



GLOBAL EDITION
Apr/May 2022
Number 111



Belgium
Laplet Slate Mine

Cancun
Whale Sharks

Sweden
**Hudson
Plane Wreck**

Turkey
Bodrum

UW Photo
**Compact
Cameras**

Contributors' UW Pix
**Spots, Stripes
& Stars**

COVER PHOTO BY KATE JONKER

INDIAN OCEAN
Mayotte

DIRECTORY

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COVER PHOTO: Tiny, 3cm-long horned blenny, *Parablennius cornutus*, in Cape Town, South Africa, photographed with a Scubalamp OSD snoot.
Photo by Kate Jonker (katejonker.com)

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Tubular hydroid in Cape Town, South Africa, shot with a Scubalamp OSD snoot. Photo by Kate Jonker



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MIDE 2022...LET'S KEEP DIVING



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We are excited to share that the next installment of the Malaysia International Dive Expo (MIDE) is scheduled from **27-29 May 2022** at Hall 3, World Trade Centre, Kuala Lumpur.

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Peace

Penning these editorials is frequently a struggle.

Coming up with new topics or pressing matters to address can often be a real challenge. Sometimes I simply do not have anything new to add to what I have already said before, and on a few occasions, I suffer plainly from writer's block.

But this time, I have struggled for a different reason.

This publication is about diving and the aquatic environment, right? It is supposed to be about the joys and adventures with which diving enriches our lives. We also cover aquatic sciences, marine life behaviour, and environmental protection and politics, for enlightenment's sake—because we cannot protect what we love, if we do not understand it nor see what is going on beneath the waves.

However, today, it is the thunder of war in Ukraine that is so troubling and disturbing. I need not go into any details as it is all over major news channels 24/7. Against this backdrop of conflict, diving, and the various ongoing challenges we face in the

international dive industry and community, just seem to pale in comparison. And I am not very good at pretending that the geo-political situation does not weigh heavily on my mind.

Diving is a luxury, not a necessity. However, freedom and democracy are, in fact, necessities.

As much as diving and the aquatic world have been my life, I cannot and will not stick my head in the sand and not take a stance when it really matters, and very important issues are at stake. This platform may not be the best-suited place for it, and its range may be limited to the community of divers and ocean lovers, but it is the only soapbox we've got, upon which we may stand.

Let me be perfectly clear: Like the rest of the free world, we stand firmly with the Ukrainians and their fight for freedom and independence, and we are against brutal aggression and totalitarianism. It is also our values and freedoms that they are fighting to defend.

We want peace for all, and hope a peaceful resolution

and an end to the violence can be found.

"Democracy dies in darkness" is the catchphrase used by the *Washington Post*. And it does. It is therefore now up to the rest of us to cast enough light across the new iron curtain and illuminate a new, brighter, and above all, peaceful future.

— Peter Symes
Publisher & Editor-in-Chief

How you can help

Below are just a few of the organizations requesting much-needed aid to help ease the humanitarian catastrophe and refugee crisis unfolding in Ukraine, where an estimated 11 million people have fled from their homes in war-torn regions, according to the United Nations. Find a more extensive list of organizations on the European Union [website](#).

- UN Refugee Agency
- UNICEF
- Doctors Without Borders/ Medecins Sans Frontieres
- Voices of the Children
- International Committee of the Red Cross
- Save the Children



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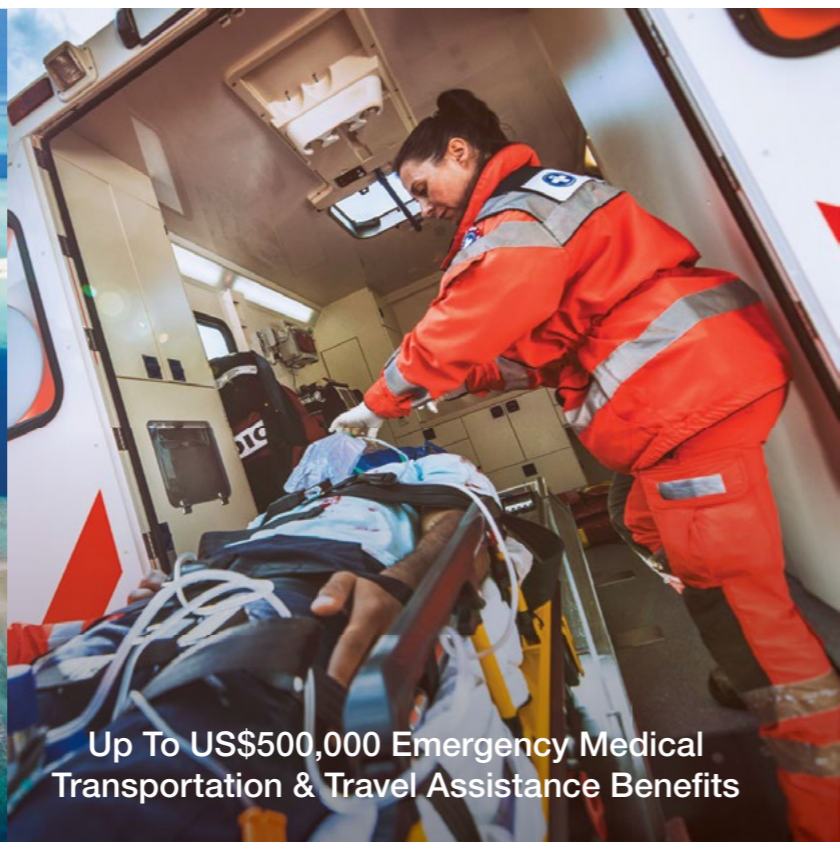
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Medical & Safety Consultations	✓	✓
Annual Individual Membership	US\$40	US\$75
Annual Family Membership	US\$60	US\$100



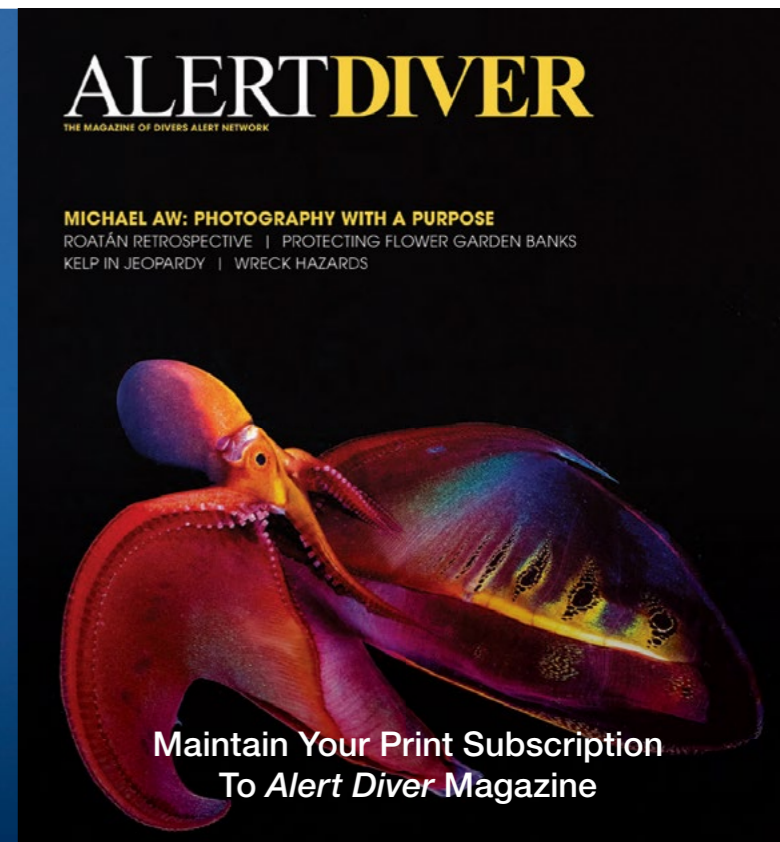
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NEWS

from the deep

Edited by
Catherine GS Lim

Expedition team member on the Triton submersible *Limiting Factor* during the expedition to the deepest point in the Atacama Trench



First-ever crewed dive into Atacama Trench

Caladan Oceanic conducted the first-ever crewed dive to the deepest point of the Atacama Trench (Peru-Chile), the deepest trench in the southeastern Pacific. The maximum depth recorded at the Atacama Trench's lowest point was 8,069m.

On 21 January 2022, two men dived the first-ever crewed dive to the deepest point of the Atacama Trench, the deepest trench in the southeastern Pacific.

This feat saw explorer Victor Vescovo, Founder of Caladan Oceanic, and Osvaldo Ulloa from the Millennium Institute of Oceanography (IMO) descending to 8,069m below sea level, in the submersible *Limiting Factor*. This dive was the first in the Chilean leg of the Ring of Fire Pt 2 (2022) expedition.

Vescovo described the experience as a great privilege to pilot the first human descent to the bottom of the Atacama Trench with Dr Ulloa: "Being able to glide along the seafloor

for three hours, personally investigating interesting points with someone who has studied the area for much of their career, was just fantastic."

"Together, we witnessed some amazing evidence of what appears to be more examples of chemosynthesis in the world's deep ocean trenches. Here, however, we saw long bacterial tendrils coming off of rock faces that

never see any sunlight, and obtain their energy from the minerals and gases seeping from the rocks, surrounded by a freezing seawater environment. Just extraordinary," he added.

The expedition's objective was to conduct extensive bathymetric map-

ping of the seafloor in the exploration area and to collect samples at various depths of the trench. By mapping the seafloor, it would be possible to determine where to install sensors for IMO's future IDOOS (Integrated Deep Ocean Observing System) project.

This project would establish the first observation system anchored in the deep ocean along Chile's coast to study the structure and temporal variability of the area's physical geochemical and biological conditions.

Subsequent missions include warship search expeditions to the Midway and Samar oceanic battlefields, the first-ever human-occupied dives to the bottom of the Yap and Palau trenches, a scientific dive to the deepest point of the ocean, Challenger Deep, as well as dives to the Manila, Ryukyu, Izu-Ogasawara, Japan and Kuril-Kamchatka trenches in cooperation with key scientists from the Japan Agency for Marine Earth Science and Technology (JAMSTEC).

However, first things first.

Since March 2022, according to Vescovo's Twitter feed, both the expedition ship *Pressure Drop* and the *Limiting Factor* submersible have been undergoing refit and maintenance to prepare them for these upcoming missions. The expedition is expected to resume in April.

About Caladan Oceanic

Caladan Oceanic is a private company dedicated to the advancement of undersea technology and supporting expeditions to increase the understanding of the oceans. Founder Victor Vescovo, a former Commander in the US Navy, has long had a passion for exploration and has summited the highest peak on all seven of the world's continents including Mount Everest, and skied at least 100km to both the North and South Poles. ■

SOURCE: CALADAN OCEANIC MEDIA RELEASE



Explorer Victor Vescovo (left), Founder of Caladan Oceanic, along with Dr Osvaldo Ulloa, Director of the Instituto Milenio de Oceanografía (IMO), have completed the first-ever crewed dive to the deepest point of the Atacama Trench

CALADAN OCEANIC / PRESS RELEASE



Edited by
Peter Symes

In a report published in the journal *Science*, a team of Japanese researchers described a species of bacteria that can break the molecular bonds of one of the world's most-used plastics—polyethylene terephthalate, also known as PET or polyester.



USER: FLOCKINE / PIXABAY / PIXABAY LICENCE

Plastic-eating bacteria to the rescue?

A bacterium can use the clear plastic that is used to make clothing fibres and drink bottles as its main source of nutrients, degrading the plastic in the process.

Plastic pollution is a gigantic problem. Our beaches and waters are littered with plastic, marine life ingests it or gets ensnared and particles are entering our food web and organisms. Microplastics are everywhere now.

Humans produce an enormous amount of plastic and a huge fraction of this goes to waste. It may only be a small fraction of this that ends up in the ocean—but the seas may still be absorbing more than 10m tonnes of plastic every year. Aside from the danger the plastics themselves pose, they also contain a lot of additives that

leach out into the water.

The solution is not to stop using plastics altogether, because they are incredibly useful. For example, plastic bottles are far lighter than glass ones, so transporting them requires less energy and releases a smaller amount of greenhouse gases.

A surprising ally

We obviously need a revolution in how we handle plastics, and this is where the micro-organisms come in. A handful of microbes have evolved the ability to digest certain plastics, breaking them down into their component molecules.

The clear plastic that is used to make clothing fibres and drink bottles is called polyethylene terephthalate (PET). Like all plastics, the material is made up of long string-like molecules assembled from smaller molecules strung together into chains. Strong chemical bonds make

these chains long-lasting—exactly what you do not want in single-use plastic.

A team of Japanese researchers has succeeded in finding a new strain of bacterium, called *Ideonella sakaiensis* 201-F6, which can not only grow on pieces of PET but also use PET as its main source of nutrients, degrading the PET in the process. The key to this ability was a pair of enzymes made by the bacteria.

These tiny organisms could soon play a key role in reducing plastic waste and building a greener economy.

Reports of plastic-digesting microbes date back to at least the early 1990s. The earliest examples were arguably less remarkable because they could only break down plastics that were already biodegradable. But by the 2000s, researchers had found enzymes that could tackle tougher plastics. ■

SOURCES: SCIENCE

Possible cancer drug discovered in a sea squirt

Could the cure for melanoma—the most dangerous type of skin cancer—be a compound derived from a bottom-dwelling sea squirt?

A naturally produced melanoma-fighting compound called "Palmerolide A" has been found in a microbe that lives in *Synoicum adareanum*, a species of ascidian common to the waters of Antarctica's Anvers Island archipelago, where it grows in small colonies.

Ascidians, or "sea squirts," are primitive, sac-like marine animals that live attached to ocean bottoms around the world, and feed on plankton by filtering seawater.

To survive in the harsh and unusual environment of the Antarctic seafloor, ascidians and other invertebrates such as sponges and corals have developed symbiotic

relationships with microbes that play a role in photoprotective pigments, bioluminescence and chemical defenses.

While Palmerolide A was isolated from the ascidians, researchers believe that the compound is produced by bacteria that are naturally associated with *S. adareanum*. ■

SOURCE: ENVIRONMENTAL MICROBIOLOGY



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BILL BAKER / USF

Synoicum adareanum, pictured here with a starfish in 80ft of water near Bonaparte Point, Antarctica.

Edited by Peter Symes

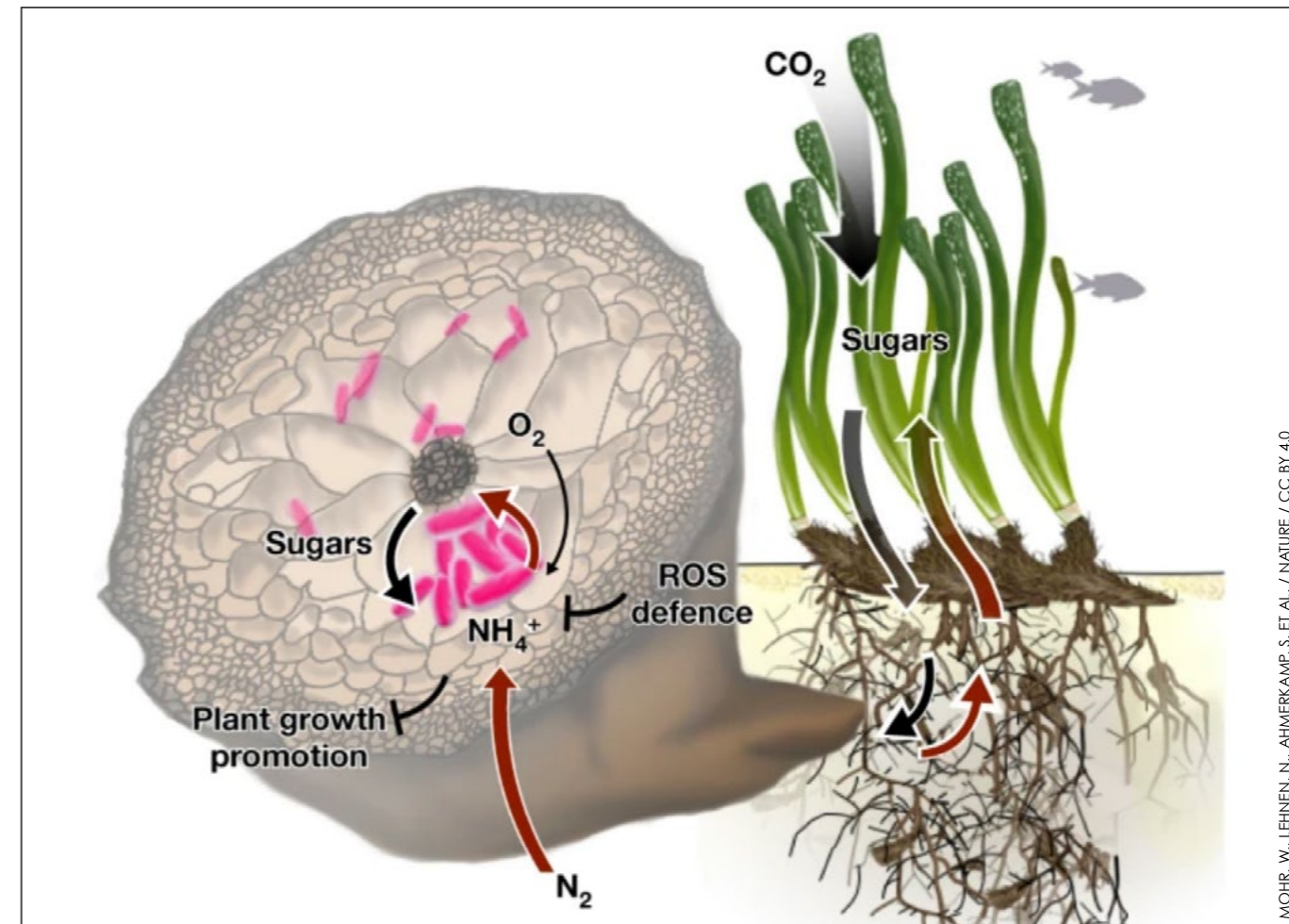
Schematic of the symbiotic interaction between *Celerinatantimonas neptuna* (magenta) and *P. oceanica*, indicating the transfer of fixed N from N₂ fixation (dark red arrows) and plant-derived sugars (black arrows). The potential for further plant growth promotion and defence mechanisms is also indicated. (ROS: reactive oxygen species)

Seagrasses are natural carbon dioxide sink, thanks to symbiotic bacteria

Thanks to a symbiosis between seagrass and a nitrogen-fixing marine bacterium, seagrasses remove large amounts of carbon dioxide from the atmosphere and store it in the ecosystem.

Seagrasses need nutrients to thrive, particularly nitrogen (N). Up to now, it has been assumed that the nitrogen is taken up by the seagrasses through leaves and roots from the surrounding seawater and sediment.

However, in many of the regions where seagrasses are most abundant, there is little nitrogen to be found. Furthermore, while nitrogen is abundant in the sea in its elemental form (N₂), seagrasses cannot use it in this form.



FRÉDÉRIC DUCARME / CC BY-SA 4.0

Posidonia oceanica, commonly known as Neptune grass or Mediterranean tapeweed, is a seagrass species that is endemic to the Mediterranean Sea. It forms large underwater meadows that are an important part of the ecosystem.

Researchers now show that seagrasses in the Mediterranean Sea live in symbiosis with bacteria that reside in their roots and provide the nitrogen necessary for growth. These bacterial symbionts convert N₂ gas into a form that the plants can use.

New species

The bacteria that live in the seagrass roots are a new discovery. The team named them *Celerinatantimonas neptuna*, after their host, the neptune grass (*Posidonia oceanica*).

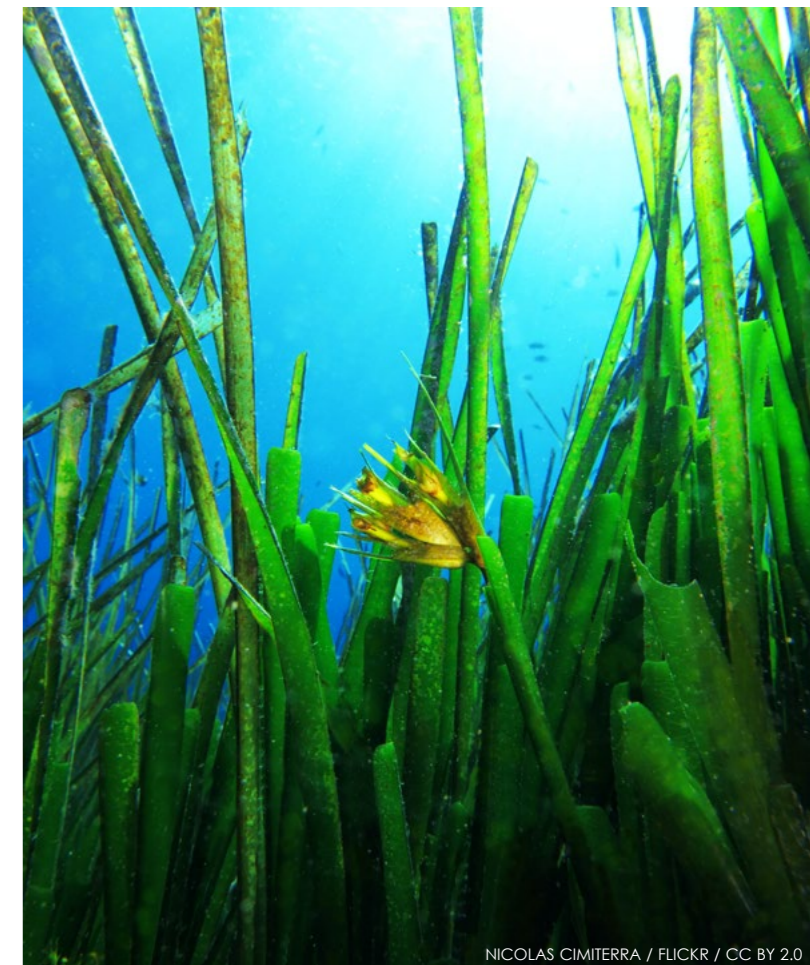
Such symbioses were previously only known in land plants. But since seagrasses evolved around 100 million years

ago from terrestrial flowering plants that migrated back to the sea, perhaps such symbiosis is not all that surprising.

The N₂ fixation is generally assumed to take place in the surrounding sediment by microorganisms that are associated with either the rhizosphere/rhizoplane (rhizoplane is the plant root surface) or with animals residing in the seagrass meadows.

By contrast, terrestrial plants that thrive in N-poor habitats often enter more intimate, mutually beneficial interactions with N₂-fixing bacteria. The bacteria usually reside within the plant tissue, and the interaction between these symbionts and their plant hosts is genetically complex, relying on a sophisticated communication and metabolite exchange. ■

SOURCES: NATURE.COM, MAX PLANCK INSTITUTE FOR MARINE MICROBIOLOGY



NICOLAS CIMITERRA / FLICKR / CC BY 2.0

Neptune grass is a flowering plant

Edited by
Peter Symes
& Catherine
GS Lim



Barred hamlet
(*Hypoplectrus puella*)

Causes of colour patterns in coral reef fish

The wide array of colours and patterns in a group of tropical reef fishes is likely due to a genomic architecture that enables rapid diversification.

The hamlets, a group of reef fishes from the wider Caribbean, sport a stunning array of colours and patterns, but the genetic basis of this morphological variety is unclear.

Although the hamlet lineage is about 26 million years old, the diversification of colours appears to have occurred only within the last 10,000 generations in a burst of diversification that ranks among the fastest in fishes.

Adaptive radiation, the evolutionary process whereby a lineage diversi-

fies over a short period of time, often occurs in geographically isolated or newly formed habitats where colonising species encounter unoccupied niches and reduced selective pressures.

Genomic analysis suggests that colour pattern diversity is generated by different combinations of alleles in a few genes with a large effect.

Such rapid phenotypic diversification has also been documented in some butterflies and finches, which are other examples of tropical radiations that took place in highly diverse and complex environments. ■

SOURCE: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES



Watch a snowflake moray (*Echidna nebulosa*) slither up a ramp on land and swallow a piece of squid. [See video >>>](#)

Snowflake morays can capture prey on land

A particular species of moray eel has been found to hunt not only underwater, but on land as well.

Many of us are familiar with photos of moray eels snug in their caves or crevices, peering out into the open sea.

One might imagine them venturing out to hunt for prey when hunger pangs strike or an unfortunate prey swims by, but do you know that a particular species of moray eels—the snowflake moray—can hunt on dry land as well?

At least, this was what happened when a group of scientists from UC Santa Cruz filmed snowflake morays emerging out from the water onto dry land, then grabbing a piece of meat with their fangs, and swallowing it.

The fact that snowflake morays were able to consume their prey while on

land was surprising, as fish generally needed to be underwater to swallow their prey.

In the beginning, the scientists noticed that the snowflake morays would get on land, grab the piece of food with their fangs and then return underwater to swallow it. “They feel safer in the water, so at first they would just grab the fish and go straight back into the water with it,” said Rita Mehta, an associate professor of ecology and evolutionary biology at UC Santa Cruz.

However, to better observe what was going on, the team trained seven snowflake morays to slither up a ramp onto a platform on land and then swallow a piece of fish first before returning to the water. That “training” took more than five years.

The effort paid off, as the scientists

could then document what was actually happening. It turned out that the snowflake moray has highly moveable pharyngeal jaws in their throat.

Once the snowflake moray sinks its jaws on the prey, a second set of jaws—pharyngeal jaws—swiftly emerges to clamp on to the prey and pull it down the esophagus.

In addition, the scientists also determined that they could feed on land as well as they did in the water. “As a result, these particular morays can utilise very different environments for food resources,” said Mehta.

The findings from the study have been published in the *Journal of Experimental Biology*. ■

SOURCE: JOURNAL OF EXPERIMENTAL BIOLOGY

wrecks

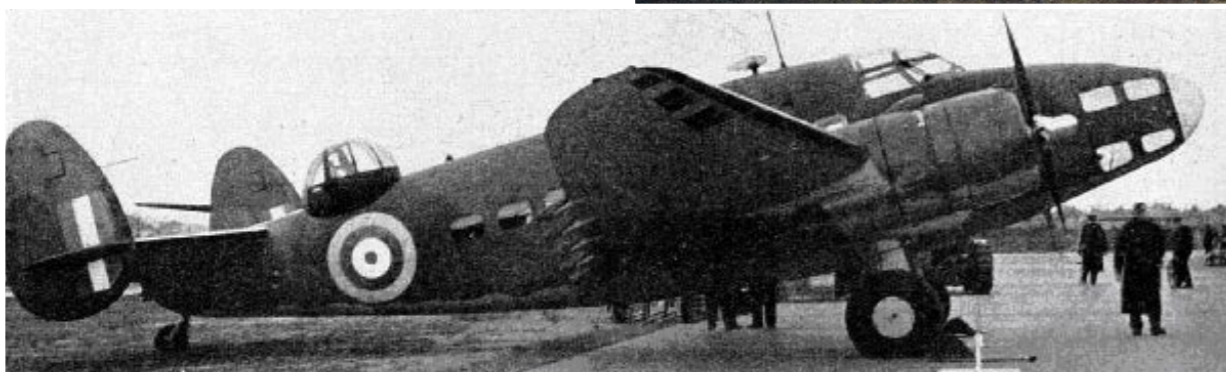
Husband and dive buddy, Glen Paulsen, peers in through the open door to the Hudson plane's hold (right).

Text Susanne Paulsen
Photos by Susanne Paulsen
and Katie Holmdahl

There are not many wrecks in the fjord of Gullmarn. What wrecks there are here should, of course, be slightly inaccessible, at a depth of 64m. For a long time, our dive team had talked about going down to the Hudson plane hidden in the fjord. Now, the wait was finally over.

History

On the night of 23 June 1942, the Lockheed Hudson Mark III G-AGDF Loch Leven—a US-made light bomber, converted into a transport plane—was on its way from Stockholm to Leuchars Airport, north of St Andrews in Scotland, as a courier. In addition to the two crew members, there were also eight passengers on board the plane.



Historical photo of the Lockheed Hudson Mark III aircraft, before conversion to carrier



Hudson Plane Wreck

— WWII Light Bomber in Sweden's Gullmarsfjord

When the plane had engine problems out on the Skagerrak, they returned to the Swedish coast to try to reach the airport at Sätenäs. However, they did not have enough time to get there. They were flying at an altitude of 1,300m when prob-

lems arose with the right engine, which started to burn. The pilot, Erik Engnaes, was forced to make an emergency landing and decided on a so-called ditching of the aircraft, a controlled landing on water, north-east of Lilla Bornö in Gullmarsfjorden.

After the successful emergency landing, the passengers managed to get out on the wing and used the plane's inflatable boat to get farther inland before the plane sank. The pilot and co-pilot swam to shore.

It was half-past 1 a.m. at night





Skipper Kjell puts the dive boat in position above the wreck (above).

