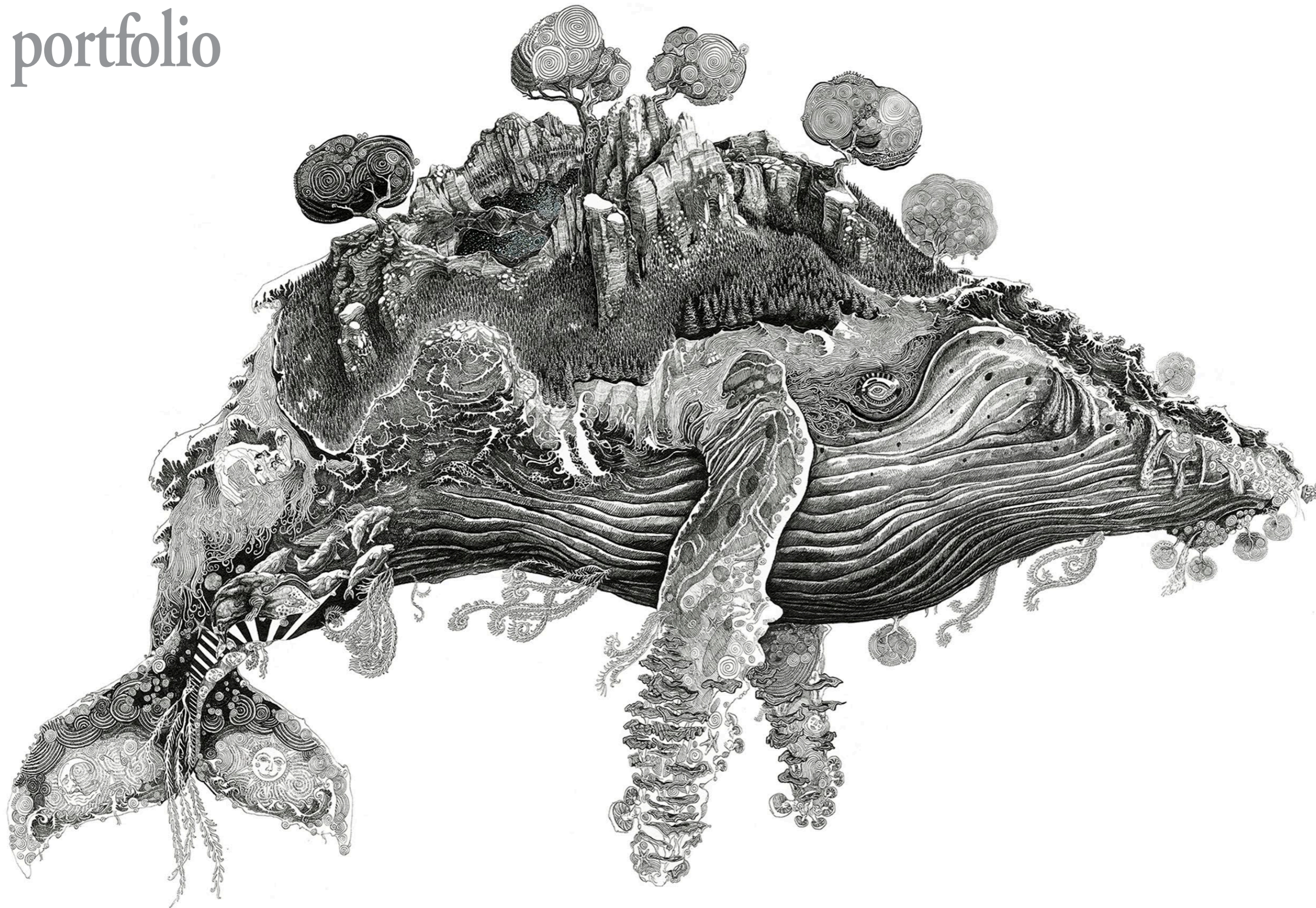
The bizarre creatures and strange phenomenon uniquely found in our oceans broadened my perceptions of life on our planet. An example is siphonophores—I saw a Portuguese man o' war last year in the Azores, and it was mind-blowing to think that this creature in front of me was not, in fact, one organism but a whole colony of organisms, working so closely together that they act as one! Then, learning about underwater salt lakes changed my perspective of the ocean as a complex system, rather than just a volume of water that covers the surface of our planet.