WRECK FACTS

PLANE TYPE: Lockheed Hudson Mark III G-AGDF Loch Leven—a US-made light bomber, converted into a transport plane

WINGSPAN: 20m

LENGTH: 13.5m

HEIGHT: 4m

PILOT: Erik Engnaes

TELEGRAPHIST: Lars Larsen Bergo

ment before continuing down the line. The next five minutes felt like an eternal repetition of the steps of breathing, equalising pressure, and balancing. I looked at my dive computer: 35m, 47m, 54m... ten metres left to go. The darkness was dense. It felt huge, this darkness. Or were we the ones that had shrunk? Despite the fjord's otherwise embracing, protective environment and all the lights, it felt like we were two very small falling stars in infinite space.

Sixty metres. No plane yet. Just the sound of our bubbles and the light

when Anders and Betty Hansson, the residents of the Linhagen farm on Lilla Bornö, heard a bang. They would soon receive an unexpected visit. Their daughters Ingrid and Lilly Andersson also woke up but were not allowed to go out. They looked curiously out of the window, and Ingrid recalled later that there were several people in the garden, as the soaked crew members were allowed to drink hot chocolate in the kitchen. In the morning, the passengers and crew were transported by boat to the mainland and beyond, via two taxis.

The incident was quickly covered up, and Swedish authorities waited till the following year to salvage courier mail and other items from the plane, to draw as little attention as possible to the incident. The explanation for the cover-up is believed to be that there were passengers on the plane whose presence would be difficult for the Swedish authorities to explain.

After the aircraft was raised and the mailbags recovered, the plane was towed out by Red Company

tugboats and released into deeper waters where it still lies. Everything took place in the greatest of secrecy, but thanks to the daughter Ingrid Andersson, who witnessed the event, and also photographed everything in secret from the island, we now have access to both witness information and footage from the occasion.

Getting to the wreck site

The *Flora III* was waiting for us at the bridge where the skipper, Kjell Williamsson, met us with his usual good mood and cheerful laughter.

During the journey into the fjord, we had time for a briefing and some history on the wreck, planning where to place the downline buoy and some usual good stories. At the dive site, Kjell made a few sweeps with the boat over the area before my husband and dive buddy, Glen, finally threw in the large, heavy wreck marker, which would quickly and accurately hit the designated spot. Kjell navigated past the buoys. Just as we passed them, the aircraft also

appeared on the monitor. This was as good as it gets.

We got ready in concentrated silence. Glen was used to diving wrecks from his time in Denmark, but I had significantly less experience, so I had a few butterflies in my stomach. Curiosity and determination mixed with uncertainty and excitement. The surface was calm with only a few ripples, as we swam towards the buoys that marked the downline. We were quite a way into the fjord, and the fresh water from the stream of Örekilsälven had turned the surface waters in the fjord very brown after the recent rain showers. We prepared our cameras and lamps and began the descent.

Dive One: Like the wall of a metal house

For the first six metres, we could only see one another as weak points of light through the dark layer of fresh water, but then it cleared up. We stopped for a minute to do a final check of our cameras and equip-



The dive boat *Flora III* (above); A spectacular display of colour ended our first day of diving in Gullmarsfjorden (top left).





SUSANNE PAULSEN

Opening of the engine cover on the wreck of the Hudson plane

of our torches sweeping down to the bottom. Slowly, we continued downwards. Still nothing. 63m. There—mussel shells and a small stinging anemone—the bottom, and the downline. The entire projectile of the wreck marker had sunken into the soft golden seabed of the fjord and only the downline protruded from the dark brown mass. There was no risk of it moving, at any rate.

We saw how just the small pressure change from our slow deceleration made the silty bottom rise towards us. Don't stir the silt up now, I thought. We shined our lights into the dark. Nothing. I stayed by the downline while Glen slowly began to move away, trying to spot the plane. He swung his torchlight in wide circles. Like

a lighthouse at night, I stayed put and guarded the downline. The plane could not be far away. A few metres maximum. I felt time ticking by. Finally, Glen waved his lamp. It was the signal that the plane had been found. I left the downline and did two fin kicks to get to Glen.

Something big and grey rose up in front of me, like the wall of a metal house. It was a strange feeling. Visibility was very poor. We were an arm's length from the wreck and could only see a small part of it at a time. The nose and left wing appeared to be thrust down into the seabed. The rest of the plane rose from the bottom like a fallen bird.

Which it was. I saw the wing-mounted engine, which had some

sort of open hatch, and continued upwards along the wing. Above me, the plane continued at a steep angle, but I wanted to see the cockpit. I followed the side of the plane down again, along its small windows. Just above the bottom, one could see straight into the open cockpit. Wow!

Heading up again, along the top of the fuselage, we found the plane's antenna and its small glass dome. Above the glass dome was some sort of box. Placed or original? No clue. Time flew. Already 14 minutes had passed. King crab, cod and anemones lived on and around the plane, but who had time to chat with the fish now? I managed to easily ignore the wildlife and focus only on getting photos of the wreck.



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The exposed cockpit of the plane, with its nose partially buried in the seabed (above); Antenna above the cockpit (right)



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The glass dome on the top of the fuselage, with the green box and the fire extinguisher



SUSANNE PAULSEN

It was difficult to get an overview. A large number of krill were drawn towards our lamp lights, causing a dimming effect on the light cones of our lamps, as if it were not dark enough already! I took some photos and adjusted the angle and position of my strobes a couple of times. There were many particles in the water and lots of krill that reflected the strobe light. Not easy, this... I sincerely hoped that some of the pictures would be good. Glen filmed the wreck, gliding along the fuselage like a submarine in the dark.

Seventeen and a half minutes had passed. We had to go back to the downline. We glided back over the plane and found the wing, which we then followed down again. We swam wide and

Glen shined his torchlight outwards into the dark. Yes, the downline was there, right where we had left it. The ascent could begin. I felt relieved, calm, and at the same time, excited. Everything had gone according to plan.

We were picked up by Kjell and previewed the film and photos before we even got out of our suits. Inland, the light had shifted, and a magnificent rainbow emerged between the rocks. How appropriate—the treasure at the end of the rainbow. We had just found it. The atmosphere on board was as high as Gullmarn's glittering mountain peaks. It had been an exciting day, and something had happened. My curiosity had been aroused, and I had gotten a taste of adventure.

Dive Two: A small bump on the bottom

The period after the first dive on the plane wreck was punctuated by thoughts of when we could dive there again. And again.

The first dive had felt like just a teaser—only a glimpse of something that was never fully explored. Somehow, more questions than answers had arisen, and now we wanted more. Was there a second glass dome? What did the second wing look like? And the rest of the fuselage, was it whole? We absolutely wanted to go down there again and could not stop thinking about it. The weeks went by and finally we found an opportunity.

Finding an opportunity for two more dives was not difficult. If we dived consecutive days, one after

another, we only needed to find the position once, place the downline buoy and leave it until the next day. Now, if only the rest would fall into place. We needed gas. Lots of gas. And more lights, both for the rope and the cameras.

The first day of November brought 12°C (~54°F) temperatures and a gentle southerly wind of 4 m/s (8-9mph). Kjell navigated the dive boat in wide circles around the buoys of lobster traps, which lay like a slalom track along the cliffs of the fjord. No ropes in the propeller, please! We drank coffee, had a light lunch, and finally arrived at the position of the wreck.

The plane was just a small bump on the bottom, and we attempted to aim for it with the wreck marker as well as the last time. With the



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Glass dome on top of the fuselage (top left); A closer view of the fire extinguisher and green box on the plane wreck (top right)



SUSANNE PAULSEN

View into the plane's cargo hold

buoy in place, we circled around it. Hmm, not really good, about 20m from the plane. If we were to circle the plane like a compass, it would be too brief a jaunt for us, considering the amount of time allowed at depth. Up again came the 50kg heavy projectile of the wreck marker. It would be heavy now, with many metres of rope. New plan, new attempt. We circled again. "Now, you probably will not need to swim at all," said Kjell and laughed. Soon, we would understand what he meant.

So, we finally jumped into the water. Line spool, check. Lamps for ascent line, check. Camera, check. Now, it bared down on us again: that same total darkness. This time we reached 60m after five minutes, and even then, we saw something. A tire! And the wing. Visibility was a little better

this time. The rope had been laid loose and free over the wing, and we followed it until we found our cable ties, which we attached in order to clip a lamp to the rope. Below us, the projectile of the wreck marker was completely drilled into the soft sea bottom. What a hit! Thank you, Kjell.

We start orienting ourselves around the plane again. The opening of the door into the cargo area. A window. The glass dome. Above the glass dome, the small green box remained, and above it was a cylinder. There sat a majestic king crab in a nice position, peering out into the darkness. We continued around the dome and took a closer look at the cylinder. Aha! It was a fire extinguisher. The box and the fire extinguisher were overgrown and covered in silt, so they had definitely been lying there for

a while. We dared not touch anything for fear of stirring up silt, but we were curious.

I forced myself to let go of any thoughts of examining the box and continued out onto the wing, which rose obliquely upwards. Glen's torch lights were visible some distance away. I turned before I reached the wingtip, went back towards the fuselage, and continued down below it. Glen was behind me. I saw a round object. What could it be? I swam closer. Several round balls and... oops, a fishing net. Best to give it a pass.

I took a deep breath and slowly ascended. I felt a rope against my cheek. I tried to back off a bit but felt crowded, somehow. There were fishing hooks on the line, which swirled a bit when I released it. Large flakes of 70-year-old aircraft silt threatened

to envelop me. "Get out of here, quick!" raced my thoughts. But I moved very slowly, so I would not get stuck anywhere.

In front of me and above me was the fuselage, and I slid slowly backward and upward, until I ended up at the wing, which descended to the bottom in front of me. Right in front of it was the ascent line, and we were back at our starting point.

Nineteen minutes now. One minute of bottom time left. Time flew down here. We made the signal for our ascent, and Glen released the lamp from the ascent line. Now, a 45-minute ascent awaited us. We made our stops, changed gas, and broke the water's surface after 65 minutes.

When we reached the town of Oxevik, it was already getting dark. We took only the essen-



A king crab sits majestically on the wreck, peering out into the darkness (above); A closer view of the cockpit and parts of the interior of the plane (right)

tials home, filled up our tanks with new gas, and enjoyed a good lasagne. The day's photos and film were reviewed, and a new plan for Sunday's filming and photography was made. Kjell, who has won several Swedish championship titles in underwater photography, shared his advice and tips, after which we made some changes to the lighting plan for the next day. While the batteries for the lamps were being charged, we also "charged our own batteries" in the wood-fired hot tub and ended the day with some good dive stories.

Dive Three: It does not blow below the surface

After a good breakfast, we prepared for the day's dives; however, one cannot be prepared for everything.

The rain had poured down during the night, but now, the rain had

stopped again. Rain at night is good. We like that. If it always rained at night and was sunny during the day, everything would have worked. And the meteorologists had been right—more often than not. We headed out quickly and loaded the boat with a few quick transfers.

The wind was blowing. "Are you going out on this choppy lake?" asked the residents of the area. "Of course!" we said happily. "It does not blow below the surface."

In fact, the wind was not blowing that hard—7 to 8 m/s, maybe. No white geese. We had a good tailwind into the fjord, as we screwed the dive rigs together and prepared our kit. Today, we would just jump in at the buoy. No searching. Wonderful!

Everything felt easy... but that would soon change. Kjell drove us right up to the buoys, and we jumped in. Hanging by the dive ladder, we

were handed our cameras and decompression tanks. Then, we left.

We descended quite quickly and ended up a little askew of the wreck but swam on. I tried to compensate for the current but soon realised that we had a real, proper current to deal with, over which I had no control. We had to abort the dive and were picked up a good distance downstream.

Kjell towed us as we hung onto the boat ladder so that we did not have to get on board again with all the equipment, and calmly drove the boat towards our destination. It took a while. I heard Glen announce the number of yards while I concentrated on just hanging on. It was quite heavy work.

In the end, we could just let go and slide right towards the buoys. We quickly grabbed each line and hung on. It was not possible to release our grip. We got stuck there, and the sweet, brown surface waters splashed

around our mouths at regular intervals. I was starting to get really tired in my arms now.

Once again, we had the notion of staying on the site longer. We decided to make a stop at ten metres to check the equipment, give the OK signal and descend.

The visibility was really zero, and I followed the downline with my hand until I hit Glen's hand. Here, the buoys' ropes met, and I tried to find the one that went downward. Soon, our hands followed one another, and we worked calmly and methodically downwards, with only the sense of touch as a reference.

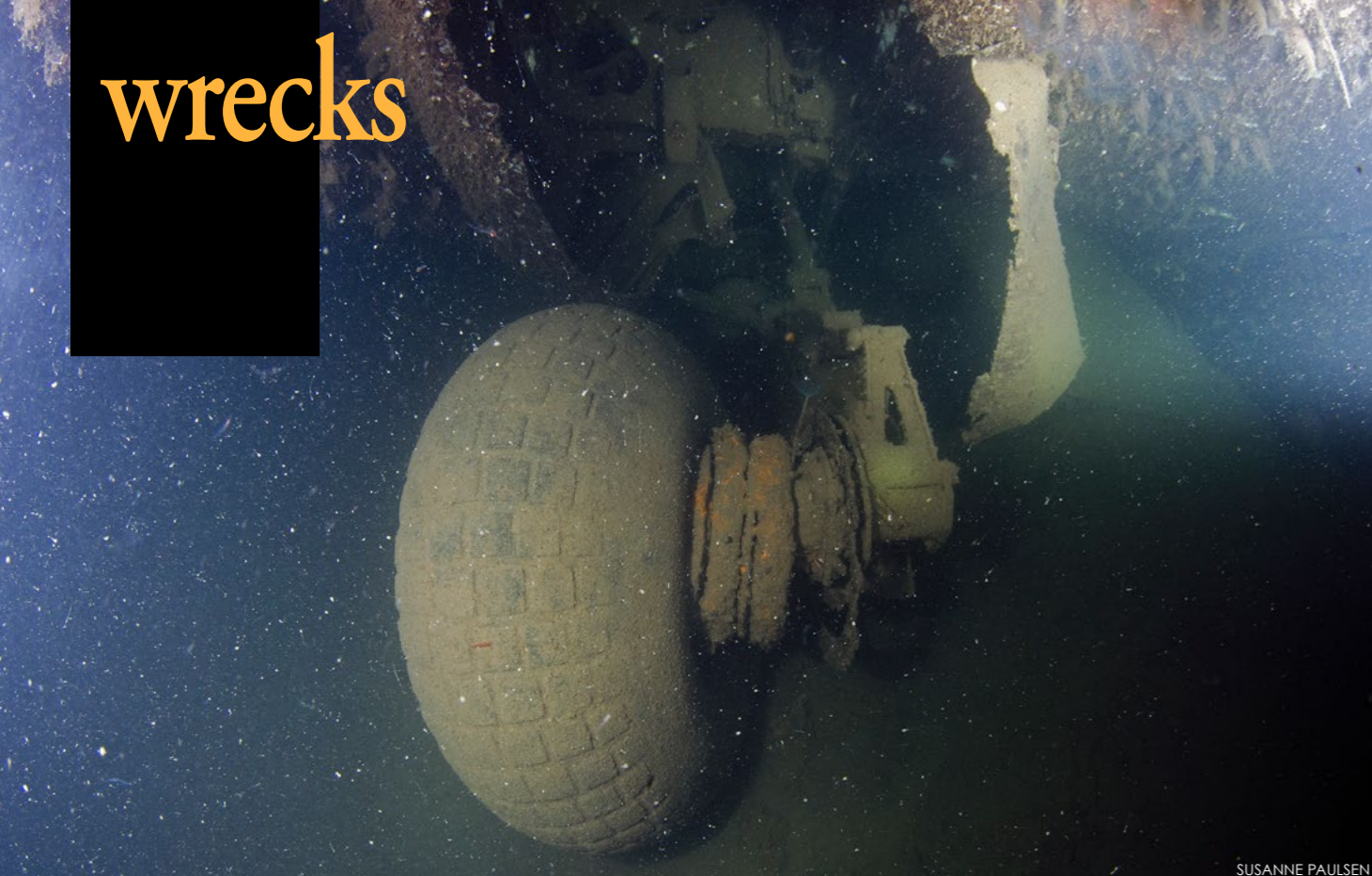
Six metres. At least now I could see my dive computer. It was pitch black and none of our camera lights were turned on. Only the hand lamp hung in place, sending its light downwards along the rope. Ten metres. We stopped, but not for long, took

a breath, turned on the lights, and checked that we were both ok. The cameras had to wait. We continued to descend, making sure to take extra time to breathe out properly.

A calmness came over me—the kind of calm that darkness and breathing under the water's surface instils. It does not blow below the surface, as I said. It felt a bit like coming home when I saw the landing site.

The descent line had straightened out, and Glen hung the lamp in place. Lens caps still covered our lenses, and neither camera nor strobe was turned on. I concentrated on using small movements to get my technique in order and then sank down to photograph the wheel.

We followed our plan and continued heading towards the cockpit. Today, we would try to photograph and film a little farther into the wreck. The cockpit windshield had been



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Landing gear with preserved deck (above); King crab on the broken tail section (right)

pushed out so the crew could get out; hence, the cockpit was completely open and accessible from the exterior. One could clearly see the backrest on one of the chairs as well as some furnishings. Much of the floor was covered with bottom sediment, and I gently stretched my camera into the space and snapped off some frames. Glen followed suit and filmed it.

We also decided to investigate the tail section. We slid up past the windows on the side and continued out along the free wing—all the way out this time. We saw the engine but no propellers. Salvaged? We headed back towards the fuselage on the other side of the wing, going upwards now.

As we thought, there was no other glass dome. It had been removed during the aircraft's conversion from bomber to transport

plane. The fuselage ended abruptly with a break, just before the tail section. A round, black hole led farther into the aircraft, but our torchlights did not reach very far inside. Instead, we looked at some of the splendid king crabs that had invaded the plane. It was literally crawling with them today.

We shined our lights down to the bottom too, to discover, if possible, the missing part of the plane, but we could not really see the bottom from here. Maybe someone got a trawl stuck in the plane and tore it apart? We now moved back along the bottom of the plane, without going under it, where the fishing net was, and headed up to the starting point again. The downline hung there, with its lamp shining welcomingly to us. The gateway to the surface. Dive computer check: 18 minutes today. Good

timing. Now, there was only a rather uninspiring ascent awaiting us.

The minutes ticked by so slowly during our decompression stop that I almost thought time had stopped. The fun part of the dive was done, and now I just wanted to go home and let everything sink in. However, the waves at the surface had not stopped.

After guessing what was on the dive computer for the last few metres, we were back at the buoys. We tried to give the OK signal to Kjell without letting go. Then, it was just a matter of sliding over and sitting glued to the dive ladder steps—no risk of slipping from there.

We felt quite sore in our bodies when we got back on board. Lunch and coffee gave us some strength back, as we returned home. It was a little sad that the diving was over on this adven-

ture to the plane wreck—the small bulge at the bottom of Gullmarsfjord, with all its history. Hopefully, she stays there for a long time, awaiting us in the dark. ■

Susanne Paulsen is a technical diver, underwater photographer and dive writer based in Sweden. With her husband, Glen, she runs Team Paulsen AB, a dive and Poseidon rebreather centre in Gullmarn. Visit: teampaulsen.se

SOURCES:

MOLANDER, L. (2008). FRÅN GULLMARN'S INRE DEL: NÅGOT OM NATUR, MÄNNISKOR OCH HÄNDELSER. MILJÖINFORMATION I VÄST. THE AUTHOR HAS, AMONG OTHER THINGS, INTERVIEWED WITNESSES AND PARTICIPANTS IN THE INCIDENT.

LUFTFARTSHISORIE.NO. LOCKHEED LODESTAR IN NORWEGIAN SERVICE FROM 1941 TO 1950
ORAL SOURCE: LEIF MOLANDER



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Six 17th and 18th-century wrecks off Sweden identified

Maritime archaeologists from the Museum of Wrecks have recently explored and identified six shipwrecks on the sea floor in the Blekinge archipelago of Sweden. To protect the strategic naval city of Karlskrona and prevent attacks by sea, the ships had been sunk in the Djupasund strait.

It has been known for a long time that several old wrecks lay at the bottom of Djupasund between the islands of Tjurkö and Sturkö in the archipelago off the town of Karlskrona in South Sweden.

During the 1780s, a number of ships were deliberately scuttled to build a barrier at the entrance to Karlskrona. The wrecks are culturally important, but today, are invisible and inaccessible parts of the world heritage.

Several of the wrecks have become attractive dive sites but no one knew how many and what they were.

Identification

The Museum of Wrecks' maritime archaeologists have finished their investigation and can now identify the wrecks: the giant ship of the line *Enigheten* (the third largest from the 17th century), *Wasa*, the frigate *Södermanland*, the pleasure craft *Disa*, the brigantine *Pollux* and the skerry boat *Simpan*.

These ships had long and intriguing histories before they ended up as underwater barriers to protect Karlskrona.

A multibeam sonar was used to survey the area, and six probable wrecks were found, in addition to some other historical remains. The survey combined with archaeological documentation, archive material and wood samples taken from the wrecks helped to figure out the ships' most likely identities.

"With the aid of the survey, we were able to focus our archaeological efforts and document the wrecks more methodically," said Patrik Höglund, a maritime archaeologist at the Museum of Wrecks. "Instead of speculating about what's hidden at the bottom, we can now use archaeological documentation to obtain facts about the wrecks in Djupasund."

"The museum has worked out a proposal for a dive trail, where divers can see various exciting details that can also tell us something about the ships," Höglund said. ■

Dive park

The identified wrecks will draw more visitors to the dive park, which is currently being planned in Karlskrona. "The museum has worked out a proposal for a dive trail, where divers can see various exciting details that can also tell us something about the ships," Höglund said. ■

SOURCES: VRAK – MUSEUM OF WRECKS

Whaling shipwreck found in Gulf of Mexico

NOAA announces the discovery of the wreck of a 207-year-old whaling ship, called *Industry*, found on the bottom of the Gulf of Mexico.

NOAA Ocean Exploration documented the brig *Industry* shipwreck in the Gulf of Mexico at a depth of 2,000m below the Gulf surface. The brig sank in the summer of 1836 after a storm snapped its masts and opened the hull to the sea.

The remains of the 64ft-long, two-masted wooden brig open a window into a little known chapter of American history when descendants of African slaves and Native Americans served as essential crew in one of the nation's oldest industries.

Mixed races

Researchers believe that the ship was indeed manned by a crew that featured Black and Native American members, based on documents per-

taining to *Industry's* voyages.

The 64ft-long ship was hunting for sperm whales about 70 miles from the mouth of the Mississippi River on 26 May 1836, when a squall struck, snapping both masts and tearing open the hull. The crew of 15, which included men from Massachusetts and probably some from Rhode Island, was rescued from the capsized ship by another Westport whaler and returned home safely.

The racial makeup of *Industry's* crew would have constrained its options when it ran into trouble, because Black

members would have been imprisoned and potentially sold into slavery if they had docked at a Southern port.

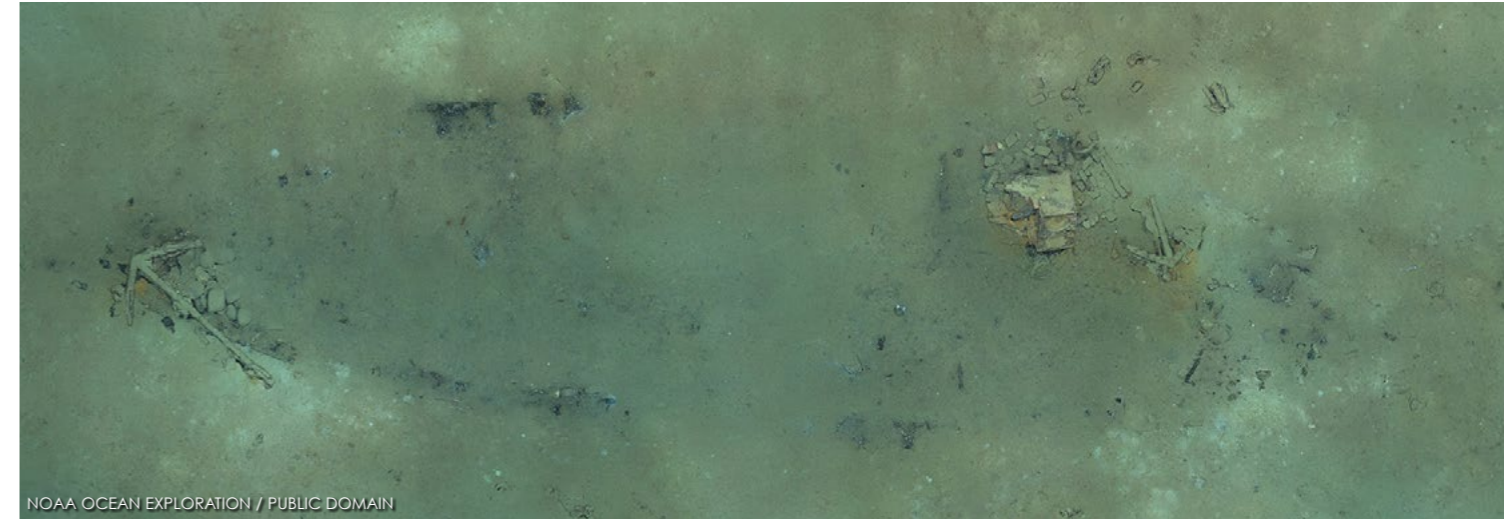
Most whalers avoided the Gulf of Mexico altogether; according to research by Judith Lund, a historian who worked for the New Bedford Whaling Museum, only 214 whaling voyages are known to have sailed in the Gulf from the 1780s through the 1870s.

Discovered in 2011

The ship's remains were first documented in 2011, when a geological data company scanning an oil lease area spotted the carcass of a ship at the bottom of the Gulf of Mexico. Following standard procedures, the company reported its finding to the Bureau of Ocean Energy Management, which logged the wreck as No. 15563 and left it alone.

While the shipwreck is more than a mile below the surface, NOAA is not disclosing its exact location to make it harder for anyone to disturb the site. According to NOAA's Monica Allen, director of public affairs for NOAA research, it is illegal to remove artifacts from the ship, and NOAA plans to leave the site untouched. ■

SOURCE: NOAA OCEAN EXPLORATION



Photomosaic of the *Industry* shipwreck site, showing the outline of the hull of the 64ft by 20ft whaling brig, in sediment and debris, as well as tryworks and two anchors



This anchor was one of two found among the remains of what is likely the 19th-century whaler *Industry*.



FALKLANDS MARITIME HERITAGE TRUST

Taffrail and ship's wheel on the aft well deck of *Endurance*

exceptional outreach programme. Today's celebrations are naturally tempered by world events, and everybody involved in Endurance22 keeps those affected by these continuing shocking events in their thoughts and prayers.

"The spotlight falls today on Mensun Bound, the Director of Exploration, and Nico Vincent, Subsea Project Manager. Under the outstanding leadership of Dr John Shears, they have found *Endurance*. But this success has been the result of impressive cooperation among many people, both on board the remarkable S.A. *Agulhas II* with its outstanding Master and crew, a skilled and committed expedition team and many on whose support we have depended in the UK, South Africa, Germany, France, the United States and elsewhere. The Trustees extend to them all our warmest thanks and congratulations on this historic achievement." ■

SOURCE: FALKLANDS MARITIME HERITAGE TRUST



FRANK HURLEY / STATE LIBRARY OF NEW SOUTH WALES / PUBLIC DOMAIN

The wreck of *Endurance* remains one of the most iconic of all shipwrecks since it was crushed by the sea-ice in 1915, and sank in 3,000m of water.

Shackleton's *Endurance* found

The Endurance22 Expedition has located the wreck of *Endurance*, Sir Ernest Shackleton's ship which has not been seen since it was crushed by the ice and sank in the Weddell Sea in 1915.

What remains of the *Endurance* is 3,000m down in waters that are pretty much permanently covered in thick sea-ice, the same sea-ice that trapped and then ruptured the hull of Shackleton's polar yacht.

Because Shackleton had a brilliant navigator on his ill-fated voyage—a man called Frank Worsley—the expedition had a pretty good idea of where the ship laid on the ocean bottom. Using a sextant and chronometer, Worsley had calculat-

ed the coordinates for the position where the punctured *Endurance* slipped below the floes on 21 November 1915 and recorded it in his diary, which is now in the Scott Polar Research Institute (SPRI) archives.

The Endurance22 Expedition team worked from the South African polar research and logistics vessel, S.A. *Agulhas II*, owned by the Department of Forestry, Fisheries and Environment and under Capt. Knowledge Bengu, using Saab's Sa-beretooth hybrid underwater search vehicles. The wreck is protected as a Historic Site and Monument under the Antarctic Treaty, ensuring that whilst the wreck is being surveyed and filmed, it will not be touched or disturbed in any way.

Donald Lamont, Chairman of the Falklands Maritime Heritage Trust, said:

"Our objectives for Endurance22 were to locate, survey and film the wreck, but also to conduct important scientific research, and to run an



FALKLANDS MARITIME HERITAGE TRUST

Name of *Endurance* on the stern of the wreck

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Can flying ever become truly carbon neutral, or are airframers' claims just another case of "greenwashing"?



Airbus A380 flies on 100% Sustainable Aviation Fuel

Airbus has performed a first A380 flight powered by 100% Sustainable Aviation Fuel (SAF).

Don't we all want to be able to fly to our favourite dive destinations with a net-zero carbon emission? If our flights can be fuelled with Sustainable Aviation Fuel (SAF), we might just be able to travel long distances without a bad conscience over making climate change worse.

Increasing the use of SAF remains a key pathway to achieving the industry's ambition of net-zero

carbon emissions by 2050. Key statistics outlined in the Waypoint 2050 report indicate that SAF could contribute between 53% and 71% of required carbon reductions. SAF is produced from sustainable feedstocks and is very similar in its chemistry to traditional fossil jet fuel. Using SAF results in a reduction in carbon emissions compared to the traditional jet fuel it replaces over the life cycle of the fuel. Many SAFs also contain fewer aromatic components, which enables them to burn cleaner in aircraft engines. This means lower local emissions of harmful compounds

around airports during take-off and landing.

Is it truly "green"?

Depending on the feedstock and technologies used to produce it, SAF can reduce life cycle greenhouse gas (GHG) emissions dramatically compared to conventional jet fuel. Some emerging SAF pathways even have a net-negative GHG footprint, according to the US Department of Energy. ■

SOURCES: AIRBUS PRESS RELEASE, US DEPARTMENT OF ENERGY



Airbus' A380 test aircraft takes off fuelled with unblended Sustainable Aviation Fuel (SAF).

Bringing camera equipment into Mexico may cost you

Op-ed by Scott Bennett and Peter Symes

Be careful in regard to how much camera equipment you bring into Mexico as your secondary or backup equipment could be considered an import, which is liable for considerable taxes.

Following **our report** about divers being charged tax on their personal photo equipment, we wrote to the Mexican tourism minister and contacted some embassies to seek their comments and clarification on the matter. The Mexican Ministry of Tourism never responded to any of our inquiries or requests for comment, and we had to reach out to several Mexican embassies and press them for an answer before we got the following reply from Mexico's embassy in Toronto, Canada.

Mexican embassy's response:

About your inquiry, the Mexican law states that persons who visit Mexico as tourists, can introduce without paying taxes:

Two photographic or video recording cameras; photographic material; three

portable cell phones or other wireless networks; a global positioning equipment (GPS); an electronic diary; a portable computer equipment of the so-called laptop, notebook, omnibook or similar; a portable copier or printer; a burner and a portable projector, with its accessories.

(<https://www.gob.mx/shcp/articulos/lo-que-debes-saber-al-pasar-por-una-aduana-mexicana?idiom=es>)

If travelers want to introduce any additional equipment than what is above stated, they will be required to pay taxes since it will be considered as a temporary import regardless of the purpose.

It would be necessary to review each case to determine if the equipment was contemplated on the list or if it exceeded what is allowed and therefore, should pay taxes.

Our take/conclusions so far
The embassy's response can at best be described as partial, since several of our essential questions were not answered. Among other things, we wanted to know whether they acknowledged that slamming unwitting tourists with such huge fines and leaving them with a very bad experience was counterproductive and painted the country in a negative light.

We also wanted to know what, if anything, was being done to inform tourists of these fees through, for example, tour operators and travel agents. We did not get an answer about these specific points, so we presume that nothing is being done. (It is somewhat telling that the link that the embassy forwarded only exists in Spanish). So, how are tourists from other countries with other languages ever going to find out? ■



Thinking of bringing a back-up housing to Mexico? Think again, as it may cost you a pretty penny.

Mayotte

Under the Baobabs

Text and photos by
Pierre Constant





The oldest of the four large Comoros Islands, Mayotte is 295km west of Madagascar and 67km southeast of Anjouan. An overseas territory of France, it is surrounded by an elliptical barrier reef, 160km long, encircling a lagoon 5km to 10km wide, with a maximum depth of 80m, a dozen passes and dotted with a hundred coral islets. Pierre Constant takes us along on his adventure to this unique and multi-cultural oasis with an intriguing diversity of species both above and below the waves.

The overnight Air Austral flight from Paris, via Reunion Island, landed in Dzaoudzi shortly after midday. The sun was high in the sky. Coming from wintery cold Europe, the temperature shock was immediate. With the 33°C temperature, it was hot and humid. For vaccinated passengers, a Covid-19 PCR test was not required upon arrival. Otherwise, one would have to quarantine for seven days.

Welcome to Mayotte, a French territory in the southern Indian Ocean. Scanning my surroundings upon exit, I located the parking lot across the road from the terminal building. When I checked in at the car hire agency, I was told with a smile, "You have been upgraded

to a Fiat Panda!"

Pamandzi—also known as "Petite Terre"—was where one landed, but I needed to get across to Maore, otherwise known as "Grande Terre," the main island. A short drive led to *La Barge*, the ferry boat, which would get me to the other side. With the waiting time in the queue, it took one hour to sail across.

Not wishing to spend my first night in the capital city of Mamoudzou, I headed south at once, along the eastern shores, bound for the village of Bandrélé.

Geography & geology

Located between northwestern Madagascar and northeastern Mozambique, at 12°50'43" South

Mtsamboro village (above); Male brown lemur at Bandrélé (above); Landscape of Mayotte's southwestern coast (top left); Baobab trees at Sakouli Beach (previous page)



View of the landscape on the southwestern coast of Mayotte

latitude and 45°08'18" East longitude, in the Mozambique Channel, Mayotte has a land surface of 376 sq km. It is composed of two islands and about 20 islets, with a population of 29,000 in 2022.

Volcanic activity—probably related to the East African rift—started 7.7 million years ago in the south (Mt Choungui, 594m, with a breached crater to the northwest) and 4.7 million years ago in the north (Mt Tsapéré, 572m, with a breached crater to the southeast). The most recent volcanic activity, Dziani crater lake on Petite Terre, would have happened 7,000 years ago. However, on 11 November 2018, a seismic event occurred 24km offshore. It was linked to

the discovery of a new underwater volcano, located 50km to the southeast of Mayotte, at a depth of 3,500m. On 21 May 2019, this new volcano was 800m high and 5km across. It was the largest submarine event ever recorded on the planet.

History

While the history of early populations here remains uncertain, one study of early crops revealed that the Comoros were colonised by South Asian sailors, in the same way as Madagascar was. Between the 8th and 13th centuries, an influx of Austronesian sailors came from Southeast Asia, introducing various rice strains, mung beans and cotton.

Part of the Swahili coast culture,

the island was populated from East Africa, with the arrival later of the Arabs, who imported Islam. A Maore sultanate was established in Mayotte in 1500. Three years later, Portuguese explorers visited (in 1503) and named it "Espiritu Santo" (Holy Spirit).

Anjouan, one of the Comoros Islands to the west, was nevertheless preferred by international traders for its deep harbour. The island's name comes from the Arab *Mawuti*, meaning "island of death" (due to its dangerous reefs), which was changed to "Mayotta" by the Portuguese. Mayotte was often targeted by pirates and Malagasy raiders.

In 1832, the island was conquered by Andriantsoly, the former king of Iboina from



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Baobab trees in Mayotte (above); Juvenile brown lemur (top right); Divers upon surfacing at Sakouli Beach (right)

Madagascar. It then fell to the sultanate of Mwali (Moheli Island) the following year and to the sultanate of Ndzuwani (Anjouan) two years later. Andriantsoly came back victorious in 1836 but found himself in a weak position against the sultans of the Comoros. He entered negotiations with the French, who were based on the island of Nosy Bé in Madagascar.

In 1841, Mayotte was purchased by the French, slavery was abolished, slaves were set free and sugarcane plantations were developed. The sugar crisis of 1883 to 1885 led to the closure of factories. In 1885, France took control of all the Comoros. After two cyclones razed the island in 1898, followed by a disastrous smallpox

epidemic, the sugar industry was replaced by vanilla, coffee, copra, sisal and fragrant plants such as citronella, sandalwood and ylang ylang.

In 1974 to 1976, by referendum on the independence of the Comoros, Mayotte decided to remain French and broke away from the other Comoros Islands. In 2011, the island was elevated to the status of being an overseas department of France, following the 2009 referendum, which was approved by 95 percent of the voters.

Dive operator

Sakouli Beach, on the southeastern coast, is the location of the Jolly Roger 976 dive centre, just five minutes

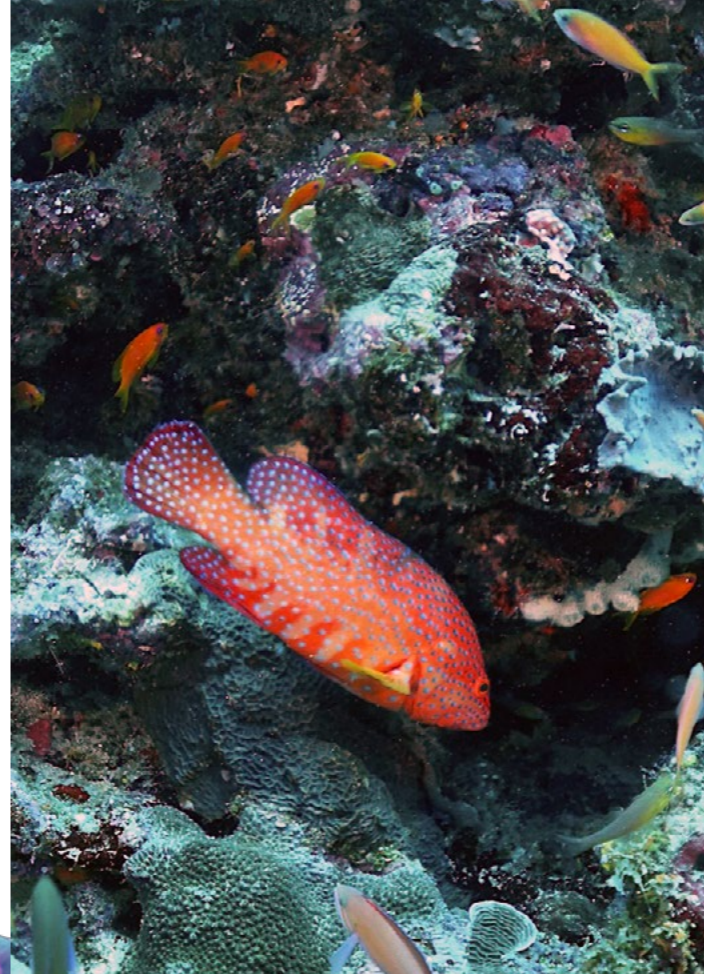
from Bandrélé and one hour south of Mamoudzou. Etienne, the friendly manager, introduced me to the operations and the 12-litre steel tanks. "Come tomorrow at 8:30 a.m.," he said. There would be one dive in the morning and one dive in the afternoon.

Jolly Roger mostly dealt with "baptêmes" (i.e. dive novices) as well as "formations," training both in the French system (FFESSM) and SSI courses. Those arriving in the month of September included newcomers who were young teachers from France, or nurses and people working in the medical field. A number of residents joined the club regularly.

As most beaches in Mayotte, Sakouli Beach was dotted with a row

of old baobabs, of which the oldest and bulkiest could be well over 1,000 years old. These belong to the species *Andansonia digitata* with white

flowers, which is the African baobab originating from Africa. Another indigenous species has been found around Milha in the northwest and



Saddle grouper (left) and gorgonian on the drop-off (below) at Passe en S dive site



Divers hover over coral garden at Passe en S (above); Bennett butterflyfish (left) and roundhead parrotfish (right) at Passe en S



Dapani in the south-east: the *Andansonina mada-gascariensis* with red flowers, which has obvious origins on Madagascar Island.

Jolly Roger takes divers to three main dive sites: the famous Passe en S (S-pass) south of Petite Terre, Îlot Bandréle (across from Sakouli Beach), and Passe Saziley, to the far southeast. All the passes connect the lagoon with the open Indian Ocean surrounding it.

Passe en S. Handled expertly by the pilot Sidi—a native Mahorais, who was all smiles—and powered by a 300HP outboard engine, the 8.4m aluminium dive boat headed off on a very flat

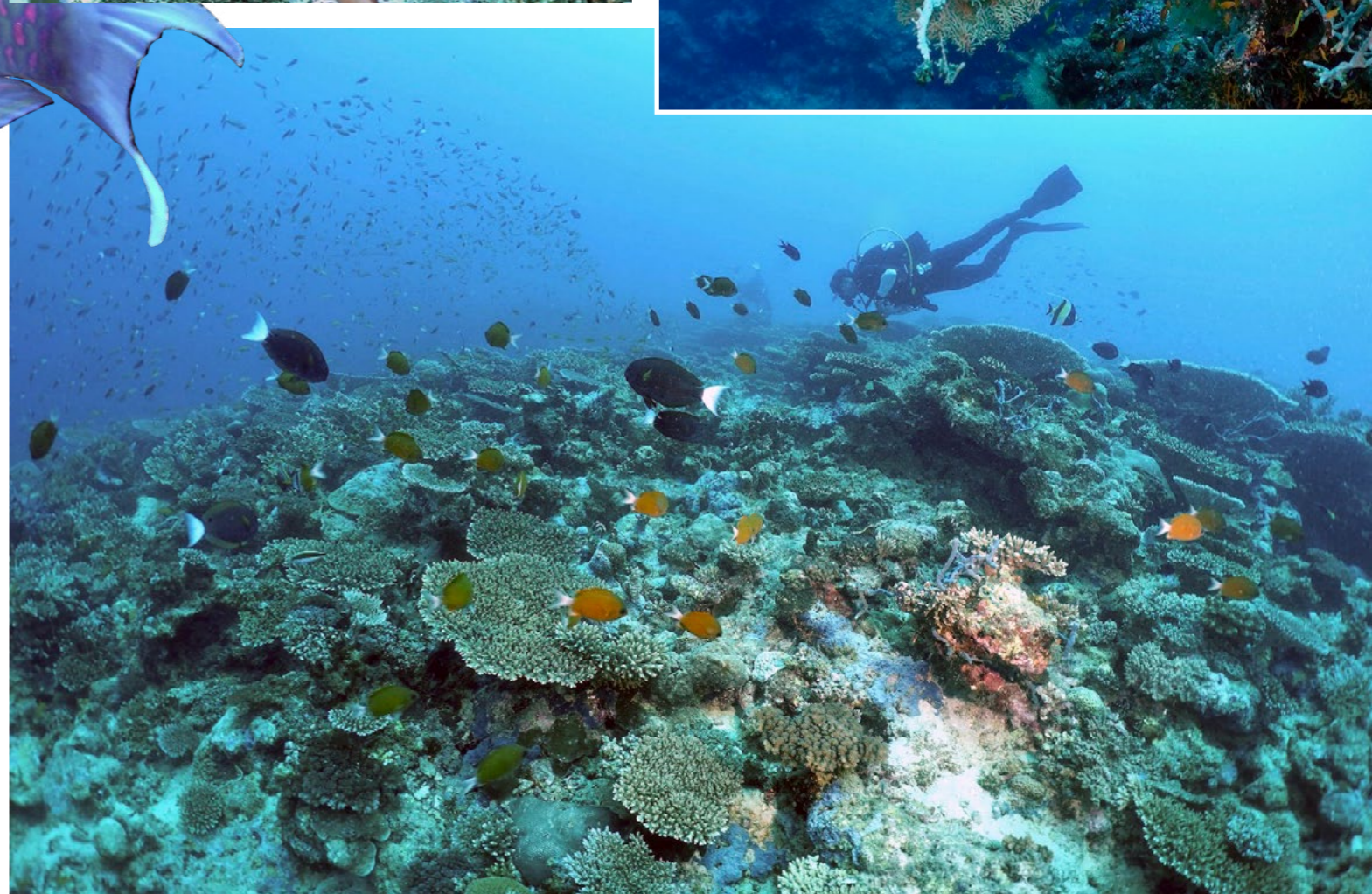
lagoon to Passe en S. A drift dive was planned on the outside of the pass. The water was 28°C, with no current.

I buddied up with two French biologists, Grégoire from a Mayotte lab and Frédéric from the Museum of Natural History in Paris. They were looking for a new species of flatworm, which was white with an orange ridge and a light blue girdle. “Not identified yet!” they beamed, all excited.

The reef flat was an extensive garden of table corals, with a drop-off from 15m to 40m. The fish life was mostly reef fish, with no apparent schools, besides golden chromis (*Chromis pembae*), with white tails; striped fusiliers

(*Pterocaesio trilineata*); and yellowback fusiliers (*Caesio xanthonota*). The visibility was misty for an average dive. The yellow Bennett’s butterflyfish (*Chaetodon bennetti*) caught my attention, with its black spot, as well as the roundhead parrotfish (*Chlorurus strongycephalus*), which was light blue-grey in colour, with a yellow patch on the cheek. I surfaced before the two biologists, who eventually found their prized flatworm, which was now a prisoner in a little plastic tube: “One for science...” they exclaimed.

La Barge. Philippe Novel, Jolly Roger’s owner, from Marseille,



Diver on reef with golden damselfish (*Chromis pembae*) and surgeonfish at Passe en S dive site





The edge of the shelf (above), diver in swim-through (right) and Java moray eel (top centre) at Îlot Bandrélé; Diver on La Barge wreck (top right)

offered to take me to *La Barge*, in the afternoon. It is a deep-water wreck at 36m, but due to strong current and poor visibility, we could not find it, and Philippe had to call the dive off at 32m.



Spondylus oyster (above), regal angelfish (right), arch and swim-through (far right), crocodilefish (bottom right) at Îlot Bandrélé



Îlot Bandrélé. On the following day, our dive took place at Îlot Bandrélé, just five minutes away. The shallow reef was carved by canyons, caves and swim-throughs filled with fish, which turned out to be an entertaining dive. There were soldierfish, groupers, Regal angelfish (*Pygoplites diacanthus*), longfin bannerfish (*Heniochus acuminatus*), powder-

blue surgeonfish (*Acanthurus leucosternon*), spondylus oysters, and occasionally, bluefin jacks (*Caranx melampygus*).

Exploring offshore, a number of pinnacles and coral bommies were scattered over a vast expanse of white sand. I encountered the quite attrac-

tive saddle grouper (*Plectropomus laevis*), with black saddles over a white body and a yellow tail.

Passe en S—Take Two. On another occasion, at Passe en S, I was surprised





by a hawksbill sea turtle grazing, with two longfin batfish (*Platax teira*) in tow. A magnificent red sea anemone hosted some orange skunk anemonefish (*Amphiprion akallopisos*).

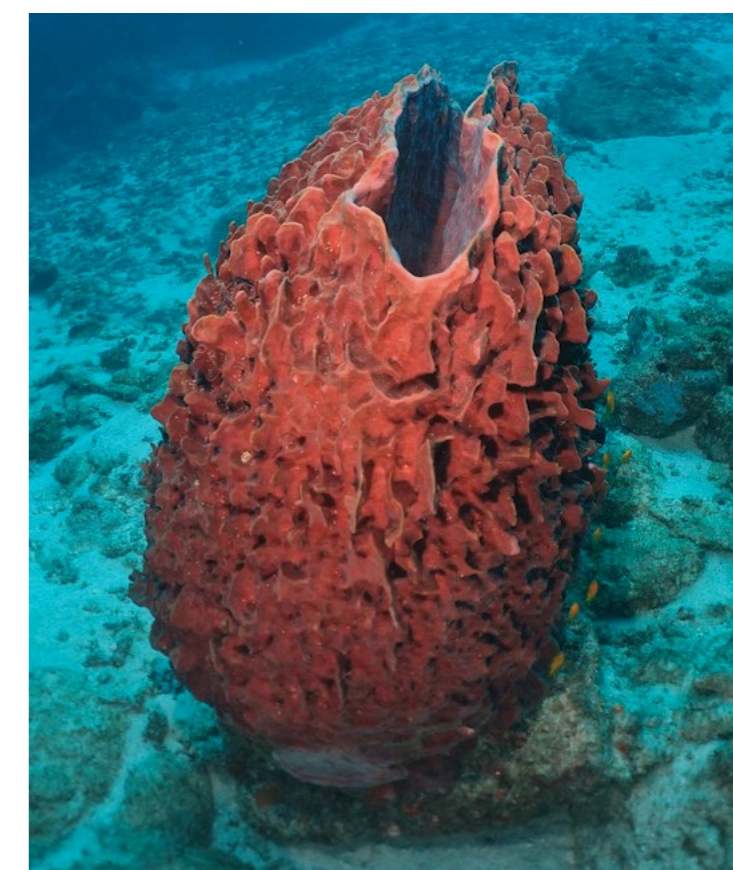
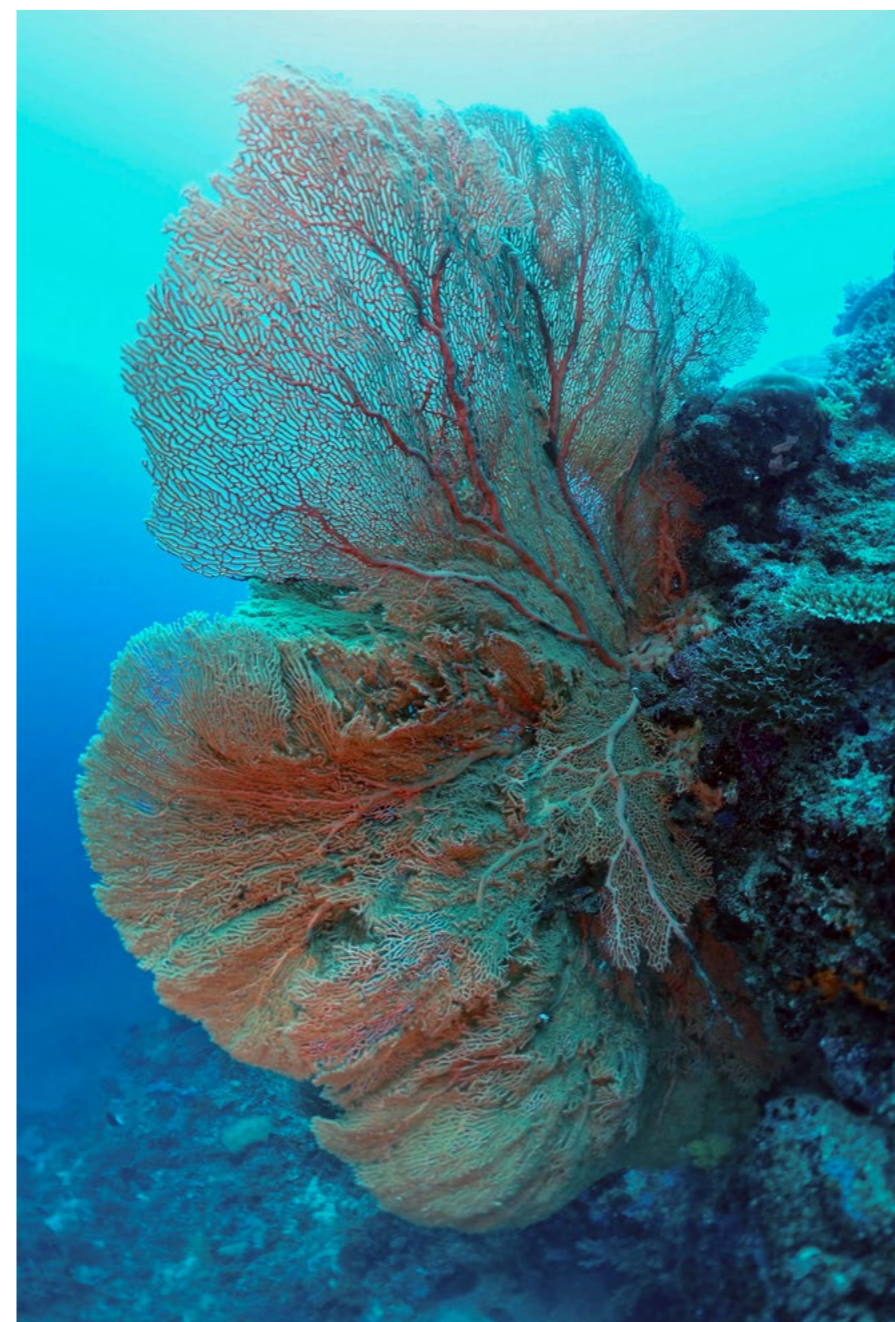
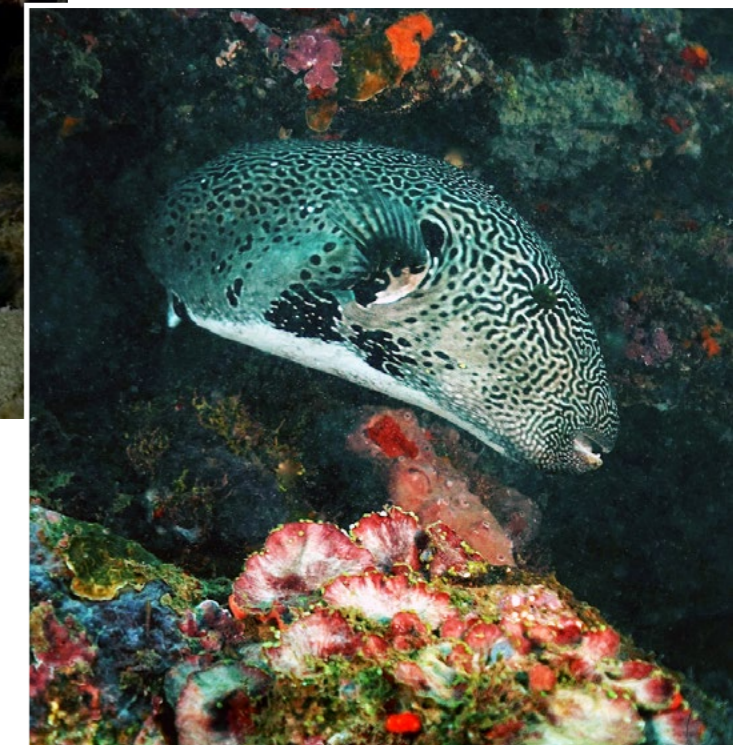
Passé Saziley. A hard early-morning rain delayed our departure for Passé Saziley, which was a 20-minute ride to the southeast. The barrier reef was massive, with

a white sandy bottom at 30m. It was a haven for schools of fusiliers: striped, yellowback, neon and moon. There were large leopard or peacock groupers (*Cephalopholis argus*), a shy Napoleon wrasse, a few species of unicornfish, including the ever-present elegant unicornfish (*Naso elegans*), with orange spines.

My observations of the eastern coast brought me to the conclu-

Yellowback fusiliers at drop-off (top left), two soldierfish species (top right), and skunk anemonefish in magnificent sea anemone (centre) at Passé Saziley; Sleek unicornfish at cleaning station (above) and divers with hawksbill sea turtle (far left) at Passé en S interior

Coral grouper at northern end of Passe en S (left); Map puffer at Milha House Reef (below)



Islands of Mtsamboro (above); Male brown lemur at Mtsamboro (left)

delighted with their diving experiences.

Mtsamboro & Milha

Driving north one morning, I was back in Pamandzi to return the car and pick up a new one. My wandering continued on a snaky road along the seashore up north, then west to Mtsamboro.

I would be staying at a little lodge on the top of a hill, down a steep sloping street—home for the next few days. My little verandah overlooked the bay down below. The village minaret called for prayer at 5 p.m., amidst banana trees, coconut trees and luxuriant vegetation. It was exotic, all right.

Driving to Milha 10km away was another story. Not sign-

posted, I missed the turn off and had to turn around to try my luck here and there. When I finally located Happy Divers, the big gates were locked with a padlock. I had to call out into the night, only to have someone answering, "Allah o' Akbar!"

Banc du Boa. The morning dive was scheduled at Banc du Boa, a site well offshore. Soon after we departed, the outboard engine displayed signs of trouble, as there was a leak in the gas line. The dive was cancelled and replaced by an alternative dive on the house reef.

Here, visibility was poor, and there was nothing to rave about. Over lunchtime,



sion that the reef had been extensively fished, considering the number of fishing lines and longlines found underwater. The Jolly Roger team was friendly and professional, and the new divers were

Barrel sponge (above) and gorgonian sea fan on the drop-off (left) at northern end of Passe en S



Magnificent sea anemones at Passe en S interior (top left); School of yellowfin goatfish and gold-spot bream at Îlot Sable Blanc (top right); Tube sponges at Îlot Bandrélé (right); Blue tang at Cocaine (far right)



Bread loaf sea cucumber (above) and orange spine unicornfish (upper right) at northern Passe en S; Blacktip grouper at Cocaine (right); Powder blue surgeonfish at Îlot Sable Blanc (far right)



fixed efficiently, and we could safely make it to Banc du Boa in the afternoon. "When you lack the right parts, you have to be creative and invent something," said Cyril, the dive director.