My artwork explores this ocean world, full of surprise and mystery, and always offering something new to discover. The drawings and paintings are complex and intricate, drawing on my understanding of the web of ecosystems that encompasses our whole world.



Origins, by Olivier Leger
(right). Ink painting on
gesso, 80 x 60cm





Humpback Whale, by Olivier Leger. Ink drawing on paper, 50 x 70cm

My art is a direct reflection of the fact that on our one planet, everything is connected.

X-RAY MAG: Who or what has inspired you and your artwork and why?

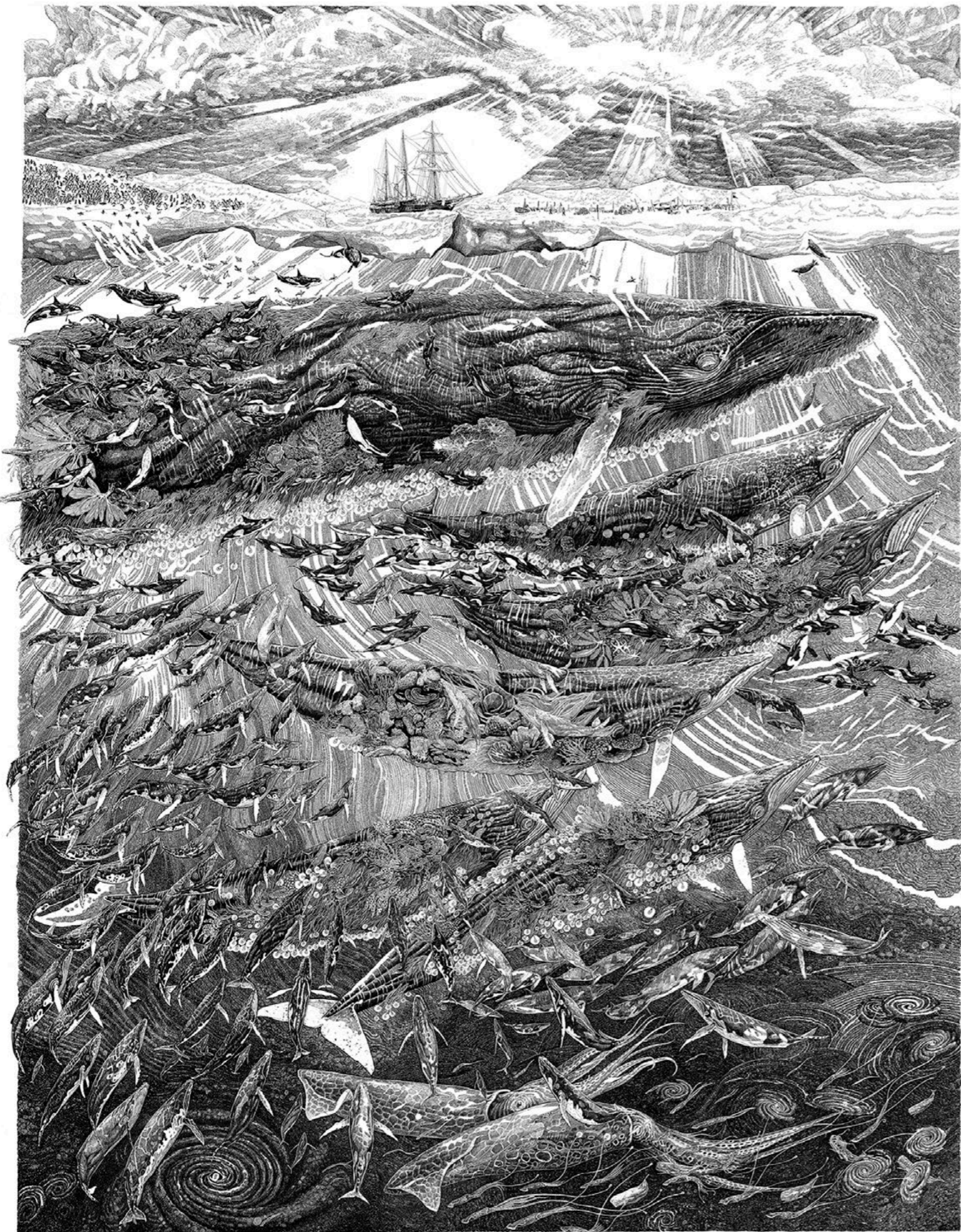
OL: I am inspired by people who use their skills and their platforms to give Nature a voice, including the nature documentary makers who bring the extraordinary beauty of our planet right into our living rooms, making it so accessible for us to learn. They are the reason I became fascinated with our oceans, long before I ever dived and experienced it for myself.

I am also motivated by the growing community of "artists" around the world. I find it encouraging to see how different artists create and use art as a tool for conservation.

The Japanese artist Ikeda Manabu is also an inspiration. His colossal, astounding pen-and-ink artworks show me what is possible to create if you dedicate your time, energy and skill to it.

X-RAY MAG: What is your artistic method or creative process?

OL: I start with the idea of an ocean animal as an "Ecological Godzilla"—a great whale, a turtle or an octopus... These animals bear ocean worlds on their backs. On them, coral reefs and vibrant habitats have established themselves, providing a sanctuary for the



Endurance, by Olivier Leger.
Ink drawing on paper,
1.5 x 1.2 metres

Olivier Leger

marine life of our world. Into that ocean world, I paint all the marine wildlife making their homes in these ecosystems, from cowfish to colossal squid and from sharks to seahorses.

With each artwork, I am attempting to create a symbol. A symbol that illustrates the wonders, biodiversity and interconnectedness of our ocean, but also holds up a mirror to the reality of the state of our ocean. Treading that thin line between celebrating our oceans and communicating the issues drives my whole process.

I do research to understand the animals, the marine ecosystem and the issues. Then, thinking through how to communicate all of that through images is not straightforward, when the issues are so complex, intangible and abstract as changing ocean currents or ocean acidification.

Hiding tiny details within my artworks encourages people to take a closer look. So, in a painting, I will include many tiny scenes, such as some penguins making their escape from a pod of orcas.

Working in fine-tipped pens or very fine paintbrushes with ink enables me to achieve the tiniest details. I have recently made the switch to colour painting in order to better capture the vibrancy and intricacy of coral reefs and marine life. And I have fun hiding some unexpected details. For example, you will almost always find

a scuba diver exploring somewhere in my paintings!

X-RAY MAG: What is your relationship to the underwater world and coral reefs? Are you a diver or snorkeller? How have your experiences underwater influenced your art? In your relationship with reefs and the sea, where have you had your favourite experiences?

With each artwork, I am attempting to create a symbol. A symbol that illustrates the wonders, biodiversity and interconnectedness of our ocean, but also holds up a mirror to the reality of the state of our ocean. Treading that thin line between celebrating our oceans and communicating the issues, without turning people off, drives my whole process.

OL: I am very fortunate to have experienced the ocean by diving. It helped me realise that there is a whole other world hidden under the waves. We are really a planet of two worlds, the land and the ocean. It has given me a new understanding and appreciation for this great wilderness on our planet that is so full of life.

Each dive changes the way I

approach my artwork, whether that be composition or content, in inexplicable ways. Whilst diving, I take photos and videos to use as reference images back in the studio.

Diving also helps keep me grounded in reality. It keeps my eyes open to the developing problems, such as coral bleaching, plastic pollution and algal blooms, that are otherwise hidden under the beautiful waves.

My most memorable underwater experience was meeting an inquisitive octopus on a dive off the Azores. As I steadied myself in the current by pinching on a rock, to stop and watch an octopus resting on the rock shelf for a while, it reached out a tentacle, a sensation which took me aback at first! I was lucky to stay with it for a few minutes whilst it explored my hand. It was fun and exciting to interact with another creature that seemed as interested in me as I was in it, and the experience helped me appreciate their intelligence and curiosity.

X-RAY MAG: What are your thoughts on ocean conservation and coral reef management and how does your artwork relate to these issues?

OL: It is clear to me that we are at a critical juncture, where the decisions and actions we take now will determine the fate of the

Olivier Leger



I hope that some will walk away from my artworks with a renewed appreciation for our blue planet, and maybe even a new idea, question or perspective on their relationship with it.

I hope that people have fun exploring my drawings and paintings, that they make them smile, and that they discover something new. And I hope that the artwork promotes dialogue, change and action.

— Olivier Leger

planet. We are seeing and experiencing the devastating impact of the changes we are causing to the Earth's systems. But science tells us that we can stem the tide, if we transform humanity's relationship with the natural world and put our planet first.

We have the opportunity to protect our natural world, to preserve its beauty and its wonders, and also the vital function it offers us (if you want to see it from a human-centric perspective) and all life we share Earth with.