Banc du Boa turned out to be a white sandy slope at the bottom of a reef wall. A prairie of garden eels was gracefully swaying in the gentle current at 33m. Wary of our approach, a bluespotted stingray took off in a cloud of sand. Larger pineapple cucumbers, *Thelenota ananas*, curled in their lazy aloofness, dotted the slope. Close to the wall decorated with

Antoine, one of the partners, had the out-board engine

gorgonians, a school of yellow-band or yellowstripe goatfish (*Mulloidichthys vanicolensis*) was hovering like a drifting balloon, joined at times by a small group of gold-spot bream (*Gnathodentex aureolineatus*). Bluefin jacks cruised by silently. The return to the boat was done over the top of the reef, which was a lively coral garden.

Other dive sites

Other similar dives with Happy Divers took place at Îlot Sable Blanc and Cocaine, where oriental sweetlips (*Plectorhinchus vittatus*) and a school of paddletail snapper (*Lutjanus gibbus*) were seen. A special mention must be made for the strikingly attractive palette surgeonfish



(*Paracanthurus hepatus*), which was a vivid royal blue in colour, with black markings and a yellow tail. It was found flirting around stony coral heads of *Pocillopora* sp. (cauliflower



coral). Karim and Khalifa were great instructors to dive with, well appreciated for their positive vibes.

Climate and weather

The rainy season, or *kashkasini*, stretch-



Ghost crab on N'Gouja Beach (above);
Young brown lemur at Boueni (left)

from June to September, with southwest trade winds. Another interseason happens in October to November, when temperatures and humidity are on the rise.

es from November to the end of April, with the preponderance of northeast trade winds. With an interseason from April to May, temperatures are lower, and precipitation is reduced. The dry season, or *kussini*, extends

Diverse species

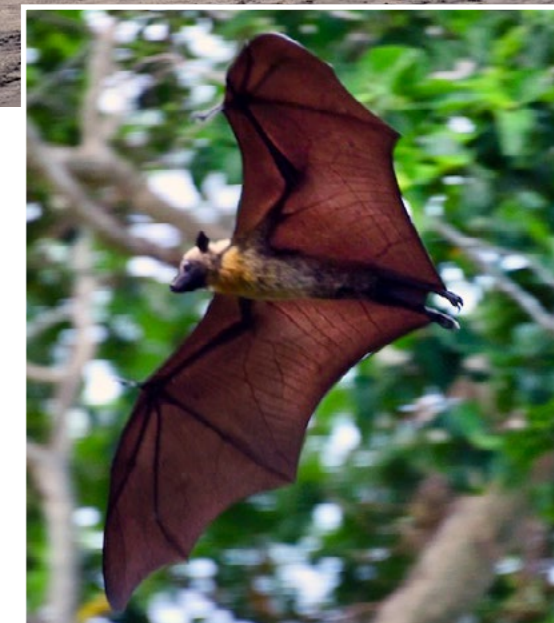
With regard to the environment, 1,300 species of plants have been identified in Mayotte, half of those being endemic. The 30 officially protected areas rep-

resent 55 sq km (or 14 percent of Mayotte's land surface). On 3 May 2021, the Forests of Mayotte National Nature Reserve (2,801 hectares) was created, which included Mt Mtsapéré, Mt Combani, Mt Benara and Mt Choungui.

A total of 140 species of birds are found on the island; however, there are only 15 species of mammals. Among others, there is the Malagasy civet, the tenrec and the brown

lemur (*Eulemur fulvus mayottensis*), which was introduced by humans from Madagascar, ages ago. The native flying fox (*Pteropus seychellensis comorensis*) is found almost every-

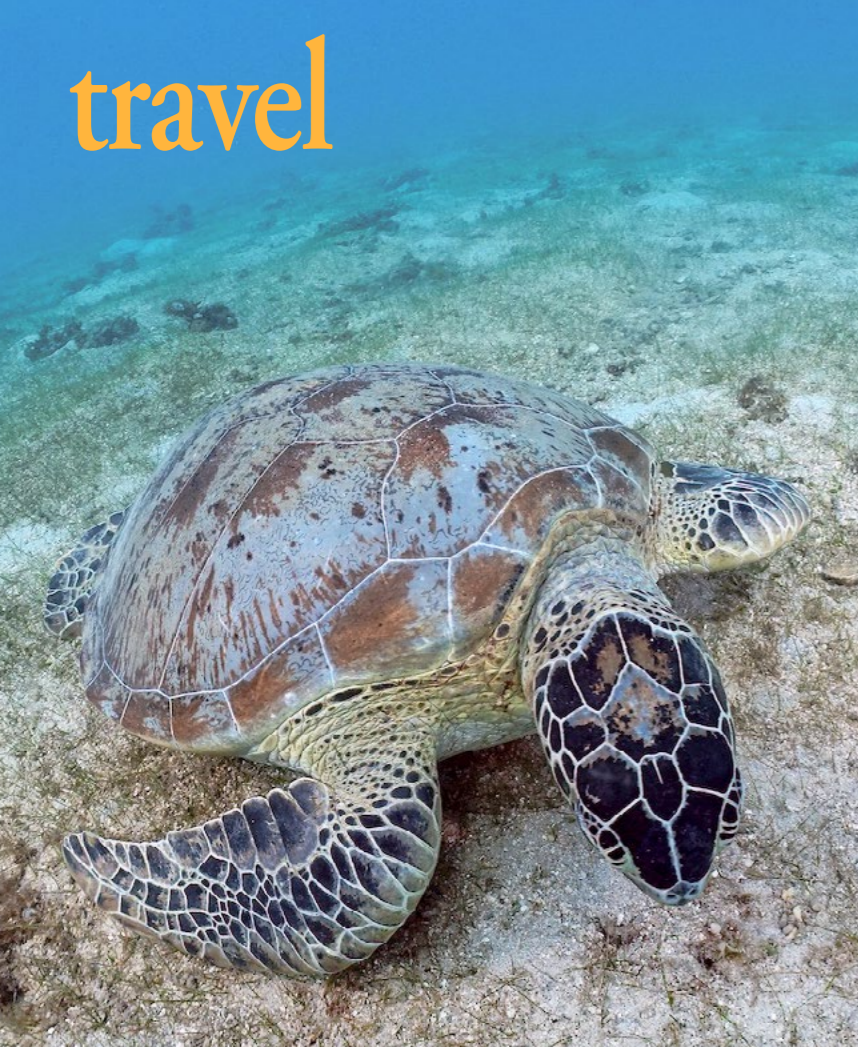
where. The 18 species of reptiles are represented mostly by geckoes, skinks, chameleons and a few harmless endemic snakes in the mountains. In addition, there are 116 species



Flying fox at Sakouli Beach (above);
Beach and mangrove on the western coast of Mayotte (top right);
The beach of Boueni (top left);
From N'Gouja Beach, divers head out for a dive (left).



of butterflies (of which 12 are endemic), 38 species of dragonflies and 23 species of land molluscs, which add to the diversity of fauna in the area.



Boueni

The coastal road kept winding along the western coast, all the way south to the Boueni peninsula. I passed by coves and beaches of ochre sand, mangrove areas, not to mention the ever-present silhouettes of giant baobabs, which seemed to have defied the passing of time. With its placid waters, the lagoon was like a mirror, flat and undisturbed, except for a few clouds drifting overhead.

N'Gouja Beach was well known for its population of green sea turtles, which come to graze on the seagrass beds. These creatures attracted



a crowd of snorkellers and beachcombers on the weekends, as well as a number of divers, staying at the comfortable resort.

The resort of Le Jardin Maoré, with the attached dive centre, Le Lagon Maoré, has been a highlight of the south for the past 45 years. French residents from Mamoudzou come regularly on Saturdays and Sundays to dive the famous three passes of the south, which are considered to be the best diving in Mayotte: Passe aux Bateaux, Passe Sada and Passe Boueni.

These passes are roughly seven miles out on the western barrier reef and benefit from good sunlight and great visibility—a positive advantage for photographers. The coral structure was massive as expected, with a visually attractive coral garden, although it was lacking in colour as a whole. The diversity was nonetheless impressive.

Diving

The morning dive departed sometime after 8 a.m. The afternoon dive at 2 p.m. was always done inside the lagoon on Shira Rani Reef. There, the coral was still healthy and plentiful, but the visibility was affected, and there was much less fish life here than on the external barrier reef.

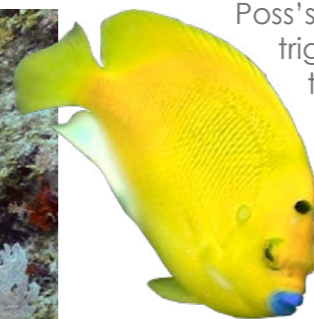
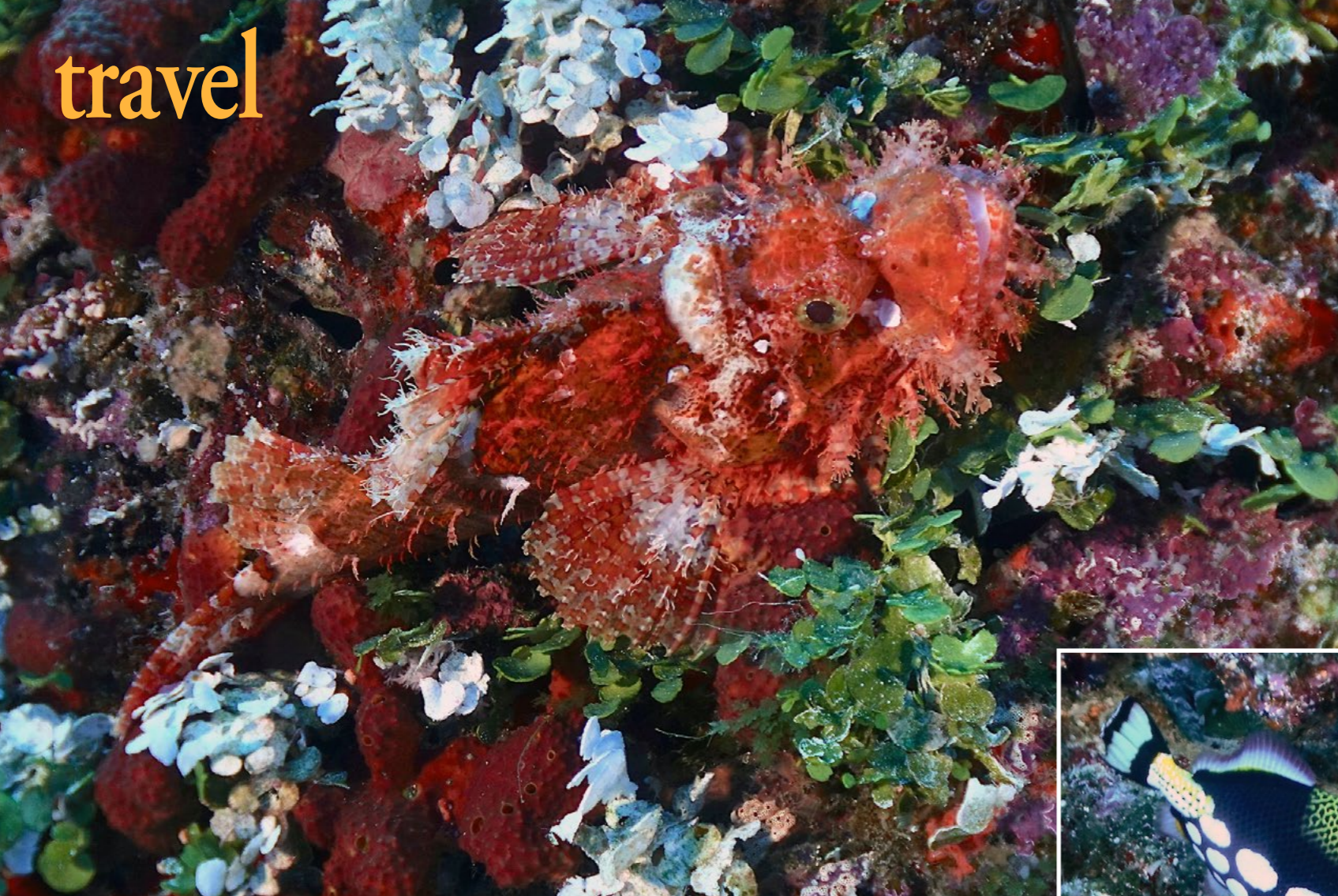
Nicolas, the dive director, was a tall, bearded fellow around 40, with long blond hair, who managed his team of five dive instructors with an iron hand. He had lived for five years in Mayotte (from 2000 to 2005), during which time he had operated a dive centre in Mamoudzou. Then, he spent 15 years in French Polynesia.

He reminded me of the strict French rules of the FFESSM. Divers must always stick to the group led by an instructor—unless one buddies up with another autonomous diver—and no solo diving would be tolerated. As an underwater photographer, this made me frown a



Green turtle, with remora attached, at N'Gouja Beach (above); Gorgonian on wall at Passe Bateau (top right); *Dendronephthya* sp. soft coral at Passe Bateau South (top centre); Green sea turtle grazing on seagrass at N'Gouja Beach (top left); Sabre squirrelfish at Passe Bateau (left)





Poss's scorpionfish (above), clown triggerfish (right), soft corals on the drop-off (top right) and eyestripe surgeonfish (far right) at Passe aux Bateau

bit, as I had been used to diving my own for many years. To have to tag along at all times, when one is in search of photographic opportunities, is not always convenient nor pleasant.

Passe aux Bateaux. Powered by twin 200HP Yamaha outboard motors, the aluminium dive boat, which could accommodate 24 divers, headed out for a 20- to 30-minute ride to the barrier

reef. There was incoming current, and we jumped overboard on the exterior of the Passe aux Bateaux.

Decorated with a few gorgonians, Tubastrea green coral hosted a lovely cloud of yellow and orange anthias or sea goldies (*Pseudanthias squamipinnis*). Queen (or red-tooth) triggerfish abounded on the edge of the drop-off. Otherwise, it was rather quiet with the usual reef fish.

An octopus popped out of its hole here and a little school of black snapper

(*Macolor niger*) crossed the scene. Oriental sweetlips (*Plectorhinchus vittatus*) hovered around a bommie, which acted as a cleaning station. Out of the blue, a grey reef shark (*Carcharhinus amblyrhynchos*) zoomed in on me along the wall, but veered off at a 90-degree angle, as I was about to take a shot. It was wary of people, for sure.

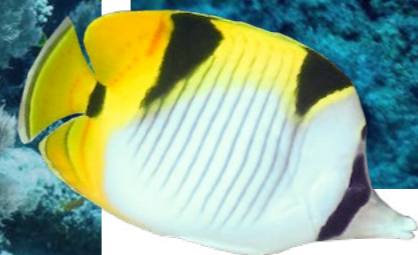
Judging by the number of old fishing lines present,

one could surmise that the reef had been extensively fished for many years. What remained was for the starry eyes of novices and new divers, for whom everything was simply beautiful.

Dive instructor Youssouf pointed out a cave at 26m. Worth a look, there was a

horizontal penetration of 10m, with a cloud of sweepers at the entrance. Towards the end of the dive, in the shallows of the reef flat, a school of spotted unicornfish (*Naso brevirostris*) and barred unicorns (*Naso thynnoides*) gathered artistically behind the dive guide.

Seafan on wall at Passe aux Bateau (above); Blue-lipped threespot angelfish (right)



Cloud of scalefin anthias at Passe Sada (top left), oriental sweetlips (top right), saddleback butterflyfish (above), and longfin bannerfish (right) at Passe aux Bateaux North



Goldbar wrasse (left) and fire dartfish (centre) at Passe Sada



Octopus "on stilts" at Passe Sada

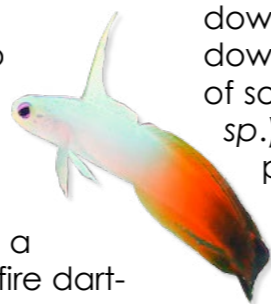
As we headed back to N'Gouja Beach, a pod of playful spinner dolphins (*Stenella longirostris*) showed up. Nicolas drove in circles to attract the marine mammals closer, and everyone enjoyed the opportunity to take a few pictures.

Passe Sada. In contrast to the former one, Passe Sada, which was located farther north, was an enchantment of gorgonians and large sea fans on a slope. There were a lot of fire dartfish. A marble or round ribbontail ray (*Taeniura meyeni*) rested on a ledge, and Maori or humphead wrasse drifted gracefully into the blue.

Passe Boueni. "My favourite site, and the prettiest, is Passe Boueni!"

declared Nicolas, enthusiastically. I could only agree.

The corals of the barrier reef were extremely enchanting, including *Acropora* table coral as well as *Pocillopora* sp., *Pavona* sp., *Porites* sp. and *Fungia* species. "We'll dive down to 40m," said Youssouf. Deep down, I marvelled at the profusion of soft corals (*Dendronephthya* sp.), which were white, red and purple in colour, with lots of happy anthias. There was a scrawled filefish, a few red snapper (*Lutjanus bohar*) and the odd bluefin jack on the hunt. Eventually, a large school of paddletail snapper appeared, undulating over the reef like a wave, although they were shy of divers.



Resort development

Nicolas's wife Marion was the director of Le Jardin Maoré, the oldest tourist resort in Mayotte (operating since 1976). Aligned along the beach behind huge baobab trees and under the cover of colourful flamboyant trees (*Delonix regia*) with red flowers, the little bungalows with verandahs were comfortable, albeit a bit small. Admittedly, they showed their age and had done their time.

However, a new project was actively under construction and due to open in October to November 2022. The new Jardin Maoré would have seven superior wooden bungalows on stilts with large verandahs, as well as 21 cheaper rooms for divers in a big





Orange cup coral, open at night on Sailboat wreck

Mayotte

FACT FILE

GETTING THERE:

From Europe, there are direct flights from Paris to Dzaoudzi (or via Reunion Island), with Air France, Air Austral.

VISA

Not required from European community members

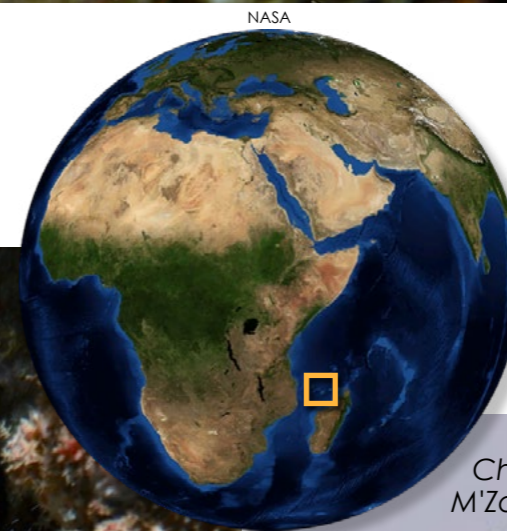
HEALTH

Full Covid-19 vaccination required. Otherwise, a 7-day quarantine is required on arrival.

CURRENCY: Euro. Exchange rate: Euro= 1.13 USD; USD= 0.8820 Euros

LANGUAGE: French, English, Maore

Scaefin anthias at Passe Sada (left); Painted lobsters in crevice at Shira Rani Reef (below); Emperor angelfish (left); Gorgonian at Passe Sada (bottom left)



restaurant with open terrace would be added, as well as a new dive centre with a terrace, reception area, equipment room, compressor room and classroom for courses. "This flashy dive centre, using nitrox, will be operational as early as February 2022," assured Nicolas.

Natural parks

Adjacent to the Glorioso Islands Marine Natural Park to the north-east, the Mayotte Marine Natural Park was established in January 2010. With a surface area of 68,300 sq km, it hosts 760 species of fish, 581 species of arthropods and 450 species of cnidarians. It is home to 24 species of marine mammals, including whales, dolphins and a small population of

dugongs. It is estimated that 2,000 sea turtles live inside the lagoon, all under protection, of course, but poaching is still rampant.

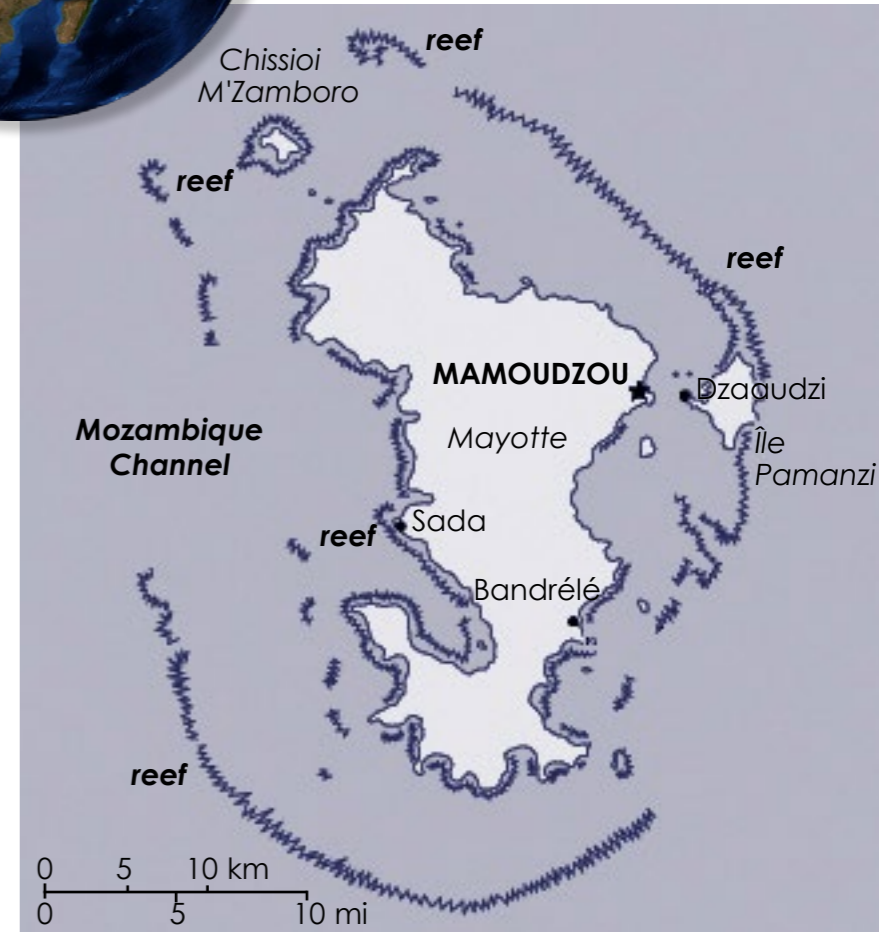
Afterthoughts

Mayotte may be the largest enclosed lagoon in the world—despite its 12 passes—and is an obvious pride to its people. Regardless of the abuses that may have been done to it in past years, what remains untouched today is what you can see from the sky—a visual feast for the eyes, turquoise blue in color. ■

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. For more information, please visit: calaolifestyle.com.



Map of Mayotte and its location on global map

longhouse on the slope behind the bungalows. A new elevated



Turkish Delight Bodrum

Diving & Dining on the Aegean Coast

Text and photos by Scott Bennett



Freediver at Kaarada, or Black Island (above); View of the Castle of St Peter in Bodrum, Turkey (previous page)

One of the premier tourist destinations on Turkey's Aegean coast, Bodrum is renowned for its beautiful coastal scenery, history and laid-back ambiance. Although I had been to Turkey several times, I had never dived in the country before. It is always exciting arriving at a new destination, and even more so after 18 months of Covid-enforced lockdowns during the pandemic.

My good friend Raf Jah had long recommended that I visit Turkey, and with a trip to Egypt routing

through Istanbul, there was no better opportunity. Spending nearly six days there, including four diving days, would provide ample time to explore. I was stoked!

Occupying a series of peninsulas extending into the Aegean like outstretched fingers, the city features an extensive history dating back more than two millennia. An easy one-hour flight from Istanbul, the airport is located well out of town, necessitating a taxi ride as long as the actual flight. Even more so in my case, as I arrived during rush hour on a Friday afternoon. Arriving just before sunset, I caught a glimpse of the Castle of St Peter, Bodrum's most iconic sight. Before long, I arrived at my modest guesthouse in Bitez, located a few bays over

from the city centre.

With gear unpacked, I was famished after a long day of travel. Luckily, there was a restaurant right across the street with high recommendations from Raf. Situated right on the waterfront, the Bitez Café was open and busy. Always a good sign! I had my heart set on something Turkish and the Çökertme kebab looked intriguing. A local speciality featuring crispy shoestring potatoes, covered by garlic yogurt and julienne-sliced chicken, it was not the kebab I expected, but it proved a tasty surprise indeed.

I awoke to glorious sunshine for my first diving day and was immediately struck by the local architecture. With gleaming, whitewashed structures contrast-



Scorpionfish on *Pinar I* wreck, an ex-Turkish Navy water tanker that was sunk in 2007 as an artificial reef (above); View over Bodrum's Castle of St Peter and the surrounding bay (top right)



ing sharply against the intense blue sky, the scene resonated “Mediterranean.” I later discovered there was a strict local code, which decreed that everything must be white or feature natural stone or wood, so as to create a uniform look. Crossing the road, I ventured back to the Bitez Café for breakfast. One of the joys of any visit to Turkey is its cuisine, and I had a hankering for one of my breakfast favourites. *Menemen* is a traditional egg scramble with peppers, onions, tomatoes and a subtle

hint of spice, served with crusty bread. Despite being a coffee guy, I ordered apple tea, served in a round glass cup. Traditional Turkish tea is black and consumed on a massive scale throughout the country, but I am quite partial to the apple variety. If strong is your thing, one tiny cup of Turkish coffee is enough to surpass one’s daily caffeine limit in one fell swoop!



Dive operator

Belly full, I set out for the marina to find the boat. I wondered where the dive shop was, but it turned out the dive shop was the boat. Quite a logical arrangement actually. On hand to greet me were owners Kenan and Joby Dogan. Kenan and Joby have been active PADI Instructors since 1995 and 1997, respectively. An ex-Navy diver,

Divers at the dive boat (top left) and exploring the rocky terrain (above) at Karaada dive site; Mediterranean parrotfish pair (left)

Kenan founded Aquapro Dive Center in 1997. A professional diver since 1985, he is both a recreational and commercial diving instructor as well as a dedicated underwater photographer. Kenan has also been a driving force in the establishment of the area’s artificial reefs.

Joby has been the sole British dive instructor on the Bodrum Peninsula for the past 24 years. A diver since 1995, she is active on the dive boat every day. Earning her PADI Rebreather Instructor licence in 2016, she is the first and only woman in Turkey to have done so. She also boasted an amusing array of T-shirts, with my two favourites being “Wonder Woman” and “Head Witch.”

Diving

Hosting a mixture of divers, snorkellers and day-trippers, the boat was quite

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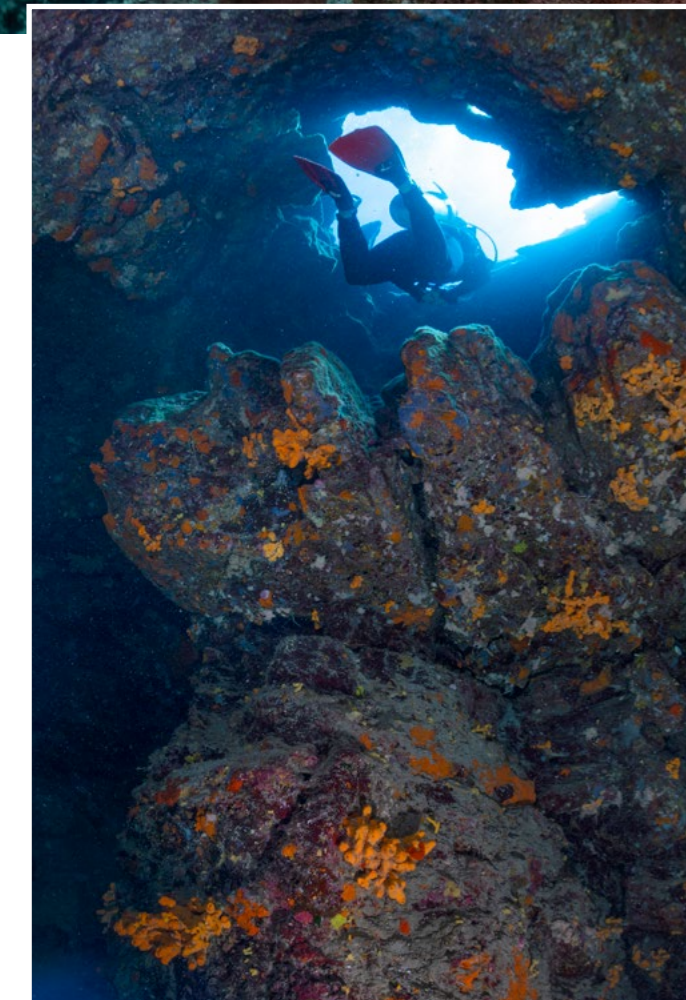
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Diver at Karaada (above) and in Bubble Cave (left)



full—a refreshing sight in our ongoing Covid-19 world. With everyone aboard and paperwork finished, it was time to head for the day's first location. Leaving the bay, the Greek island of Kos was plainly visible on the horizon; so close in fact, that one's smartphone will proclaim "Welcome to Greece!" However, I was on vacation, so mine remained firmly off.

Although Aegean reefs are not exactly brimming with coral, the beautiful underwater environment and clear waters make Bodrum a great dive destination. Around 20 dive spots are present, featuring typical Aegean and Mediterranean

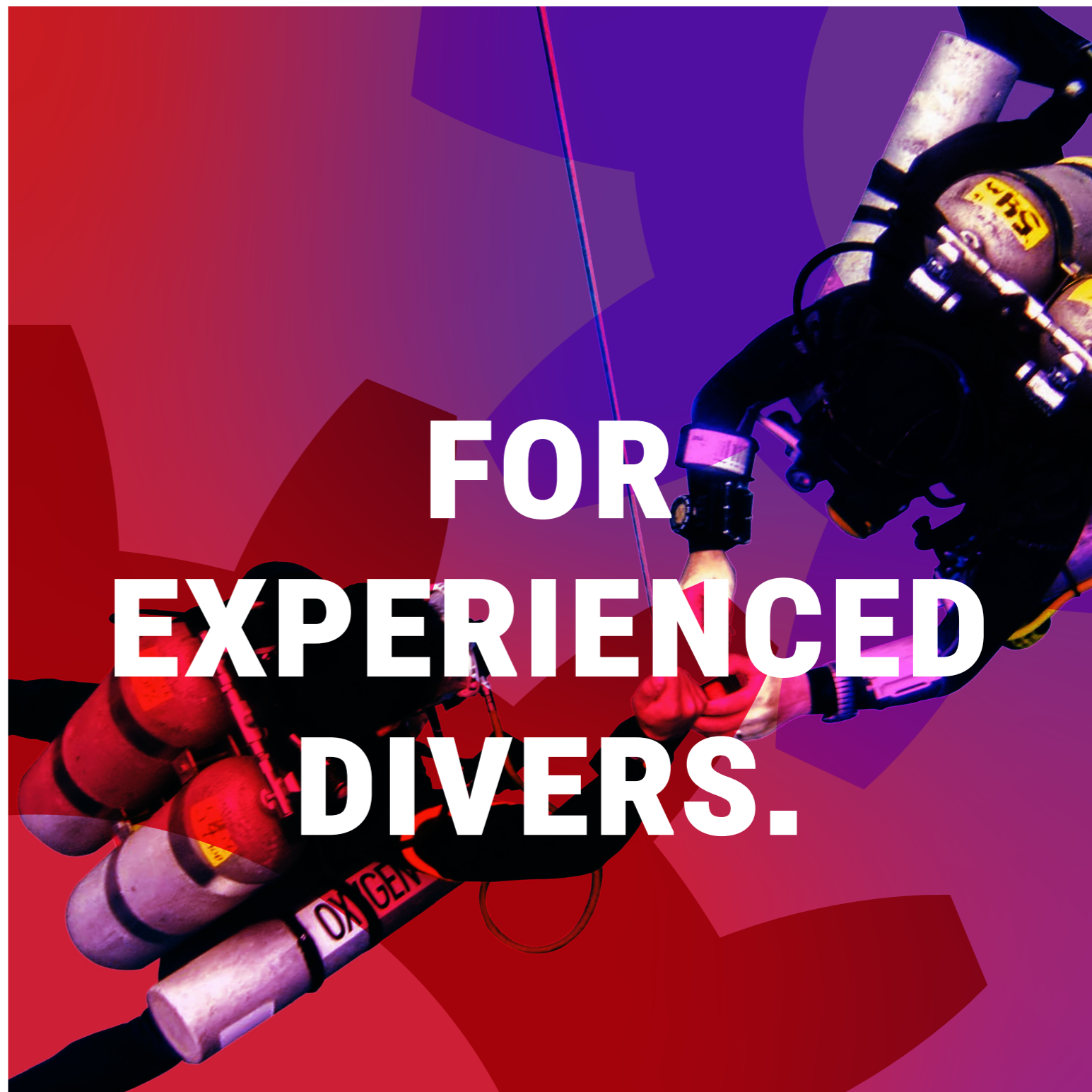
flora and fauna. An hour later, we arrived at our anchorage spot in a picturesque bay where rugged formations cascaded into the azure sea.

Karaada

Located only four miles from the coast of Bodrum, Karaada (Black Island) is the most popular dive location for beginners and advanced divers, with depths ranging between 6 to 35m. Back on the dive deck, it was time for our briefing.

Bubble Cave. Our first dive site was Bubble Cave, named from the chimney-shaped cave accessible at 12m. Geared up and

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CLOCKWISE: Squirrelfish under ledge, two-banded seabream under boat, wrasse and seagrass, *Flabellina affinis* nudibranch, and football-shaped black sponge at Kaçakçı (Smuggler's) Bay

Situated at the rear of Karaada, its depths ranged from 5 to 30m and was suitable for both beginners and advanced divers. Although coral was lacking, the undersea scenery was striking. Here, the photography was all about the terrain, a rich tapestry of shapes, textures and form. Football-shaped black sponges clung to jagged outcrops,



Dining

After an exhilarating day, I had a quick shower before venturing out to find some dinner. I could see restaurants farther along the bay, so I headed in that direction. With many eateries to choose from,

ready, I did a giant stride off the rear of the boat. The 25°C water was a jolt in my shortie wetsuit, but the chill quickly subsided. Descending to the sandy bottom at 30m, we followed the wall's base before gradually levelling to around 20m. Visibility was easily 25m, with the undersea formations mirroring those above the surface. Huge boulders punctuated the slope, interspersed with patches of seagrass alive with tiny fish.

walls dotted with crabs, corals and sponges. The spacious interior narrowed towards the exit point at 5m, necessitating a single-file exit for our entourage. Upon exit, the reason for the cave's name became immediately apparent, the result of divers' bubbles escaping through cracks in the cave's ceiling.

Kaçakçı

A short boat ride delivered us to our second dive at Kaçakçı (Smuggler's) Bay.

with one specimen hosting a delicate *Flabellina affinis* nudibranch with freshly laid eggs. I even spotted a lionfish, a relatively recent arrival from the Red Sea.

Finning back to the boat, I noticed a school of two-banded seabream had congregated beneath it as well as the two additional vessels that had since anchored alongside us. Obviously used to handouts, I was immediately surrounded, offering some fun photo ops of the fish beneath the boats.

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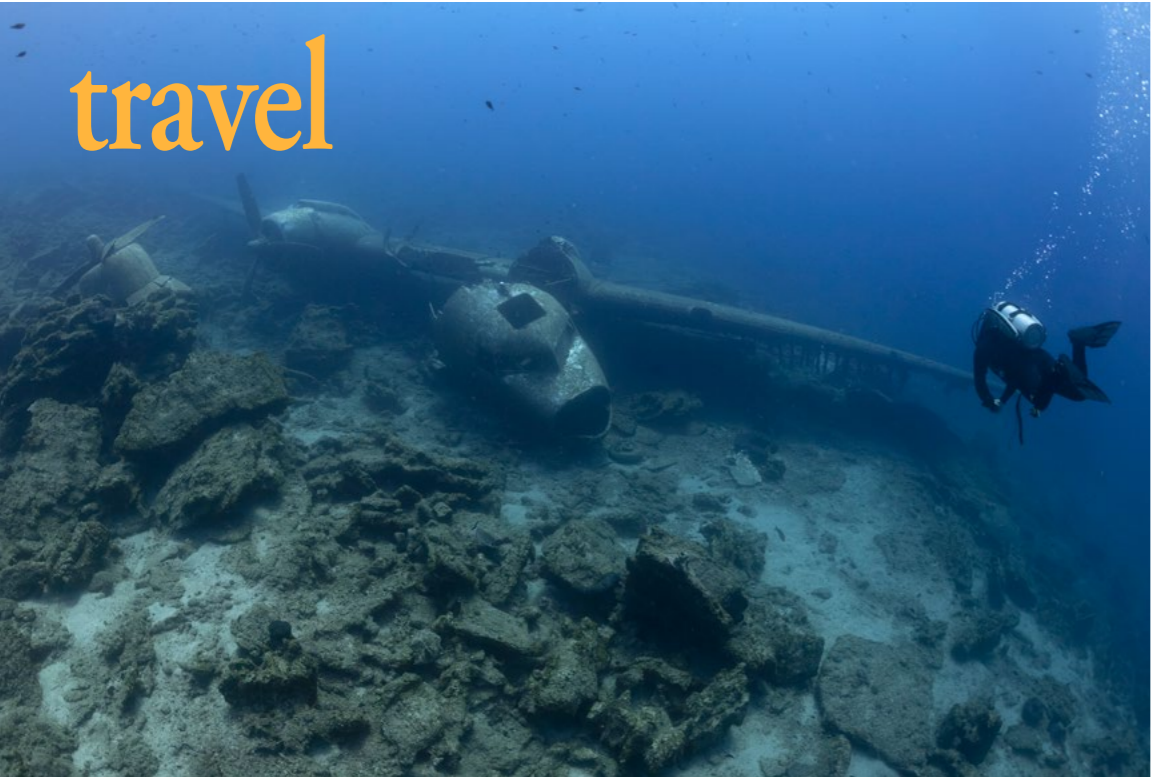


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away from the fuselage. Aside from the rear cabin door at 29m, the wreck was not penetrable.

I was taken aback at just how large this aircraft was; I was expecting something a LOT smaller! I had previously dived a few Japanese Zero wrecks in Papua New Guinea, but nothing that matched this craft's titanic dimensions.

Pointing skyward, a detached propeller perched atop a rocky outcrop, comically reminding me of an old-time beanie. In a recess



I opted for the Sultan Restaurant, with outdoor tables right on the beach.

Sadly, I had a propensity for mangling Turkish, but the friendly waiter took it in stride. In fact, he brought me a pair of complimentary appetisers to accompany my Efes lager. Both the creamy yoghurt with dill and the red pepper dip were amazing as was my main course of a mixed grill. And I did not dine alone.

An affable pair of beach dogs patiently sought a handout, and their ambitions were not remotely subtle.

The small one sat at my feet with eyes locked on mine, while the larger one rested his head on the table edge, a puddle of drool expanding outward.

Diving on Day Two

After an enjoyable first day, I could not wait to see what Kenan had in store. With the Aegean lacking coral reefs, the Turks create their own attractions by sinking things. BIG things!

Dakota C47. Resting between 17 and 32m, the Dakota C47 is a for-

mer Turkish Air Force plane sunk as an artificial reef in 2008. From the boat, it was an easy 10-minute swim to the wreck, past rocky outcrops interspersed with seagrass meadows. Before long, the aircraft soon loomed into view, materialising from the blue like a winged ghost.

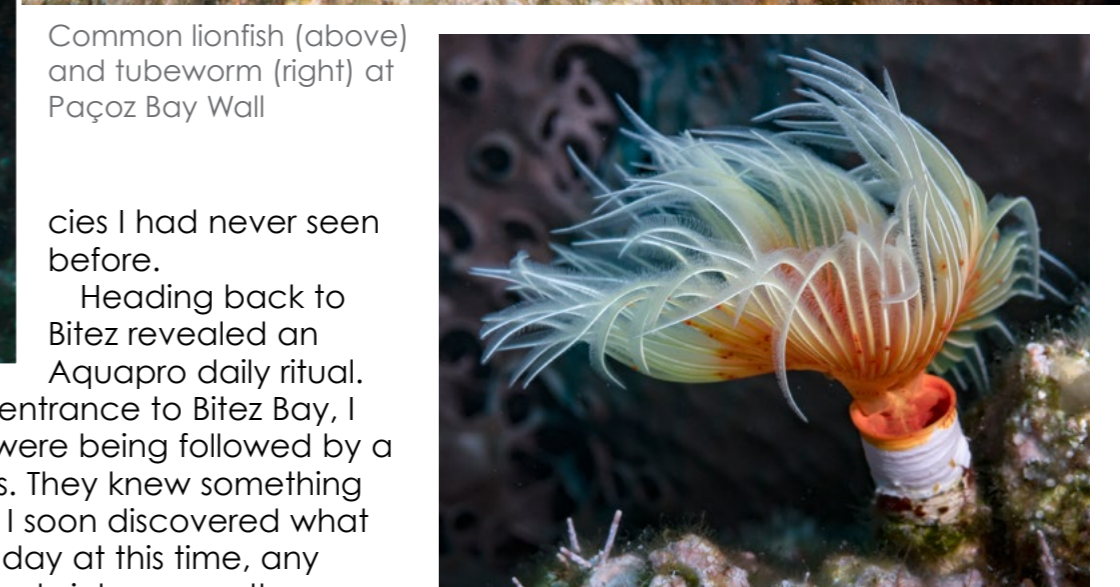
Although intact when sunk, storms and currents had since broken the plane apart. The fuselage and tail now remained ensconced in the sand, with one wing at 17m and the other at 25m. The cockpit had also broken

at the base, numerous lionfish hid in a large clump. Recent arrivals in the area via the Suez Canal, I encountered more lionfish here than on my Red Sea liveaboard two weeks earlier.

There was just so much to photograph, it was hard to know where to start. Fortunately, my dive buddy Timucin proved to be an excellent model. Having a diver in the image really demonstrated the wreck's scale. I was utterly blown away and would easily rate the Dakota as one of my all-time favourite wreck dives.

CLOCKWISE: Diver approaches Dakota C47 plane wreck; Tail of plane; Lionfish in nose of plane; Engine and wing, wheel and cockpit of the Dakota C47 plane wreck





Pair of spotted doris nudibranchs (above) and painted comber (right) at Paçoz Bay Wall

Common lionfish (above) and tubeworm (right) at Paçoz Bay Wall

I was so enthralled by all the photo ops on hand, I later realised I totally missed photographing the cockpit. Grrrrr! Despite this omission, I would say it was a pretty good dive!

a hasty retreat at our approach. Once again, the scenery was dramatic, with sheer walls interspersed with rocky outcrops and sandy patches. Mediterranean fish were positively electric, bright red with white patches fringed with a yellow stripe. If camouflage was their intent, they failed miserably, standing out like beacons against the rock and sand. The guide gestured towards a sponge, and I was baffled as to what I was seeing. I took a photo regardless and was later ecstatic that I did. The subject was a pair of doris nudibranchs, a spe-

Nearing the entrance to Bitez Bay, I noticed we were being followed by a posse of gulls. They knew something was up, and I soon discovered what it was. Every day at this time, any remaining sandwiches were thrown overboard and were speedily gobbled up.

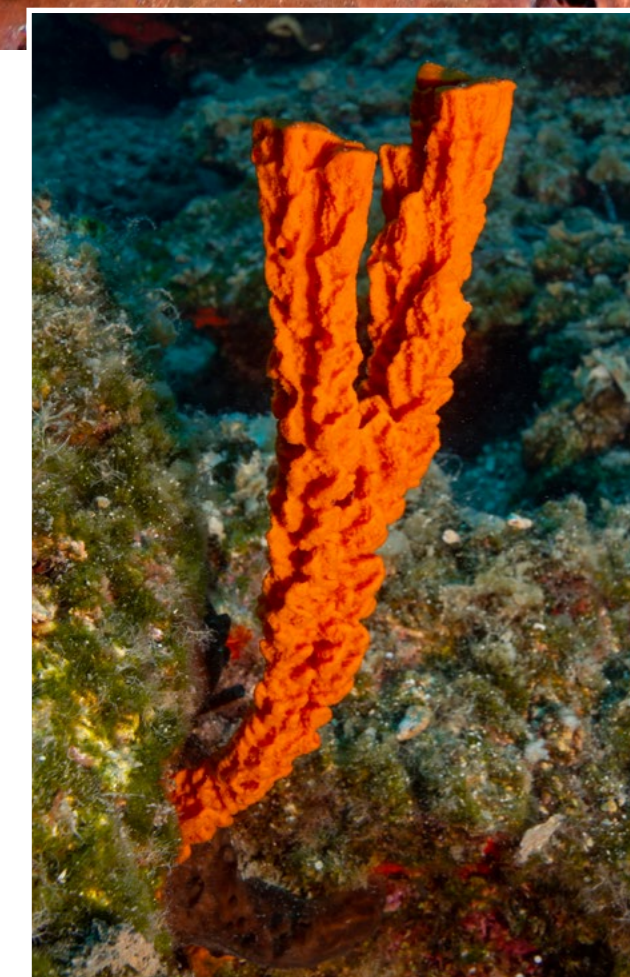
Mezze & raki

For the evening, Raf had arranged dinner with his friend, local guide Deniz Kilic. When he picked me up at the guesthouse, I had no clue where we were headed. "Do you like Turkish

food?" he asked. "We're going to a place that serves only mezze dishes. No tourists come here, only Turkish people. Is that OK?" Frankly, he had me at Turkish food.

After finding a parking spot, a short walk along the promenade brought us to Iki Sandal. We were led upstairs to the terrace, our table offering stun-

Paçoz Bay Wall. Our second dive at Paçoz Bay Wall contrasted sharply with the Dakota. Orange sponges capped rocky outcrops, adding splashes of colour. Overhangs provided refuge for Mediterranean soldierfish, painted comber and starfish, while closer scrutiny revealed delicate violet flabellina nudibranchs. Far below, beyond recreational limits, some enormous groupers were visible just off the wall. Farther along, a few were in shallower water, but they beat



Orange sponge at Paçoz Bay Wall



On the waterfront promenade in Bodrum (above), Iki Sandal (bottom right) served delicious Turkish mezze; Mezze comes in a wide variety of small dishes featuring traditional recipes (right); Turkish beer and mezze (left)



ning views of the waterfront, with the castle dramatically silhouetted by the setting sun. Looking down at the lively promenade, Deniz commented it was quieter than usual. If this was quiet, a normal evening must be mayhem!

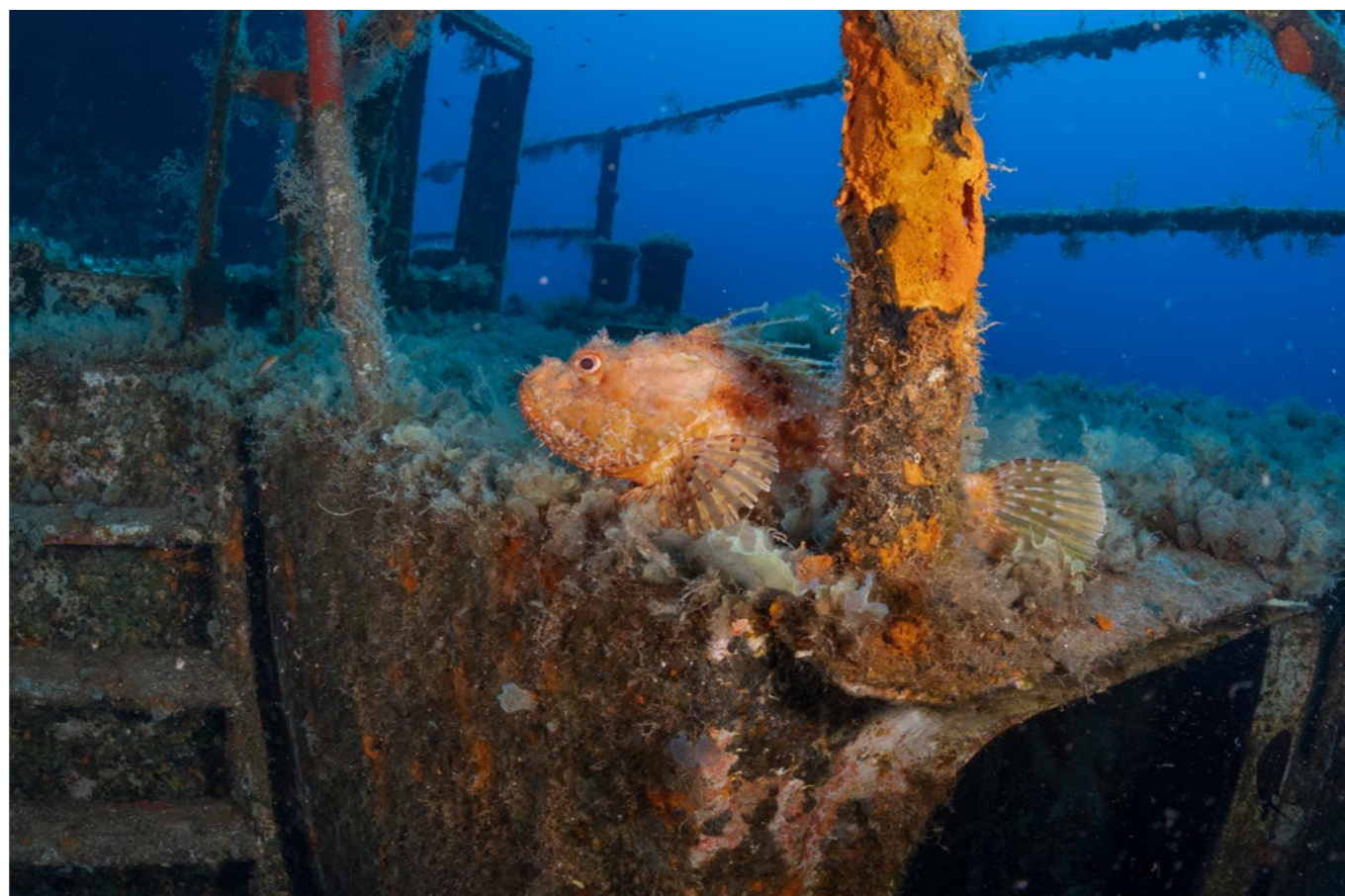
Before long, the manager arrived with a tray laden with tantalising dishes. Deniz explained that a number of the dishes had recipes that were hundreds of years old. The manager patiently described each item, and I was given the task of choosing. Offerings included yogurt with dill, swordfish, a fava bean puree, eggplant with tahini and red pepper with cheese, nuts and basil, to name a few.

Utterly overwhelmed, I finally settled on seven dishes, only a small selection of what was on offer. Each one was outstanding, and we ordered seconds accompanied with a bottle of raki,

Turkey's beloved aniseed liqueur. This was not just one of the best meals of my entire trip; it was one of the best meals I have ever had, period! I know where I am going the next time I am in town. With my belt in need of an additional notch (or two), a post-dinner stroll was in order.

With twilight deepening, we set out on the waterfront promenade. Shops bustled while music resounded from bars and restaurants. After 18 months of lockdowns, everything seemed normal again! Streetlights twinkled overhead as vendors tempted passers-by with fresh seafood from wheeled carts. The stacks of mussels with lemon looked tempting, but for me seafood from a vendor was not exactly the safest culinary option. Then again, I probably did not need to eat again for at least two days.





School of two-banded seabream (above) and scorpionfish (right) on *Pinar I*, which was sunk as an artificial reef in 2007

Divers explore the bow (top centre) and the stern (above) of the *Pinar I* wreck.

More diving

The ensuing three days followed a similar schedule, with a 10:00 a.m. departure, two dives and lunch on the boat. Each morning at the café, I ran into Kenan and joined him for breakfast. After all, the day could not begin properly without some *menemen* and Turkish tea.

Pinar I. We were originally set to dive a reef in Bodrum

Bay, but exceptionally strong currents thwarted our plans. No matter, as Kenan's backup site was hardly a disappointment. Another big wreck, the *Pinar I* was recommended for advanced divers only. Located southeast of Karaada, the ex-Turkish Navy water tanker was sunk in 2007 as an artificial reef.

Measuring 39m long and 17m high, the stern sits at a depth of 20m, with the bow descending to 33m.

Upon arrival, I immediately descended to the bow, where the vessel's scale became immediately apparent. It was

ous doorways allowing penetration to the interior, but I was more than content to explore the exterior.

a good thing I had the fisheye lens on my camera to capture its immense scale but limited my depth to around 30m. Qualified wreck enthusiasts will enjoy the numer-

Two-banded sea bream congregated around a mast on the main deck, while a large scorpionfish posed obligingly by a nearby railing. The wheelhouse was especially photogenic and home to nudibranchs, tubeworms and sheltering fish, while moray eels hid in the vents. The wreck's depth and size created the classic diver's dilemma: too much to see and not enough time!



Divers at bow of SG115 wreck, a retired coast guard patrol ship (far left), at the stern (left) and the wheelhouse (centre); Diver on the Dakota C47 plane wreck (below)

Dakota C47 revisited. Our second dive was a return visit to the Dakota C47, and I was thrilled! This time, I headed straight for the cockpit to get the shots I missed the first time around. Peering through an opening at the top revealed the corroded interior, with controls relatively intact and a sea urchin being the sole occupant. With so many photo prospects, I could have easily done another dive there.

From seafood to mixed grills

Back in Bitez, I started a nightly routine. After a shower and backing up the day's images, I walked back to the area of restaurants for dinner.

Each night I tried a different one, sampling a variety of Turkish dishes ranging from seafood to mixed grills while enjoying the sunset from my beachside table (with a dog or two for company).

Last day of diving

Sadly, my final diving day had arrived, but Bodrum's hat trick of wrecks was completed with a visit to the SG115 shipwreck.

SG115. The retired coast guard patrol ship was 29m long and 15m high. The stern rested at 18m and the bow at 26m. Smaller and shallower than the *Pinar 1*, the SG115 was suitable for both entry-level and advanced divers. Another marvellous wreck dive, penetration into the wheelhouse

was also possible, allowing for some interesting wide-angle photography opportunities. Hydroids and encrusting sponges shrouded the railings, while two-banded sea bream congregated around the mast and flagpole, where squid eggs could sometimes be found. Due to its smaller size, we were able to navigate a majority of the wreck in one dive.

Paçoz Bay. After three full days of wide-angle photography, I hauled out the macro gear for my final dive at Paçoz Bay. Blennies perched atop black sponges, while I managed to catch a glimpse of an octopus before it vanished into a crevice. I found some more specimens of *Flabellina affinis* nudibranchs to photograph along with some tiny tubeworms.



Castle of St Peter dates to the 15th century (left), with statues and artifacts dated as early as the 4th century (above).



Bodrum Mariners Association Café served tea and *simit*.

Topside excursions

For my last day in Bodrum, I met up with Deniz for a full-day tour. Unfortunately, recent fires made an

excursion to the surrounding countryside off-limits, but there was no shortage of things to see. Bodrum is one seriously historic place, dating back to the 4th century BC. Back then, it was called Halicarnassus, capital of Caria and home to a certain seventh wonder of the world.

American Hospital.

Our first stop was at the American Hospital for a PCR test, as I was leaving the country two days later. Only a short walk from where we parked, I decided

to leave my camera. I soon learnt that in Turkey, one should ALWAYS bring a camera. During hospital construction a few years earlier, digging revealed intricate mosaics, the floor of a long-vanished home from the Halicarnassus period. As a result, the hospital was built around them, with glass panels at the ground level allowing visitors to view them. Despite just walking in, the test was finished within 20 minutes, and we were on our way.

Bodrum Mariners Association Café.

The shops and bars, buzzing with activity only two nights before, now lay empty and silent. Deniz remarked that he had never seen Bodrum so quiet. However, coffee shops were always open, and he suggested the Bodrum Mariners Association Café for a cuppa. Established as a café

for local fishers, it was a relaxing spot to enjoy tea and a Turkish-style bagel called *simit*.

Castle of St Peter. We then headed towards the Castle of St Peter, home to a superb archaeology museum with an emphasis on undersea wrecks. Constructed by the Knights of St John starting in 1404, the castle was seized by the Ottoman Empire in 1523 and remained under their control for another 400 years. After laying empty for 40 years, the castle was converted into a museum.

Along with exhibitions featuring amphora, glass, coins, jewellery and the history of Halicarnassus, the museum's claim to fame was its shipwrecks. Dating from 1025, the *Serçe Limani* was a two-masted vessel with lateen sails some 16m in length. Laden with a glass



Windsurfing in the bay at Bitez



The Mausoleum of Halicarnassus, with remnants dating to 4th century BC (above); Amphorae at Castle of St Peter (right)



cargo in excess of three tons, it was thought the vessel was en route to a glass factory somewhere within the Byzantine Empire when it sank off the southern Turkish coast.