Our oceans are the largest ecosystem on the planet and supports every single living being on it. When I started off as an ocean artist a decade ago, I wanted to celebrate the wonder of life in our oceans through my artwork, in the

hope that it would inspire a desire to protect them. I shied away from addressing the negatives because I thought it would turn people off. But I am at the point now where that is no longer good enough, and I am now addressing these issues directly in my artwork.

We still have a beautiful world with so much to be grateful for and so much worth fighting for, and I want to celebrate that. But in order to respect the ocean, I also need to reflect these issues in my compositions. I am trying to capture the moment in time we find ourselves in, to paint things as they are, the good and the bad.

As a small creative business, I am committed to operating as environmentally friendly and sustainably as I can. For example,

I source materials for my prints, products and packaging to avoid, where possible, the use of virgin, single-use and non-recyclable materials. And every print purchased plants a mangrove tree through Only One. I realise it's not perfect, and I am continually looking for ways to improve.

X-RAY MAG: What is the message or experience you want viewers of your artwork to have or understand?

OL: I hope that some will walk away from my artworks with a renewed appreciation for our blue planet, and maybe even a new idea, question or perspective on their relationship with it.

I hope that people have fun exploring my drawings and paint-

ings, that they make them smile, and that they discover something new. And I hope that the artwork promotes dialogue, change and action.

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?

OL: I think the biggest challenge and opportunity artists, and especially ocean artists have, is to use our artwork to say something. In order to communicate effectively, the challenge is striking that delicate balance between creating engaging, approachable artwork whilst also addressing the issues.

My other advice is to think outside the box for ways to reach audienc-



Endurance, by Olivier Leger. Pen and ink on paper. Close-up detailed view of the artwork (top left)



es with your artwork. Of course, social media provides a great platform to reach an international audience. Also consider non-traditional institutions and opportunities to reach people from all walks of life with art.

X-RAY MAG: How do people—adults and children—respond to your works?

OL: It is really fun watching people discovering all the little details hidden in my artworks, when they spot their favourite animal, or something unexpected like a plesiosaur or a treasure chest, and their faces light up. Kids are great explorers; they are curious and not inhibited by preconceptions of art.

I often hang magnifying glasses alongside my work as an invitation for someone to pick one up and take a closer look. It's like "Where's Wally?" but with whales... "Where's Whaley?!"

X-RAY MAG: What are your upcoming projects, art courses or events?

OL: I have just started my largest, most ambitious painting to date! *Atlas* is a 2.1 x 1.8m painting of a turtle bearing a coral reef on her back.

I will be painting a coral reef full of biodiversity, with a wonderful multitude of animals living within and around her, from great whale sharks to the tiniest cowfish. I will also be painting the issues, like coral bleaching and plastic pollution. And I will be addressing less tangible



Leviathan Ray,
by Olivier Leger.
Ink drawing on paper,
140 x 170cm



Work-in-progress, *Atlas*,
by Olivier Leger.
Ink painting on gesso,
2.1 x 1.8 metres

issues such as shifting baselines, or environmental generational amnesia, the idea that what we consider to be a healthy environment now, past generations would consider to be degraded, and what we consider to be degraded now, our children will consider to be healthy or "normal."

Painting *Atlas* is my effort to tell the story of the challenges and opportunities facing our blue planet at this moment in time and help protect the ocean that I love.

I anticipate *Atlas* will take me 18 months to complete. I will share photos of my progress on my social media, so please follow me to see it come to life over the coming months.

You can also watch *ATLAS*, a short documentary which follows my journey over the summer of 2022, as I embark on painting *Atlas*. Throughout it, I grapple with my role as an ocean wildlife artist and whether art can inspire change. You can watch it for free on my YouTube channel (youtu.be/QxSa0DUK9gg).

X-RAY MAG: Lastly, is there anything else you would like to tell our readers about yourself and your artwork?

OL: I am a wannabe marine biologist at heart, keen to learn more about marine life and the opportunities and challenges facing them, so that I can better communicate them through my artwork. So, if you have got a research or conservation project that I could get involved in, I would love to hear from you! ■

For more information or to purchase prints, please visit the artist's website at: olivier-leger.com, or follow him on Instagram at [@olivier_leger](https://www.instagram.com/olivier_leger). To see the documentary video about the artist's work *ATLAS*, go to: youtu.be/QxSa0DUK9gg

The artist at work on *Atlas* (top right) and *Mothership* (right)