Even older is the *Uluburun*, a Late Bronze Age wreck of the late 14th century BC discovered in the Mediterranean near Kas, Turkey. Found by a local sponge diver in the summer of 1982, the wreck had been spared plunder due to its depth between 44 to 61m. Boasting a cargo of copper, tin and glass ingots, jewellery, Cypriot pithoi (large storage jars) and perishable goods, the vessel provides a unique window into Bronze Age maritime trade. Fascinating stuff indeed!

The Mausoleum of Halicarnassus.

Bodrum is also home to the remains of one of the world's original Seven Wonders: The Mausoleum of Halicarnassus. In fact, the word "mausoleum" is derived from

ancient King Mausolus, who built the structure as his intended tomb. Completed in the 4th century BC, the original structure stood 45m in height, its sides adorned with columns of sculptural reliefs atop a massive stone platform.

Ultimately abandoned, it was eventually toppled by a series of earthquakes. When the Knights of St John arrived in the 15th century, they plundered the giant stone blocks to construct the Castle of St Peter. Today, all that remains are a scattering of blocks and broken columns, a faint echo of the massive structure that once stood here. In a small museum



on site, a model hints at the structure's original grandeur.

Craft beer & Turkish ice cream

After a stop at the old city gate of Myndos, Deniz had a special place in mind for lunch. Not far from Bitez sun, the beachside Pab Gastro Pub was an inspired choice. A cold craft beer was just the ticket after a full day of touring, along with some tasty *kofte* (Turkish meatballs). Seriously, I



Serçe Limani, a two-masted vessel dating from 1025 (above); *Uluburun*, a Late Bronze Age wreck dating from the late 14th century BC, which was discovered near Kas (top right)





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Landscape around Bodrum's harbour (above); Boats moored at Betiz (top right)

could spend all my time in Turkey just eating.

But the food was not quite over. I had earlier mentioned that I liked the Turkish ice cream called *dondurma*, so we finished up at, where else, a place called Turkish Dondurma in Bitez. *Dondurma* is unique, boasting a chewy texture due to the inclusion of mastic. It is a bit unusual to the uninitiated but no less delicious. After a three-scoop bowl of blackberry, sour cherry and pistachio, it was time for a break.

Deniz dropped me off at the guesthouse to recharge for a few hours. As other commitments beckoned, he left me in the capable hands of his associate İlknur Demir, who picked me up around 4:00 p.m.

Incredible views

The final stop of the day was a

hilltop viewpoint with Bodrum Bay on one side and Gumbet Bay on the other. At the highest points, stone windmills faced northwest to ensnare coastal winds. Now derelict, they were used from the 18th century until the 1970s to grind flour for the local people.

The views were astonishing, encompassing Bodrum and the surrounding bays and peninsulas. As the sun set and the city lights flickered to life, the colour intensified, with land and water a radiant mélange of red and gold. And if that was not enough, a Turkish mixed grill at a Bitez beachside restaurant sealed the deal.

Afterthoughts

After six days, Bodrum's charms, both under and above water, had me mesmerised. Couple the great diving with beautiful scenery, his-



tory, local cuisine and the wonderful Turkish people and you have got a destination that appeals to both divers and non-divers alike. A return visit is definitely in the cards. Besides, there are still some mezze dishes to sample... ■

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, South and East Pacific. See more of his stories at: xray-mag.com/
Contributors/Scott-Bennett



Bodrum's Gumbet Bay at sunset (above); Dondurma, Turkish ice cream (centre)

Swimming with

Whale Sharks

Text and photos by Brandi Mueller

in Cancun, Mexico



Some ocean animals are just inspiring. To be able to glimpse a massive animal like a whale shark can be a lifelong dream that some divers never get to experience. The ocean's largest living fish inhabits all of the world's tropical waters, but sightings are usually rare. However, there are a few seasonal hot spots where the likelihood increases.

One of those hot spots is off the coast of Cancun and near Isla Mujeres and Isla Holbox, Mexico. Sightings are almost guaranteed from June through to September when whale sharks congregate for unknown reasons in deep waters to feed. I had heard about this aggregation for years and finally found myself in the right place at the right time in Mexico. So, a dive buddy and I headed out for two days of snorkeling with the whale sharks.

What started off as a little-known event seen by offshore fishermen has turned into a very popular tourism experience. When the whale sharks show up, many boats stop whatever else they are doing (like fishing) and turn into whale-shark encounter boats. It used to be only a few boats taking people out, but now there are a lot more. As our boat neared our destination, it was obvious that we were in the right place because the horizon was filled with other small boats.

Regulations and safety

With such an influx of boats and people, there have been rules laid out to try and help protect the safety

of tourists and (hopefully) whale sharks. All participants must wear lifejackets—a condition with which my buddy and I were a bit unhappy, both because they were sort of uncomfortable (we were quite confident in our ability to snorkel), and the bright orange lifejackets were going to show up in my photos.

Other rules included the following:

- No scuba diving
- Everyone must have a guide
- Only two people and one guide (per boat) are allowed in the water at a time
- There is a limit on the total number of people that can be in the water per whale shark
- No touching of the whale sharks

• No lights or strobe use

• Use reef-safe sunscreen only

I learned later that there is a way around the lifejacket rule if one is a certified freediver and on a charter carrying only freedivers.

Approaching whale sharks

With our legs dangling over the side of the boat, we were ready, geared up

with masks, fins and snorkels in place. Looking down into the water, we could see the white spots and body outline of a whale shark next to the boat. We could also see nine snorkelers in the water next to it, who were slowly being left in the whale shark's wake.

As I watched the boats, it looked like the captains maybe had a bit of a line-up system, allowing them to take turns.



In hot spots off the coast of Cancun, sightings are almost guaranteed from June through to September when whale sharks congregate for unknown reasons in deep waters to feed.



For me, it was an overwhelming burst of happiness and joy just to be alongside a whale shark.

But just as this thought crossed my mind, I saw one boat jet out of "line" and cut off another boat, with the snorkelers' legs dangling just like ours. For a second, I thought it was going to sideswipe the other boat (and the dangling legs). While it was a miss, I cringed inside at the unnecessary maneuver. What a jerk!

Looking up at what seemed to be a semi-organized group of boats, I suddenly saw what might be considered the other side of the coin. How did they go on like this—70-plus boats every day, with an average of eight snorkelers on each boat—and not run anyone over? Or smash legs on the side of the boat? Or hit a whale shark? It worried me.

Swimming next to a whale shark
But it was almost our turn to get into the water. Our captain got a little bit ahead of the whale shark, and we slid off the side of the boat, immediately kicking like mad to keep up with the giant creature. Words and images cannot describe the actual feeling of being next to such a massive animal (particularly one that does not want to eat you). For me, it was an overwhelming burst of happiness and joy just to be alongside a whale shark.

Whale sharks can grow up to 20m and weigh over 11,000 kilos; but the gentle giants only feast on tiny marine life like plankton, with their giant mouths gaping and stretching open, up to four

feet across. They can swim as fast as 8kph, using a side-to-side motion with their whole bodies along with propulsion from their huge tails. We do not know much about their migration patterns, but records show that one tagged individual traveled over 8,000 miles in one year. The whale sharks' blue bodies are covered in white spots, which are unique to each animal, like zebra stripes, making it sort of like a fingerprint for each animal.

Kicking as hard as I could to keep up with the whale shark, I could not help but also stick my head out of the water to look around for boats. It would be so easy for a boat to run over a swimmer. I realized the lifejacket rule probably helps immensely in

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What used to be a fishing boat (doing detrimental things to the marine ecosystem) can now make far more money taking eight snorkelers at US\$150 each, without killing anything, and hopefully the park fees go to improve protected areas of Mexico too.

preventing this. You cannot freedive in a lifejacket and surface in a different location, like under a boat propeller. Plus, the bright red or orange color of the lifejackets helps boat crews to better identify the small humans in the big, blue ocean.

After the whale shark outswam us, we eventually stopped, and our boat came around to pick us up.

Wide smiles were on everyone's faces, and we got back on the boat, ready to go again.

When it came to our turn again, my buddy and I were geared up and ready to go. Our boat was "in line" when my buddy saw a whale shark off to our port side that no one had spotted yet. The captain veered to port and dropped us in, giving us

about ten minutes with this incredible animal all by ourselves before another boat showed up. I could not help but feel so small next to the huge animal out in the middle of the ocean.

Shark tourism debate

As someone passionate about the ocean and all the things in it, there is nothing I would rather be doing than

swimming next to whale sharks. I truly believe these experiences, in which almost anyone can be up close and personal with animals like this, do a huge service to ocean conservation.

People only love what they know. Once someone has been exposed to something like this, it is hard not to care at least a little bit more about the ocean environment. Our boat

that day, which was full, had no other scuba divers besides my buddy and me. This experience was opening up the ocean to so many people—non-divers—who might otherwise never get to see an animal like this in person.

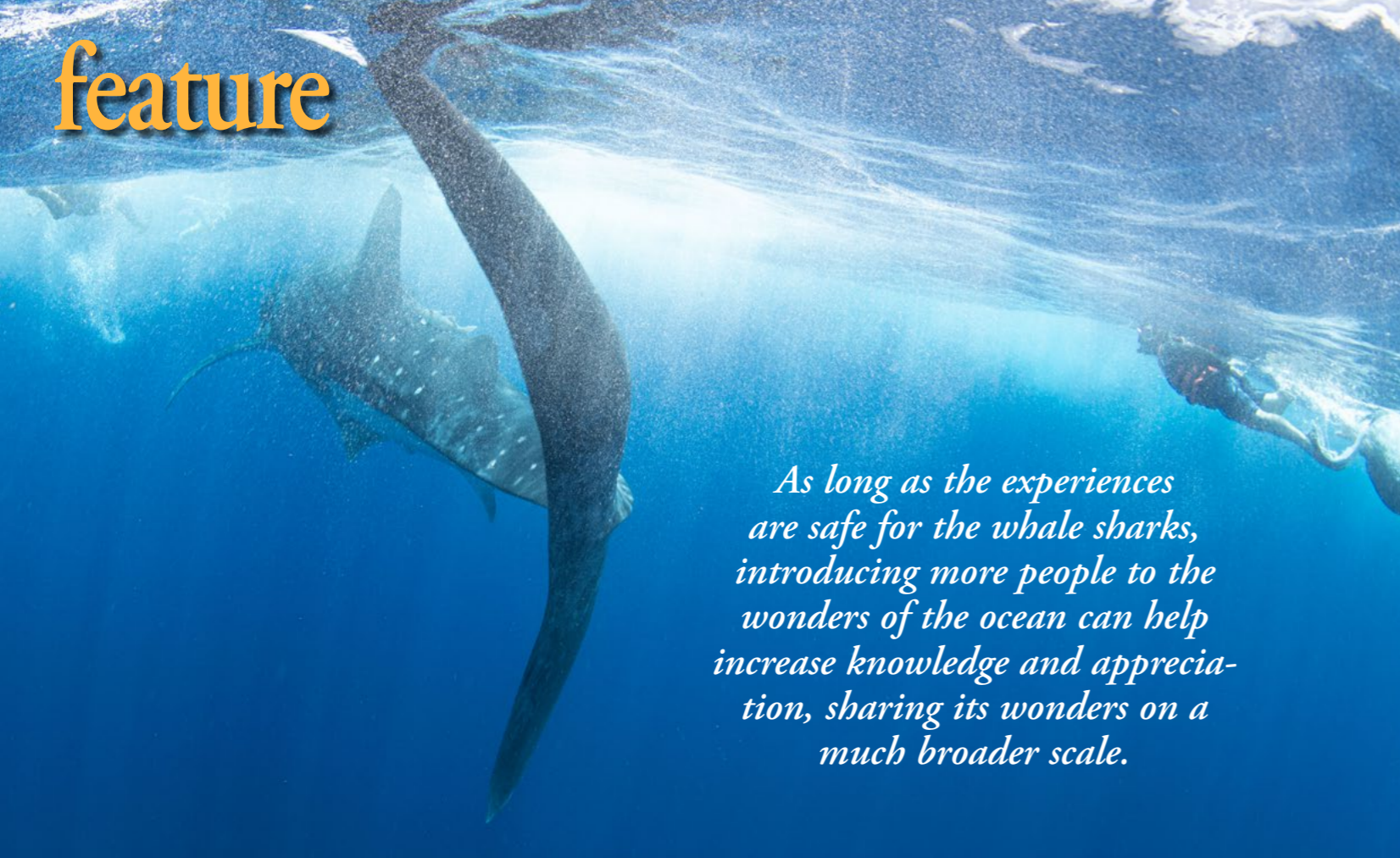
But I am also torn because the experience seemed a bit like a circus. There were too many boats and too many people. One could not help but wonder about the safety of the whale sharks (and the humans). Were the current rules enough?

Pros and cons

These trips also bring in a huge amount of money to the local people, the marine park, and Mexico. What used to be a fishing boat (doing detrimental things to the marine ecosystem) can now make far more money taking eight snorkelers at US\$150 each, without killing anything, and hopefully, the park fees go to improve protected areas of Mexico too.

I often find myself with questions like these after participating in ocean experiences around the world. Does the good outweigh the bad? I would rather give money to fishers for "not" fishing so that they can make a living and support their families without damaging the environment. Like it is often said, marine creatures are worth more alive than dead when you factor in what tourism dollars can bring in. But I also do not want the experiences we enjoy so much to cause harm to those animals we love.

At the end of the day, I think it is our responsibility to do the research and find out as much as we can about the ocean experiences we take part in. Are they being done the right way? Are they keeping the ocean (and people) safe?



As long as the experiences are safe for the whale sharks, introducing more people to the wonders of the ocean can help increase knowledge and appreciation, sharing its wonders on a much broader scale.

Afterthoughts

I cannot deny that it was an amazing experience, and I would likely do it again if I was back in Mexico at the right time. But I do hope that the operators and the park service continue to make and enforce rules to protect everyone (and every living thing) involved.

I would suggest that there be limits on how many boats can be out there at one time. The number of whale sharks seen on our boat trip varied from day to day. I could see that on days with lots of whale sharks, boats would be more spread out. However, on our second day, the weather was bad, and it seemed that over 70 boats were crowded around one whale shark!

On a planet in which the environment and marine species are threatened in so many

ways, whale sharks are no different. Their populations seem to be declining (although we do not necessarily have a good base on previous population estimates). We also do not fully understand where they live and spend time, where they mate and reproduce, or their migrations. They face threats, including shark finning, entanglement in fishing gear and pollution, ingestion of pollution such as plastics, being struck by boat propellers and ships, and changes in habitat due to climate change. They are listed as endangered on the IUCN list. I hoped we visiting swimmers were not on that list of dangers to whale sharks.

Encounters, like these around Isla Mujeres, can help whale shark conservation efforts by spreading awareness on a large scale. As long as the experiences

are safe for the whale sharks, introducing more people to the wonders of the ocean can help increase knowledge and appreciation, sharing its wonders on a much broader scale. ■

American underwater photographer, dive writer and regular contributor Brandi Mueller is a PADI IDC Staff Instructor and boat captain living in Micronesia. When she is not teaching scuba or driving boats, she is most happy traveling and being underwater with a camera. Mueller's book, *The Airplane Graveyard*, featuring her underwater photos of forgotten American WWII airplanes at the bottom of the Kwajalein Atoll lagoon, is available at [Amazon.com](https://www.amazon.com). For more information, please visit: [Brandiunderwater.com](https://brandiunderwater.com).

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Silvertip nudibranchs, *Janolus capensis*, photographed in Cape Town, South Africa, with a Scubalamp OSD snoot. Camera gear: Nikon D850 with 60mm macro lens and +12.5 diopter. Settings: ISO100, f/25, 1/250s

Text and photos by Kate Jonker

The innovative new Scubalamp OSD Snoot was officially released in late 2021. Underwater photographer Kate Jonker took it through its paces and shares her review of the product as well as her stunning photos taken with it.

When I first started taking photos underwater, I was immediately drawn to macro shots showing beautifully vibrant and detailed subjects with black backgrounds. I wanted to take photos like that!

With careful strobe positioning, I was able to achieve black backgrounds, but I discovered that there was more to these images than just strobe positioning. To isolate the subject from its busy surroundings, a snoot was needed.

What is a snoot?

I started my research and discovered that a snoot is a device that attaches to the front of your strobe and narrows the beam of light that is emitted when you fire your strobe. If carefully

positioned, only your subject is lit by a small pool of light, leaving everything else completely black.

There are several types of snoots—some are cone-shaped with a nar-

row opening at the end, some use fibre optic threads that channel the light from the strobe into a narrow beam, and others have lenses that condense and narrow the beam

of light without losing light quality. I chose the latter for ease of use and quality of light.

Most optical snoots come with a set of masks that slide into a special

slot. The masks have holes of varying sizes and the smaller the hole, the narrower the beam, and thus the smaller the pool of light that lands on your subject.

Photo Gear Review

Scubalamp OSD Snoot





Bluespotted klipfish, *Pavoclinus caeruleopunctatus*, on multi-coloured sea fan (above). Settings: ISO160, f/25, 1/250s; Salmon gasflame nudibranch, *Bonisa nakaza* (top right). Settings: ISO160, f/25, 1/250s. Camera gear for both images: Nikon D850 with 105mm macro lens

Using a snoot

Positioning the snoot is done using the strobe's focus light, which will shine through the hole in the mask and show you where your strobe will light when you press your camera's shutter. It is therefore vital that your strobe has a strong focus light.

Once you can see the focus light in your camera's viewfinder, you need to adjust the position of your strobe until the focus light falls in the centre of your frame where you want your subject to be. You then need to focus your camera and the beam of light on your

subject at the same time. I use the back button focus for this. When the focus light falls on your subject and your subject is in focus, take a test shot to check your snoot is in the correct position, and when it is, tighten the clamps of your strobe arms and you are ready to go!

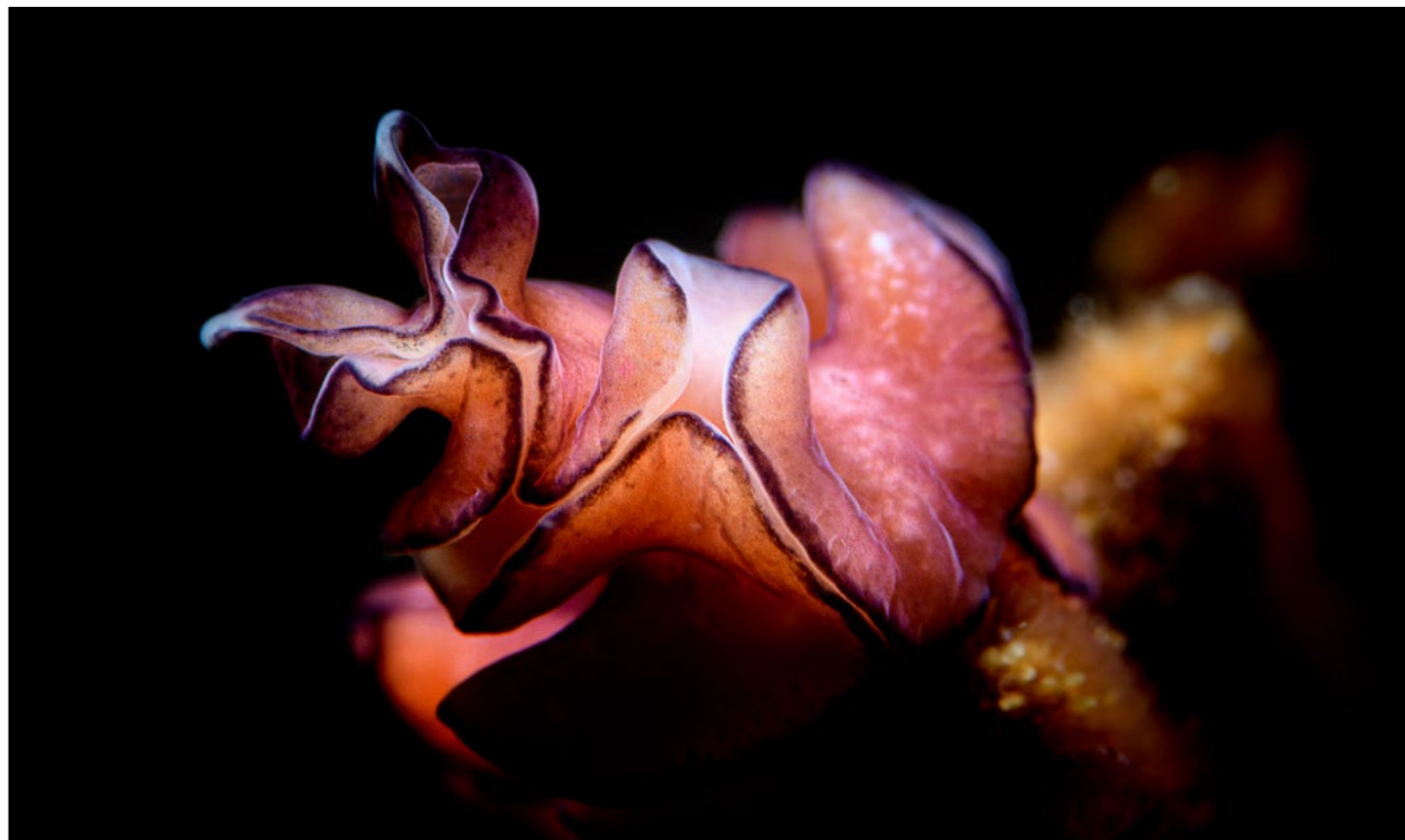
The problem comes in when you find a differently sized subject and need to choose a smaller or larger hole for your mask. This is usually when the strobe gets moved out of position, and you have to start all over again with aligning your strobe. It can be very frustrating and time-

consuming.

Camera settings need to be quite specific to ensure a black background. Go for the fastest shutter speed that your camera will sync with your strobe, a high aperture for good depth of field and a low enough ISO to help cut out ambient light—but high enough to give you sufficient lighting of your subject.

An innovative new snoot on the market

Towards the end of 2021, I was fascinated to hear of an inno-



Maroon lined flatworm stretching towards the light of the OSD. Camera used: Nikon D850 with 105mm macro lens. Settings: ISO160, f/25, 1/250s



Side view of the SUPE OSD (right); Photo of the SUPE OSD showing the plastic collar that attaches to the strobe (below).



The SUPE OSD apertures at different sizes, from 1 (small) to 8 (large)—left to right.



angle scenes, but soft enough to light delicate macro photos.

As an avid “snooter,” I was very keen to try the SUPE OSD for myself and ordered one with an adaptor for my SUPE D-Max Strobe as well as an adaptor for the Sea&Sea YS-D2 strobe.

About the SUPE OSD

The SUPE OSD (optical shaping device) differs from other snoots due to its innovative way of changing the size of the beam of light.

Instead of using masks, it has an in-built aperture that can be dialled in to eight different aperture sizes. For a narrow beam of light, a small aperture can be selected and for a wider beam, a larger aperture can be selected by merely turning a knob on the side of the OSD.

The SUPE OSD is very sturdy and made from aluminium. It uses glass lenses to enhance the strength of the focus light and quality of light emitted from the strobe. It measures 117mm x 114mm x 99mm and weighs 522g.

SUPE says that the OSD is compatible with its D-Max and D-Max Pro strobes, Seacam 150D, Ikelite 161 and 160, Retra and Sea&Sea YSD2 and YSD3.

To attach the OSD to a strobe, SUPE has designed special adaptors for each strobe type. Each adaptor consists of a plastic collar that clips onto the front of the strobe, which is then tightened by a metal clamp that fits over it. The OSD fits onto a bayonet mount on the plastic collar and locks in place with a spring-loaded button. It is easy to remove the OSD on a dive, should you wish to take a photo without a snoot effect.

The OSD also comes with a groove on its neck, which makes attaching a lanyard possible. It is sealed with O-rings, and SUPE says that it is waterproof and “future proof,” meaning that if you change strobes, you will just need to purchase a new adaptor.

First impressions

When I received my OSD, the first thing that struck me was how much shorter it was, compared to the other snoots I own. This makes it more compact to use, which is a bonus—especially when using larger strobes such as the D-Max, Seacam and Ikelite strobes.

Once I attached the OSD to the front of my D-Max strobe, it seemed quite heavy and bulky in comparison to my usual Inon Z240 strobe and snoot setup. I was quite worried about how heavy it was going to be underwater.



The author and her camera rig with SUPE D-Max strobe fitted with a SUPE OSD

vative new snoot, the Scubalamp (SUPE) OSD that had just been released onto the market. Scubalamp Underwater Photographic Equipment (Scubalamp, or SUPE for short) collaborates with underwater photographers to develop and manufacture high-quality underwater photography lighting products for both photographers and videographers.

I own a set of SUPE D-Max strobes that have a central focus light and a circular flash tube, providing an even spread of light, strong enough for even the most challenging of wide-

Sleeping dark shyshark, *Haploblepharus pictus* (right). Camera used: Nikon D850 with 60mm macro lens. Settings: ISO320, f/25, 1/250s; Egg ribbon with a tiny, 2mm-long amphipod perched in its centre (far right). Smallest aperture of the OSD was used. Camera used: Nikon D850 with 105mm macro lens and +12.5 diopter. Settings: ISO160, f/22, 1/250s



Snoot



Tubular hydroid, photographed with OSD pointing diagonally at it (right). Gear: Nikon D850 with 105mm macro lens. Settings: ISO160, f/22, 1/250s



Blue gasflame nudibranch, *Bonisa nakaza*. Camera used: Nikon D850 with 105mm macro lens and +5 diopter. Settings: ISO160, 1/250, f/32

Field testing the SUPE OSD

I initially used my 105mm macro lens with my Nikon D850 camera and attached the strobe and snoot to a float arm with 750g lift underwater. I attached my torch to the right-hand float arm. I used the torch to search the reef for critters and pointed it to the right so that its light did not seep into my snooted images.

As soon as I entered the water, I was pleasantly surprised to discover that the strobe and snoot combination was unnoticeable and did not pull the camera forward or put undue strain on my wrists.

I found it easy to see the strong focus light of the D-Max strobe underwater and because of the sturdy strobe and OSD combination, it was easy to move into place. Some snoots have a habit of dislodging from the strobe when you move them, but the

OSD stayed firmly locked in place.

When I pressed the trigger, I was delighted to discover that the beam of the focus light was spot on, and my subject was lit exactly as I wanted. The light quality was brilliant and produced great colours and details.

It was an absolute dream not to have to move or remove the mask to change the size of the beam of light—all I needed to do was dial in the aperture size I wanted. I did have to change the position closer to my camera for super macro, but apart from that, I did not need to move the strobe at all.

The different aperture sizes were adequate for the 10cm gasflame



nudibranchs, which we have in Cape Town, South Africa, right down to 0.5cm ghost nudibranchs. One thing I did notice was that when using a smaller aperture on the OSD to photograph smaller subjects, I had to push up my strobe power a notch.



Gasflame nudibranch (above). Camera used: Nikon D850 with 60mm macro lens. Settings: ISO100, f/22, 1/250s; Small common octopus, photographed using widest aperture to light as much as possible (left). Camera used: Nikon D850 with 105mm macro lens. Settings: ISO160, 1/250, f/25



Tiny, 0.5cm-long ghost nudibranch, photographed with OSD on a small aperture, pointing directly downwards. Camera used: Nikon D850 with 105mm macro lens and +5 diopter. Settings: ISO160, f/32, 1/250s

The following day, I decided to attach the OSD to my Sea&Sea YSD2 strobe to find out how it performed. Apart from the setup being much smaller than my D-Max strobe, the other difference between the two strobes was the location of the focus light. The Sea&Sea focus light is located at the 12 o'clock position on the face of the strobe, whereas the D-Max has a centrally located focus light. I found that when used with the Sea&Sea strobe, the focus light did not give a true indication of exactly where the strobe light would fall, and I needed to compensate for this by adjusting the strobe position accordingly.

Conclusion

The OSD is designed to be used with a selection of different strobes, although I found the OSD far easier to use with the D-Max strobe than with the Sea&Sea YS-D2. I found it much harder to get the beam of light to fall in the right place with the YS-D2 strobe, and it took quite a bit of trial and error to get the strobe light to fall in the right spot.

I have been using the Scubalamp OSD with my SUPE D-Max strobe for the past four months, with both my 105mm and 60mm lenses and am incredibly happy with the photos I have been able to produce. Would I recommend the SUPE OSD? Absolutely—if you have a

strobe with a centre-mounted focus light. I am pleased with how mine works with my D-Max strobe and can imagine anyone with a strobe that has a central focus light will have equally successful and enjoyable dives with the SUPE OSD as I do. ■

Kate Jonker is an underwater photographer, dive writer, underwater photography instructor, dive guide and dive boat skipper based in South Africa who leads dive trips across the globe. For more information regarding diving and underwater photography in Cape Town, divers are welcome to find her at: katejonker.com.

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Spots, Stripes & Stars

My Favorite UW Pix

*Contributors' Picks from
Around the World*

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

We asked our contributors what their favorite underwater photographs featuring spots, stripes and star patterns were, and they returned with a surprising range of subjects from delicate macro marine life to majestic manta rays. *X-Ray Mag* contributors share their favorite images from the tropical waters of Indonesia, Philippines, Malaysia, Papua New Guinea, Yap, Maldives, Mozambique, Hawaii and Red Sea to the subtropical and temperate waters of Turkey, New Zealand, South Africa, the US East Coast and British Columbia.



ANITA GEORGE-ARES

Coleman shrimp on variable fire urchin, Secret Garden dive site, Anilao, Philippines (previous page). Gear: Canon EOS Rebel SL1 camera, Canon EF-S 60mm f/2.8 macro USM lens, Ikelite housing, two Ikelite DS161 strobes. Exposure: ISO 100, f/11, 1/200s

Haeckel's anemone, Sabang Point, Puerto Galera, Philippines (left). Gear: Canon EOS Rebel SL1 camera, Canon EF-S18-55 f/3.5-5.6 IS STM lens, Ikelite housing, two Ikelite DS161 strobes. Exposure: ISO 100, f/8, 1/160s

Bubble coral shrimp, Sun View Point dive site, Anilao, Philippines (right). Gear: Canon EOS Rebel SL1 camera, Canon EF-S 60mm f/2.8 macro USM lens, Ikelite housing, two Ikelite DS161 strobes. Exposure: ISO 100, f/11, 1/200s

ANITA GEORGE-ARES



ANITA GEORGE-ARES

Ambon crinoid shrimp on a feather star (crinoid), Masaplod North, Negros Island, Philippines. Gear: Canon EOS Digital Rebel XT camera, Canon EF 50mm f/2.5 compact macro lens, Ikelite housing, two Ikelite DS161 strobes. Exposure: ISO 200, f/11, 1/200s

Telling a Story

Text and photos by Anita George-Ares

I have an insatiable curiosity. Underwater photography helps me identify the subjects in the images that I take. Regarding the creative process, I aim to tell a story while celebrating the uniqueness of marine life. I photograph species in their habitats, for that tells a story. I try to photograph behavior for that is another part of the story.

While I sometimes previsualize an image, and in the words of Sam Abell, "compose and wait," things often happen quickly underwater. So, when I am back home, I use Lightroom and Photoshop to highlight compositional elements such as color and patterns. I sometimes discover another species, situation or pattern that I did not notice when I was taking the image.

Anilao's Secret Garden dive site in the Philippines includes a relatively steep, muddy slope that has an amazing number of variable fire urchins with Coleman shrimp. I was drawn to the intense coloration of the fire urchin, the unique shapes and arrangement of its spines, with the bonus of shrimp! Shooting downward captured the interesting patterns. Because I moved in close while shooting, minimal cropping was used for the image.

Coleman shrimp are found in pairs and occur on only one or two species of fire urchin. Female Coleman shrimp are larger than the males. The colorful and venomous fire urchins provide protection for the shrimp. The shrimp neither benefit nor harm the urchin, which is an example of a commensal relationship. The shrimp occupy a cleared area that shows part of the urchin test or skeleton.

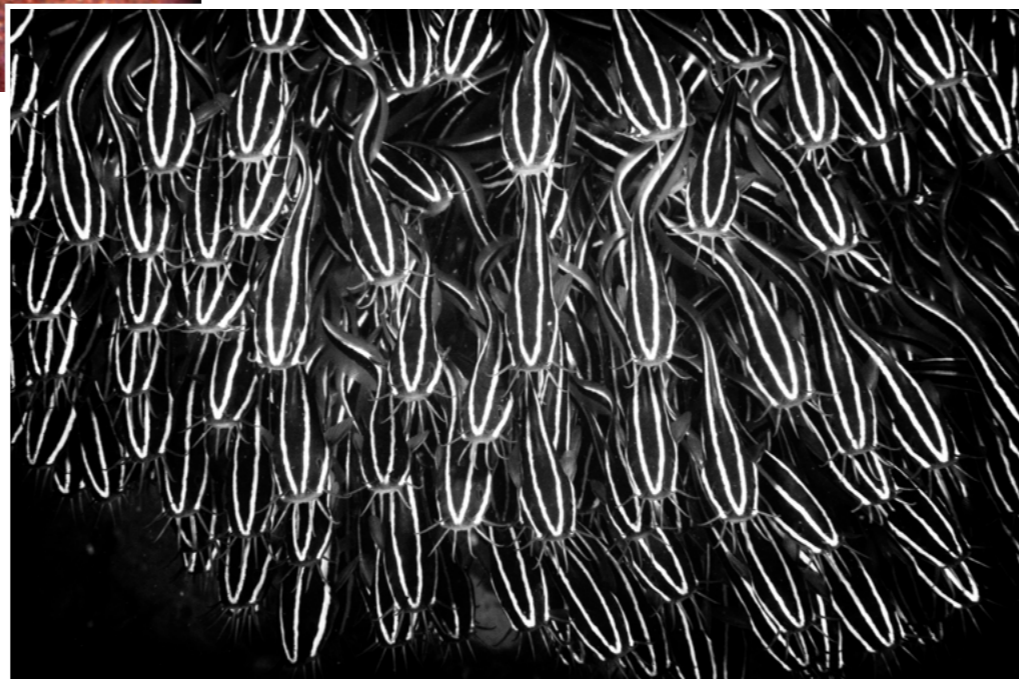
Crinoids, also known as feather stars, occur in many colors. The commensal crinoid shrimp are well camouflaged as they expertly match the colors and patterns of their host crinoids. I chose this image from Negros Island in the Philippines to illustrate how beautifully camouflaged this small shrimp was. In the original image, the shrimp and the crinoid arm were in a near vertical position. To improve the composition, I rotated the image 90 degrees and then cropped it. The image almost looks as if it has been converted to black and white. There is no color to distract from the repeating pattern of stripes and spots.

At a dive site in Puerto Galera, Philippines,

I noticed the interesting pattern of spots and stripes on the Haeckel's anemone, which varies in color. I like this image because the radial symmetry of the surrounding soft coral complements the radial pattern of the anemone. The image was cropped to make it more pleasing. The spots on the large tentacles are nematocysts (venomous, stinging capsules). This anemone species is typically found in sandy areas, where the anemone can withdraw completely into the sand.

In the image of the bubble coral shrimp taken at Anilao, the shrimp appears to be looking at the viewer. I like the bold stripes of the shrimp against the muted, striped pattern of the bubble coral. The image was significantly cropped. A few of the bubbles were overexposed. The adjustment brush tool in Photoshop was used to darken some of the overexposed bubbles. These commensal shrimp reside exclusively on bubble coral. Please visit: [facebook.com/profile.php?id=100016947967639](https://www.facebook.com/profile.php?id=100016947967639)





Spots on sea star, Maldives (top left). Gear: Canon F-1 camera, Canon 50mm FD f/3.5 macro lens, Ikelite housing, single Ikelite DS-125 strobe. Exposure: ISO 400, f/22, 1/60s; Striped nudibranch, Dumaguete, Philippines (top center). Gear: Canon Rebel T1i camera, Canon 100mm f/2.8 macro lens, Ikelite housing, twin Ikelite DS-161 strobes. Exposure: ISO 400, f/16, 1/60s; Striped coral catfish, Dumaguete, Philippines (right). Gear: Canon Rebel EOS T1i camera, Sigma 50mm f/2.5 macro lens, Ikelite housing, twin Ikelite 161 strobes. Exposure: ISO 400, f/11, 1/60s

Crown-of-thorns sea star, Siquijor Island, Philippines (above). Gear: Canon Rebel T1i camera, Canon 100mm f/2.8 macro lens, Ikelite housing, twin Ikelite DS-161 strobes. Exposure: ISO 400, f/16, 1/60s

Rewards of Identification

Text and photos by John A. Ares

The image of the cushion sea star in the Maldives was shot on film and digitized. The sea star was loaded with spots! I thought getting very close would isolate the elements of the sea star. Using a single strobe held at a low angle would accentuate the contrast and add depth.

For me, part of the rewards of underwater photography is identifying what I photograph. Since studying marine sciences in graduate school, my wife and I have collected an extensive library on species identification and behavior. So, I picked out the book, *Reef Creature Identification—Tropical Pacific* by

Humann and DeLoach, for a reference. If you have a general idea of what a particular creature might be, searching a reliable identification book for it beats scrolling through thousands of potentially misidentified internet images.

I loved shooting these catfish at Dumaguete in the Philippines. I think I may hold the world record for the largest swarm of catfish in a photo, which was published in *Aqua—International Journal of Ichthyology*, 2011. Estimates by graduate students pegged the number of the huge swarm in my photo at over 2,700 fish!

Striped coral catfish are common in the Indo-Pacific. During the day, the juveniles hunt together. The adults

come out at dusk or night. The catfish have venomous spines on their dorsal and pectoral fins, so they should not be touched.

Shooting down on them was a different approach for me. I usually try to get low in order to get their “Roman soldier” rotating charge in front of me. Since they are black and white in color, converting the color photo to black and white was a natural choice.

Many nudibranchs are just plain gorgeous, like the *Armina occulta* nudibranch I photographed in

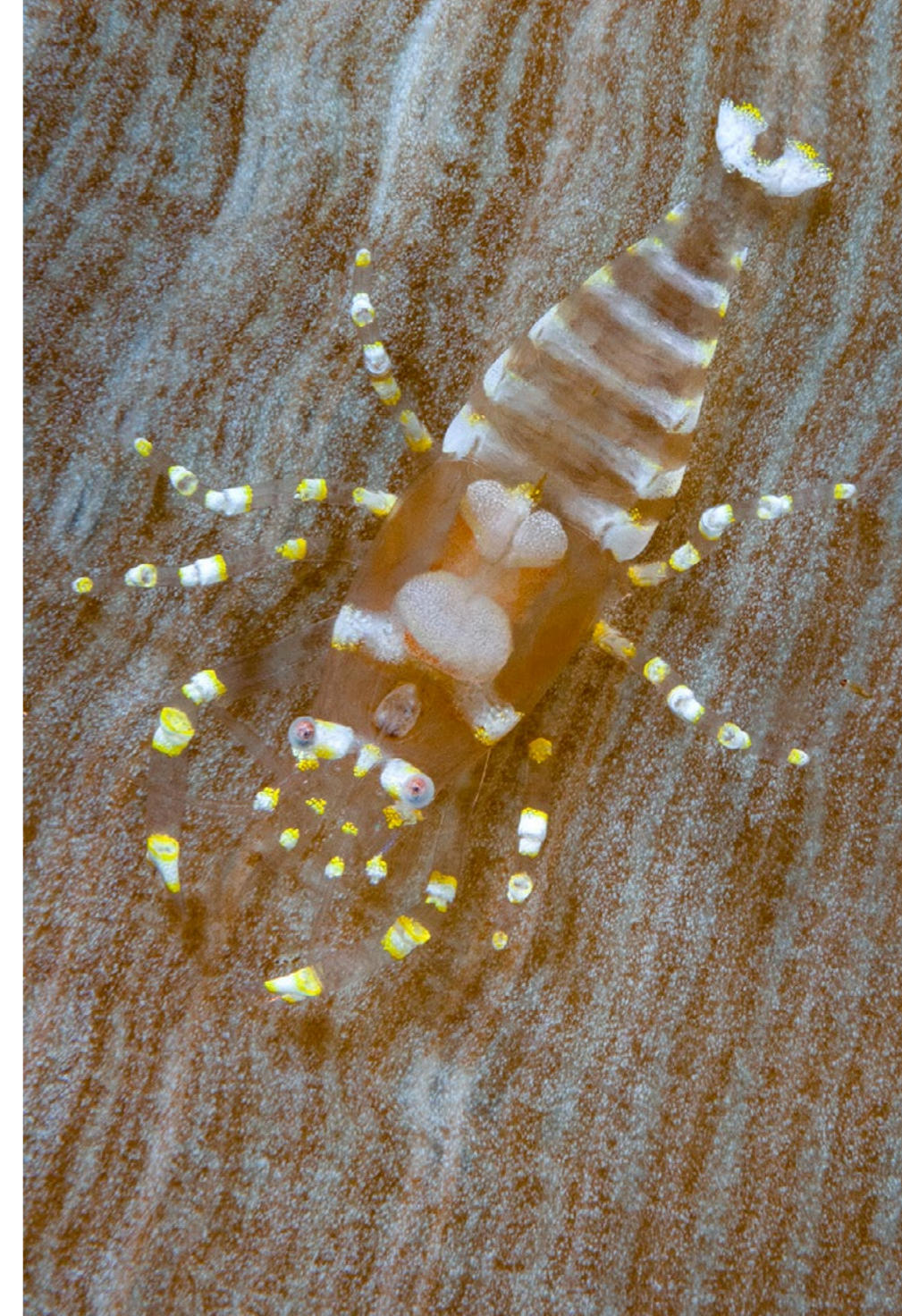
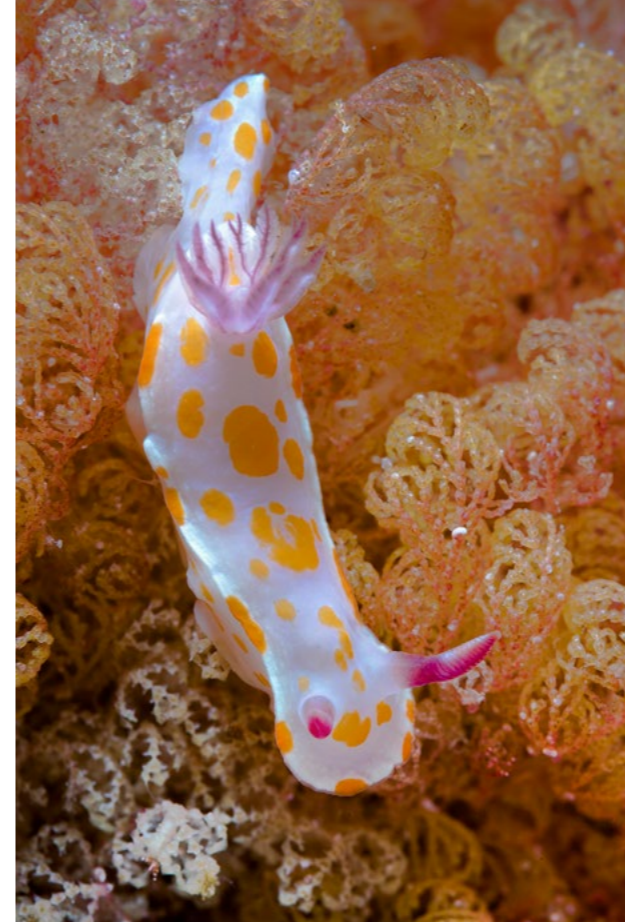
Dumaguete. There are entire websites devoted to nudibranchs, in addition to a Facebook page and books. I learned years ago that in the Indo-Pacific, one should stick with the dive guides who will find you creatures. So now, I give dive guides a list of what I am looking for and I get a higher success rate of new creatures to photograph, in contrast to the dives when guides just point out a common *Chromodoris annae* for the hundredth time. For me, the square format works better for many pictures. I got used to shooting in this format while using a Hasselblad film camera.

To photograph the crown-of-thorns sea star in Dumaguete, I approached

it from a side angle and placed the strobes low and to the side, to create a bit of drama. The square format and black-and-white photography seemed a natural choice again for this shot. Crown-of-thorns sea star have venomous spines, so care needs to be taken when photographing them. In some areas, they help maintain coral reef balance as they eat fast-growing corals. In other areas, because of their ravenous appetite, their populations need to be controlled. Visit: JohnAres.com

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NUDIBASE. [HTTPS://WWW.FACEBOOK.COM/ GROUPS/NUDIBASE](https://www.facebook.com/groups/NUDIBASE)





Spiny sea stars, False Bay, Cape Town, South Africa (above). Gear: Nikon D810 camera, Nikon 16-35mm lens @28mm, Seacam housing, two Ikelite D160 strobes. Exposure: ISO 320, f/11, 1/160s; Sweet ceratosoma, Poor Knights Islands, New Zealand (top centre). Gear: Nikon D810 camera, Nikon 105mm macro lens, Seacam housing, two Ikelite D160 strobes. Exposure: ISO 100, f/25, 1/125s; Zebra moray, Seraya Secrets, Bali, Indonesia (right). Gear: Nikon D200 camera, Nikon 60mm macro lens, Hugyfot housing, two Ikelite D125 strobes. Exposure: ISO 100, f/18, 1/160s

Critters that Crawl or Slither

Text and photos by Scott Bennett

Regarding spots and stripes, there is no better subject than ghost shrimp. While on a liveaboard trip to Papua New Guinea's Kimbe Bay, I encountered this specimen on a disc anemone. Beautifully patterned with white bands and yellow spots, the transparent body was virtually invisible, creating dramatic contrast. The anemone provided additional stripes, and the image was shot with the subject and background on a

diagonal to lead the eye.

During a dive to photograph Cape fur seals in Cape Town, South Africa, things were not going according to plan. Lightning-fast seals and poor visibility proved frustrating, so I concentrated on the reef itself. The colours and textures were amazing, but it was the spiny sea stars that captivated me. The reef was literally swathed, a mass of twisted bodies and knobby textures. Using a wide-angle lens, I moved to fill the frame,

with the reef adding a splash of contrasting colour.

New Zealand's Poor Knights Islands are a meeting ground of temperate and tropical species, and home to a plethora of unique species. Nudibranchs are a personal favourite and none more so than this sweet

ceratosoma. Following one's progress, I waited for it to traverse a patch of yellow bryozoans. The white body provided contrast, with its yellow spots echoed in the background, drawing in the viewer's eye.

Situated off Bali's northeastern coast near Tulamben, Seraya Secrets is a fantastic macro site and home

to a dizzying array of critters. This zebra moray was encountered on a night dive as it patrolled the volcanic substrate in search of prey. It finally settled, its upper body protruding from beneath a piece of wood. The undulating curves and vertical stripes created a striking contrast against the dark sand. Visit: xray-mag.com/Contributors/Scott-Bennett

Ghost shrimp, Kimbe Bay, Papua New Guinea. Gear: Nikon D200 camera, Nikon 105mm macro lens, close-up filter, Hugyfot housing, two Ikelite D125 strobes. Exposure: ISO 125, f/40, 1/100s



Ocean Floor, Sharm El-Sheikh, Egypt, 2013 (above). Gear: Canon 7D camera, Canon 10-22mm lens (at the 10mm end), Easydive housing, ambient light. Exposure: ISO 200, f/8, 1/125s; *Abstract Fin*, Sharm El-Sheikh, Egypt, 2014 (top right). Gear: Canon 7D camera, Canon 60mm Marko lens. Easydive housing, two Sea&Sea YS-110 strobes. Exposure: ISO 100, f/18, 1/200s; *Sabella*, Kas, Turkey, 2010 (right). Gear: Canon 40D camera, Ikelite housing, Ikelite DS125 strobe. Exposure: ISO 100, f/13, 1/60s

Revelling in Abstractions

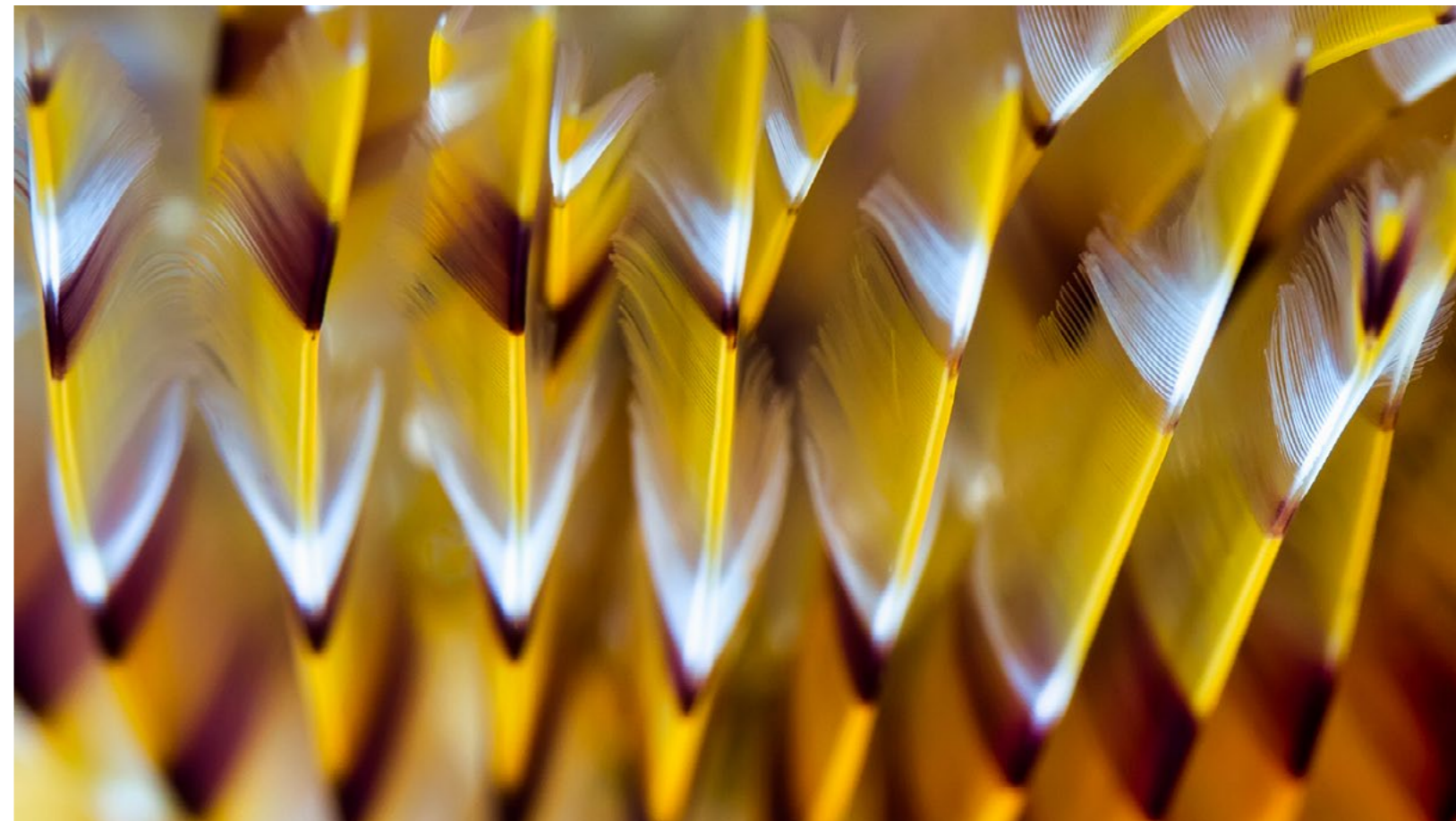
Text and photos
by Rico Besserlich

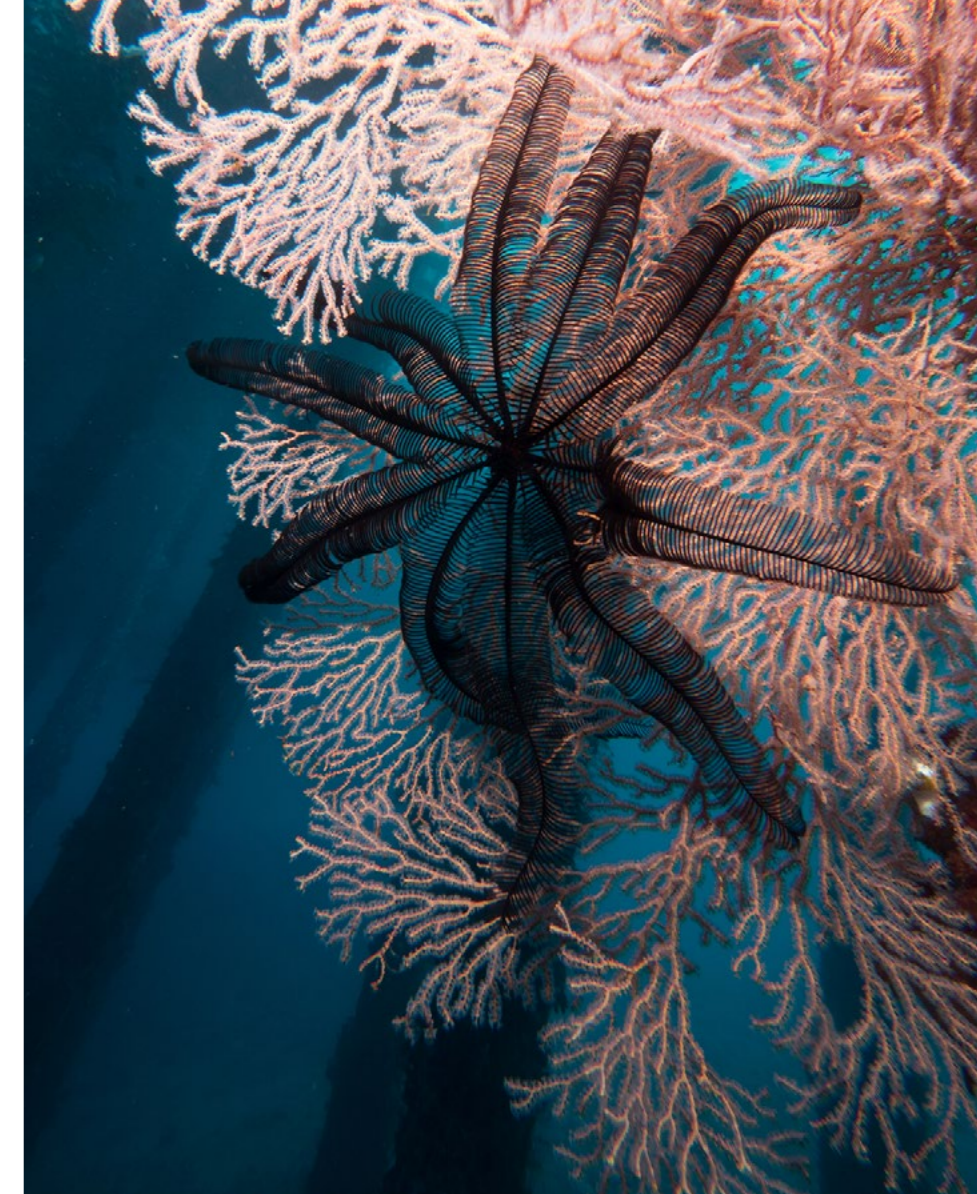
As I have always been a fan of abstract underwater photography, I often look for interesting patterns and shapes during my dives. The photo *Abstract Fin* is an abstract image of a lionfish's dorsal fin. I enjoyed reducing the subject to its very core: the beautiful stripes inside the fish's fin.

Whenever I conducted underwater photography work-

shops in the Red Sea, I always tried to arrive a bit earlier (before the participants did) and have a day for myself, snorkelling the shallow bay of Na'ama Bay, looking for patterns, shallow underwater scenes, and anything else that was interesting to spot. The image *Ocean Floor* was taken while freediving. It is one of my all-time personal favourites, because it displays the peace and harmony of the ocean so nicely. Also, I loved the stripes and patterns the sunlight drew on the ocean floor.

Tubeworms (*Sabella*) can be seen very often in the Mediterranean Sea of Turkey. Having a very close look at them (if they let you—often, they just hide in their tubes) shows their special beauty, which not only consists of beautiful colours and fine gradients but also, perfect stripes. Again, I like abstractions. Therefore, I like to go incredibly close to common subjects (if they let me), discovering their finest details with my camera. Visit: maviphoto.com





Vibrant Patterns of Alor

Text and photos by Sheryl Checkman

In 2017, I dived off the island of Alor in Indonesia and was blown away by patterns in the sea more vibrant than I have seen in the Caribbean—from the freeform turquoise-stripes on the orange body of a mandarin fish—to the evenly spaced, black-and-white, candy-cane stripes of a sea snake.

Never having encountered one before, I must have followed the snake for a good ten minutes as it weaved its way along the reef, its black and white stripes a sharp contrast to the reef beneath it. It was only later that I learned how poisonous this snake was.

At Bakalong Jetty, a black crinoid spread its star-like arms against a pale

pink coral sea fan. The fine, feathery lines that make up its arms, as well as the dark lines of the jetty itself, contrasted with the branched pattern of the sea fan.

I also encountered many different types of starfish with varied textures and colors. One in particular had an interesting pattern of geometric shapes on the inner part of its cream-colored body, with the tips of its arms a deep orange, as if they had been dipped in paint.

Another purple-toned sea star (*Linckia laevigata*) spread itself out against the pink-toned reef as if to say, "This is mine!" If you look closely, you can see a pattern of darker spots, adding subtle texture to its arms. To see more, click the photo tab at: checkmandesign.com.

COUNTERCLOCKWISE FROM ABOVE:
Crinoid, Bakalong Jetty, Alor, Indonesia.
Gear: Olympus OMD EM5 Mark II camera, Olympus M. Zuiko 9-18mm f/4.0-5.6 lens at 9mm, Olympus PT-EP13 housing, Sea&Sea YS D-1 strobe. Exposure: ISO 200, f/11, 1/60s

Sea snake, Anemone City, Alor, Indonesia.
Gear: Olympus OMD EM5 Mark II camera, Olympus M. Zuiko 9-18mm f/4.0-5.6 lens at 11mm, Olympus PT-EP13 housing, Sea&Sea YS D-1 strobe. Exposure: ISO 200, f/11, 1/125s

Starfish, Bakalong Jetty, Alor, Indonesia.
Gear: Olympus OMD EM5 Mark II camera, Olympus M. Zuiko 14-42mm f/3.5-5.6 II lens at 28mm, Olympus PT-EP13 housing, Sea&Sea YS D-1 strobe. Exposure: ISO 200, f/5.6, 1/80s

Purple sea star, Bakalong Jetty, Alor, Indonesia. Gear: Olympus OMD EM5 Mark II camera, Olympus M. Zuiko 9-18mm f/4.0-5.6 at 9mm, Olympus PT-EP13 housing, Sea&Sea YS D-1 strobe. Exposure: ISO 200, f/11, 1/60s





Spots

Twinspace gobies live in areas of sand, silt or rubble, Tufi Resort, Papua New Guinea (above). Gear: OM-D E-M1 camera, Olympus 60mm macro lens, Aquatica housing, Sea&Sea YS-D1 strobes. Exposure: ISO 200, f/16, 1/250s; Brittle star crawls across the seafloor, Dicky's Reef, Papua New Guinea (top right). Gear: Olympus OM-D E-M1 camera, Olympus 60mm macro lens, Aquatica housing, Sea&Sea YS-D1 strobes. Exposure: ISO 200, f/16, 1/200s

From the Defensive to the Comical

Text and photos by Larry Cohen

As an underwater photographer, I am always on the lookout for marine life with patterns that might include spots or stripes. These patterns are pleasing to the human eye, but their purpose could be for mating, as warning signs, or for defense purposes.

In the case of the yellow boxfish, the spots and yellow color is a warning sign. When this beautiful fish is stressed, it releases the neurotoxin tetrodotoxin (TTX) from its skin. This is deadly to fish in the surrounding waters.¹ Trying to keep this tiny, fast-moving fish in the camera's frame as it quickly moved in front of me was difficult.

Diving Matakating House Reef Pier on Pom Pom Island in Malaysia was an exciting shore dive with a strong current. Marine life

was abundant under the pier, including a school of juvenile golden batfish. These fish have an engaging vertical stripe and seem to relish being photographed. They stayed still in the water column while I struggled to keep my position in the current.

Underwater photographers can easily stay engrossed, documenting the variety of sea stars in Papua New Guinea. I spotted a brittle star crawling across the seafloor when diving Dicky's Reef. I found it interesting that this star has a tiny central body surrounded by long flexible arms used for locomotion.

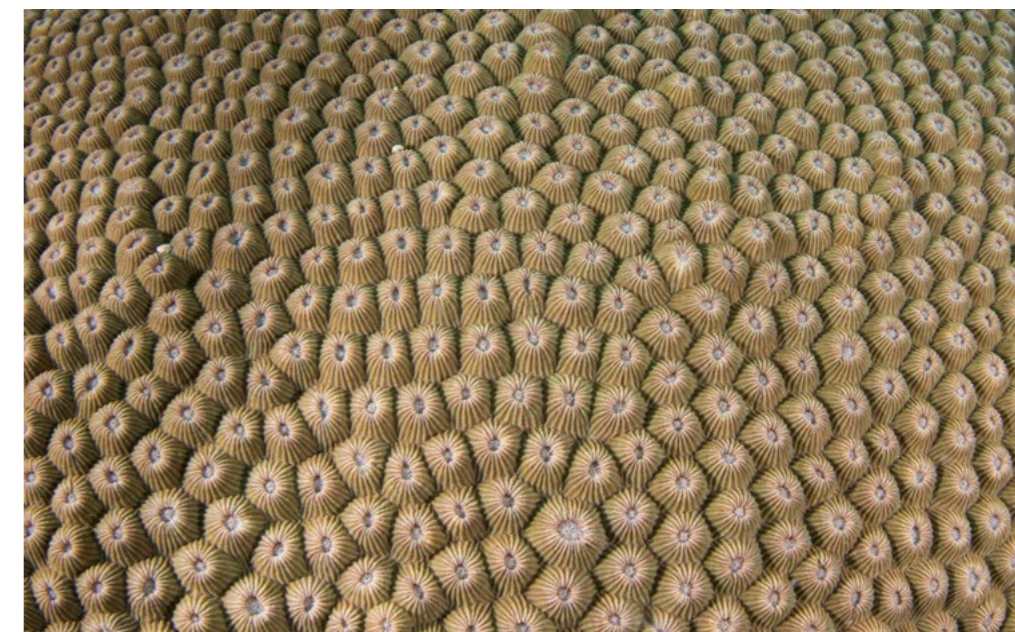
When diving below the dock at Tufi Resort, I was entertained by watching two twinspace gobies. These fish are absurdly comical as they hop along the bottom. They travel in pairs; and to their predators, their twin spots look like eyes on a much larger fish. Visit: liquidimagesuw.com



The spots and yellow color on the yellow boxfish are a warning sign (above). Gear: Olympus OM-D E-M1 camera, Olympus 60mm macro lens, Aquatica housing, Sea&Sea YS-D1 strobes. Exposure: ISO 200, f/8, 1/200s

Juvenile golden batfish at Matakating House Reef Pier, Pom Pom Island, Malaysia (right). Gear: Olympus OM-D E-M1 camera, Panasonic 8mm fisheye lens, Aquatica housing, Sea&Sea YS-D1 strobes. Exposure: ISO 200, f/5.6, 1/250s





A lionfish uses stripes and spots to confuse its predators, Northern Red Sea, Egypt (above). Gear: Canon EOS 7D Mark II camera, Tokina 10-17mm fisheye lens, Sea&Sea housing, two Inon Z240 strobes. Exposure: ISO 320, f/14, 1/250s; An inkspot nudibranch uses its purple spots to warn predators that it is toxic, Gordon's Bay, South Africa (top centre). Gear: Nikon D850 camera, Nikon 60mm macro lens, Isotta housing, two Supe D-Max strobes. Exposure: ISO 64, f/25, 1/250s

Contrast of Patterns

Text and photos by Kate Jonker

Spots, stripes and stars can be found in many different forms underwater, from markings on marine animals, to abstract textures on the reef. As an underwater photographer, I am drawn to the contrast of these patterns. But why do they exist? Do they serve a purpose?

Spots are often used to hide the location of a fish's eye, making it difficult for predators to predict the direction its prey will swim in when it tries to escape. Spots can also camouflage animals, making them harder to find on the reef. Stripes can break up the outline of a fish, making it less visible to potential predators.

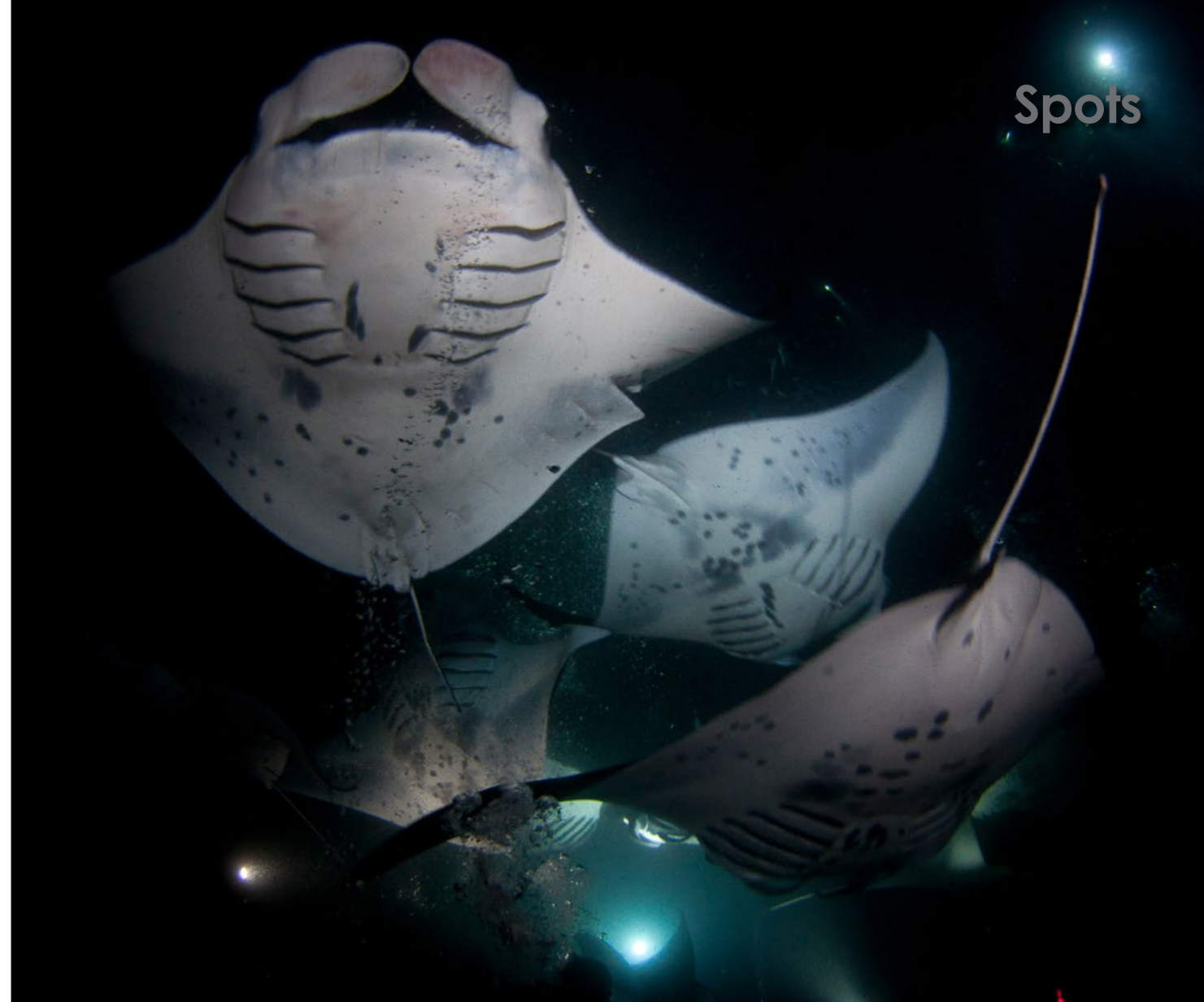
Other creatures, especially nudibranchs, use

A juvenile yellow boxfish uses spots to hide its eye, Mozambique (above). Gear: Canon EOS 7D Mark II camera, Canon 60mm macro lens, Sea&Sea housing, two Inon Z240 strobes. Exposure: ISO 160, f/18, 1/250s

colourful spots and stripes to warn other marine animals that they are toxic and not good to eat. On the other hand, some animals use their brightly coloured spots and stripes to attract their next meal—or a mate.

Over and above the many beautiful starfish we find in our oceans, natural star shapes can be seen in the formation of our corals and even in the polyps of soft corals. Not only do spots, stripes and stars serve a purpose to their owners—be it protection or attraction—they also provide divers with wonderful opportunities to create striking images underwater! Visit: katejonker.com

Star-like detail of a honeycomb coral in Anilao, Philippines (above). Gear: Canon EOS 7D Mark II camera, Canon 60mm macro lens, Sea&Sea housing, two Inon Z240 strobes. Exposure: ISO 320, f/18, 1/160s; An ornate ghost pipefish uses lines to camouflage amongst the crinoids, Lembeh (top right). Gear: Sony A6400 camera, Canon 60mm macro lens, Fantasea housing, two Inon Z240 strobes. Exposure: ISO 100, f/5.6, 1/250s



Manta Spots

Text and photos
by Brandi Mueller

Every manta ray has a unique pattern of spots and stripes on its ventral side, which can help us identify individual animals. Early in my dive instructor career, I worked for several years around Kona in the US state of Hawaii where one of the first manta identification programs was started.

Many years ago, a hotel put lights out on the ocean for decoration, and the light attracted plankton and then mantas, which came in to eat the plankton. Since then, they have moved the “dive site” north of Kona, and every night, mantas come in to feed on a free buffet of plankton attracted by the divers’ lights.

Diving this site over and over again, I started to recognize mantas, many of which were named. I have been lucky to dive with mantas all over the world, and these photos show several individuals from Kona, Indonesia, Yap and the Maldives.

Any diver can become a citizen scientist and submit photos of mantas’ spots and stripes to the databases, such as mantamatcher.org, to help researchers learn more about manta populations and behaviors. Please visit: brandiunderwater.com



Manta ray in Komodo, Indonesia (above). Exposure: ISO 640, f/14, 1/125s; Manta ray in Yap (top left). Exposure: ISO 400, f/16, 1/200s; Manta rays at night dive in Kona, Hawaii, USA (top right). Exposure: ISO 500, f/4.5, 1/40s; Manta ray in the Maldives (right). Exposure: ISO 320, f/14, 1/160s. Gear used for all images: Nikon D750, Ikelite housing and strobes





Bars and Bands, on a young male tiger shark (above). Exposure: ISO 200, f/8, 1/200s; *Bands of Light*, from a lemon shark (top right). Exposure: ISO 200, f/11, 1/125s; *Sun Dappling Light Patterns*, on a lemon shark (bottom right). Exposure: ISO 100, f/11, 1/80s. Gear used for all images: Nikon D500 camera, Tokina 10-17mm lens, Nauticam housing, Inon Z330 strobes

Starring Sharks

Text and photos by Gary Rose, MD

Perhaps like many underwater photographers who are asked to consider the theme “spots, stripes and stars,” I immediately summoned up visions of the living reef with shoals of fish rhythmically moving with the gentle surge of the sea. We have all seen thousands of photographs with the myriad of patterns and colors that our coral reefs have to offer—a photographer’s dream. Rather than repeating this notion with my own repertoire of reef photos, I decided to share with you the “spots, stripes and stars” found far offshore, in the deep blue water column.

Bars and Bands is a photo of Patrick, a young male tiger shark, who is a frequent visitor to the local water column off the US East Coast. The image beautifully demon-

strates the transitioning of “young bars” to “maturing stripes” on tiger sharks. There is nothing like the thrill of swimming with tiger sharks and observing their slow serpentine propulsion.

The photo, *Sun Dappling Light Patterns*, very clearly captures the beauty of natural sunlight creating an abundance of visual light effects. I love to watch the lemon sharks follow divers to the surface and play with small pieces of sargassum seaweed. The added benefit was the wave patterns that formed on their reflective skins.

Bands of Light is a photo rulebook no-no: “Never shoot down,” they say. To capture this panoply and admixture of light, I chose to shoot straight down through the dark-blue water column. This special effect of the light rays, seemingly emanating from this lemon shark, is one of my favorites.

Visit: garyrosephotos.com



Crab in a bed of mussels, Manasquan River railroad bridge, New Jersey, USA.
Gear: Canon EOS 7D Mark II camera, Nauticam housing, Tamron 60mm macro lens, dual Inon Z-330 strobes.
Exposure: ISO 160, f/20, 1/250s

Finding the Perfect Fit

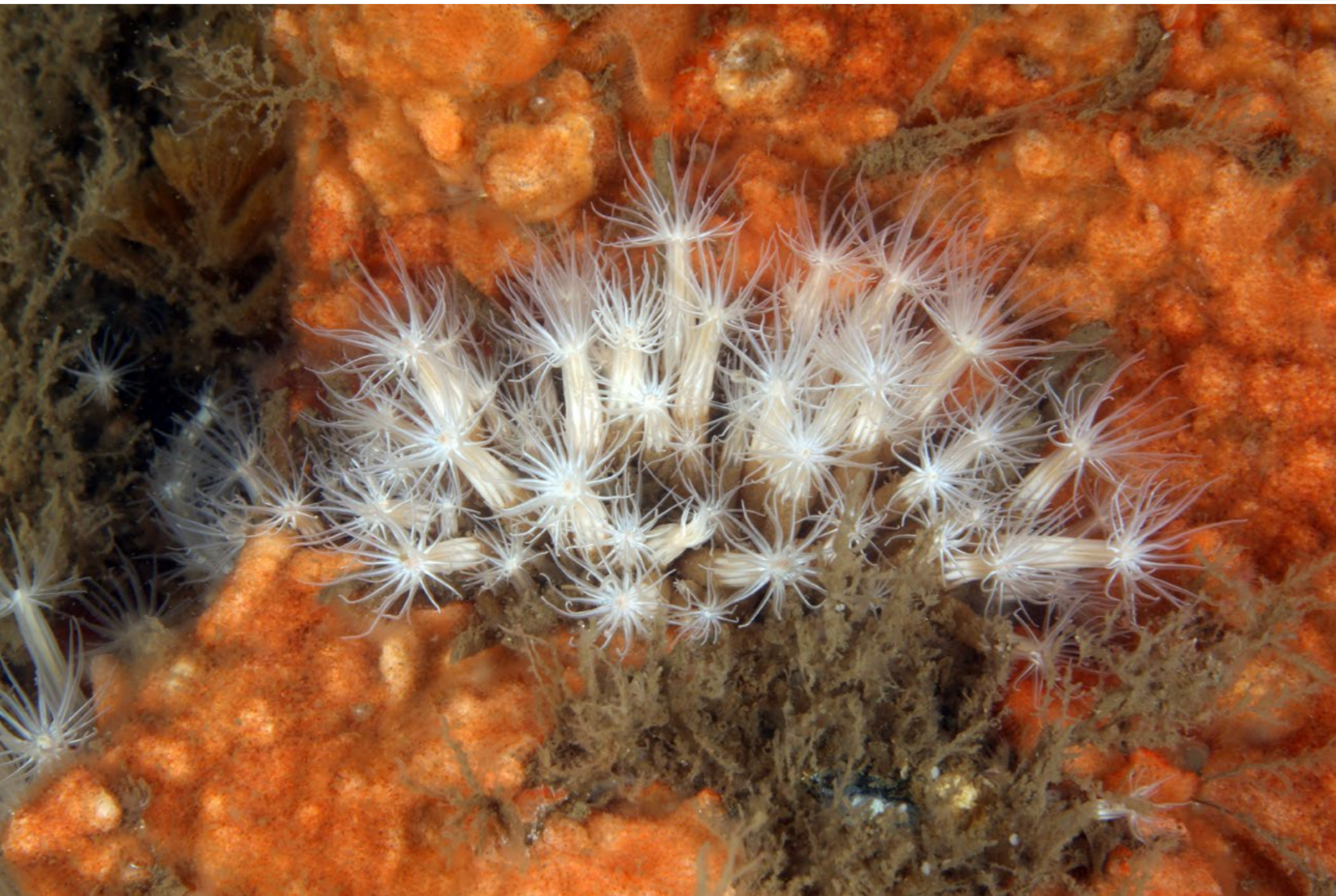
Text and photos by Michael Rothschild, MD

The image of the crab is from one of my favorite local dives near my home in New Jersey, a shallow site just off the shore, underneath a bridge. The spots of the crab's high-key shell contrast nicely with the dark bed of mussels.

The lined anemone photographed on the Cadet wreck is common coverage

on our local shipwrecks. The stripes on the shaft and the stars on top seemed to be a perfect fit for this assignment. I especially like the way the bright orange background makes the white polyps pop out, giving the image a 3D effect.

Finally, the banded rudderfish have some of the most prominent stripes in our part of the ocean. These fish—a type of small jack—get their name from their habit of following the stern of ships near the surface. I found this group swimming under the propellers of our dive boat. Visit: dive.rothschilddesign.com



Banded rudderfish, Block Island, Rhode Island, USA.
Gear: Canon EOS 7D camera, Nauticam housing, Tokina 12-24 lens (12 mm), dual Inon Z-240 strobes.
Exposure: ISO 400, f/5.6, 1/250s

Lined anemone, Cadet wreck, New Jersey, USA. Gear: Canon EOS 7D Mark II camera, Nauticam housing, Tamron 60mm macro lens, dual Inon Z-330 strobes. Exposure: ISO 100, f/22, 1/250s



The ochre orange and purple sea stars (*Pisaster ochraceus*) in Port Hardy, British Columbia, Canada. Gear: Olympus OM-D E-M5 camera, Olympus 12mm-50mm lens, Nauticam housing, dual Sea&Sea YS-01 strobes. Exposure: ISO 200, f/7.1, 1/200s.

Kelp greenling (*Hexagrammos decagrammus*) in British Columbia, Canada. Gear: Olympus OM-D E-M5 camera, Olympus 12mm-50mm lens, Nauticam housing, dual Sea&Sea YS-01 strobes. Exposure: ISO 250, f/6.3, 1/25s.

The ochre orange sea star (*Pisaster ochraceus*) and green surf anemone (*Anthopleura xanthogrammica*) in Port Hardy, British Columbia, Canada. Gear: Olympus OM-D E-M5 camera, Olympus 12mm-50mm lens, Nauticam housing, dual Sea&Sea YS-01 strobes. Exposure: ISO 200, f/7.1, 1/200s.



subject for this theme. The primary color yellow is a distinguishing feature of the yellow stripe that runs along the primary blue or black body of the fish, from near the third dorsal-fin spine, and extends to the lateral line and to the tail. If you want to photograph a giant pacific octopus, China rockfish are a good indicator, since they live in the same rock crevices.



Stars of British Columbia

Text and photos by Olga Torrey

As a wildlife photographer, I find patterns, color and texture of the subjects essential. I bought my Olympus OM-D E-M5 camera in 2013, and right after, I flew to British Columbia, Canada, to dive off the liveaboard *Swell Explorer* around Vancouver Island.

British Columbia's top dives are in the northeastern corner of Vancouver Island. Browning Passage is the place for underwater photography. This location is rich with bright colors of soft raspberry corals, yellow sulfur sponges, white plumose anemones, sea stars, nudibranchs, red urchins and many other creatures you will see on the walls. This place is excellent for macro and wide-angle photography.

The China rockfish (*Sebastes nebulosus*), or yellow-spotted rockfish, is the right

subject for this theme. The primary color yellow is a distinguishing feature of the yellow stripe that runs along the primary blue or black body of the fish, from near the third dorsal-fin spine, and extends to the lateral line and to the tail. If you want to photograph a giant pacific octopus, China rockfish are a good indicator, since they live in the same rock crevices.

The orange ochre sea star, with its vibrant color in contrast to the bright color of green surf anemone, is in the same group of secondary colors. Primary colors red and yellow make orange, and primary colors yellow and blue make green.

The ochre sea star is a perfect subject when it comes to color. This star comes in two vibrant secondary colors: purple and orange, and the tertiary color brownish-red. Scientists wonder if the color of the ochre star is caused by habitat, diet or genetic variation. The mystery of its color puzzle still needs more scientific research. These two stars remind me of the Henri Matisse painting, *La Danse (The Dance)*.

With its vivid body coloration mixed in primary colors yellow and blue, kelp greenling stands out among the fishes in British Columbia. The eyes of the kelp greenling are mesmerizing with vibrant yellow color. The coloring of the male and female is distinct. This photo shows a male with bright blue spots on his head and sides. The female has reddish-brown to bright golden colors. Visit: fitimage.nyc

China rockfish (*Sebastes nebulosus*), in Port Hardy, British Columbia, Canada. Gear: Olympus OM-D E-M5 camera, Olympus 12-50mm lens, Nauticam housing, dual Sea&Sea YS-01 strobes. Exposure: ISO 200, f/7.1, 1/200s

Equipment

Edited by
Rosemary E. Lunn
and Peter Symes

Mares EOS LRZ torch

Mares states their EOS LRZ collection "is a complete torch line" (seven sizes) that runs from 500 to 3,200 lumens. This favoured perennial range has been on the market for about 10 years. As battery and LED technology improves, Mares revisits and updates these flashlights. The latest iteration of the EOS 20LRZ has an adjustable beam (12° - 75°).

Its removable, rechargeable Lithium-Ion battery has a burn time of 100 mins on high. Depth rated to 120 mt / 393 ft. Mares.com



FE Rec Fin

Attenborough's *Blue Planet II* spurred a passionate global response to change how we use plastic. Fourth Element has embraced this initiative—their new Rec Fin is the world's first scuba diving fin to be made from recycled, post-consumer plastic waste! The soft foot pocket and classic four-channel-design blade utilises 100 percent recycled polypropylene and thermoplastic rubber. The fin is secured by an innovative honeycomb silicone heel strap, which provides six points of adjustment. Available in Small (37cm/0.85kg)*, Regular (38.5cm/0.9kg)* and XL (40cm/1kg)* and two colour combinations: OceanPositive Aqua/White and Black/Grey. *Single fin blade length and weight. fourthelement.com



Cressi Quantum

Cressi states that its scuba and freediving Quantum mask has been designed to stop fogging. When you exhale, warm air from your nose invariably ends up making contact with your mask lens at some point. Cressi has therefore designed a patented barrier system that surrounds the inner nose pocket, and both the inner eye pockets. This traps any moisture that involuntarily escapes the diver's nose, and channels it away. In addition, the skirt has been fitted with two small heat sinks, which act as radiators. Cressi.com



Unimatic U1

The Italian brand has issued a new and slimmer edition of its Modello Uno diving watch, being just 11.6mm thick. The case is made from black brushed stainless steel. The dials feature the matte black look of Unimatic's original U1 with striking white dot, dash, and triangular indices and sword hands. Other than the Unimatic word-mark and two lines of text, the dials are utterly devoid of extraneous decoration and would not seem out of place on the wrist of a combat diver in the 1960s, Unimatic writes. The watch is self-winding and depth-rated to 300m. Unimaticwatches.com



Scubapro GO BCD

Scubapro's GO travel BCD weighs in at a mere 2.5kg (5.5 lbs) in the medium size and is designed to be folded up. It benefits from rotating, quick-release shoulder buckles; integrated front weight pockets; two large quick-draining, low-profile, zipped cargo pockets; and five aluminium D-rings, including two large, pre-bent D-rings on the shoulders. The wraparound bladder is covered in 210 denier nylon covered with polyurethane, and this has been RF soldered for maximum wear resistance. Available in five sizes: XS, S, M, L, XL. Scubapro

Text by Simon Pridmore

How to go with the flow underwater: Simon Pridmore provides tips and insights on the challenges and benefits of diving in current conditions.

A few years ago, I was diving around the mid-ocean seamounts of Tubbataha in the Philippines with Sue and Dave, friends from Guam. I still remember Sue's words as we ascended from a midmorning dive, during which we had been swept along by swiftly moving water through teeming schools of fish and past coral trees swaying in the "breeze" in a wild ride along a kilometre or more of submerged reef.

She removed her regulator, eyes wide with excitement and screamed: "This isn't diving, it's flying!"

Drift diving tends to have that effect on you; however, the idea of letting the prevailing current govern the direction and speed of your dive tends to fill some divers with anxiety. This is understandable as a current puts the ocean firmly in charge and many of us feel ill at ease when we are not in control of what is happening to us. But with the right skills and a

little experience, dives when a current is running can be some of the best dives of your life.

Where and why?

The places where you will typi-

cally encounter current while diving include reef walls parallel to the shore, exposed and submerged seamounts in channels between islands and passages through fringing reefs.

Quite apart from the excitement,

the main reason you want to dive in places like this when there is a strong current is the fish. As water movement through channels and reef passages increases, everything comes in from the blue. Huge schools congregate,

clinging together close to the reef walls and mid-ocean pinnacles for shelter. Then predators come in to feed on them. Seascapes that are quiet and relatively lifeless during times of calm water can turn into

Drift Diving

"This isn't diving, it's flying!"

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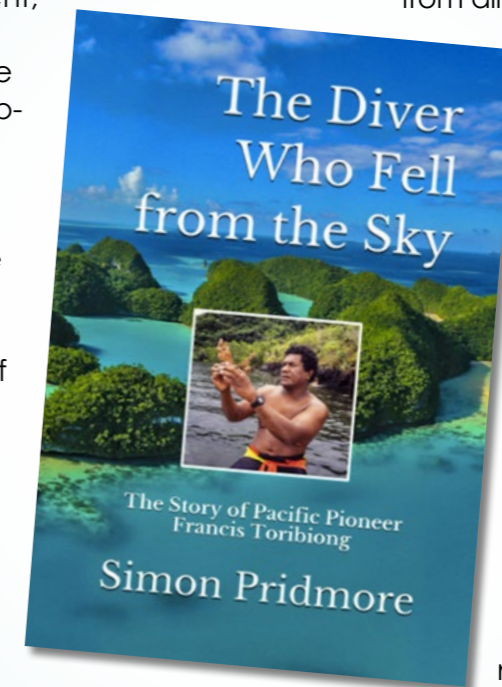




JOKANIT / PIXABAY / PUBLIC DOMAIN

A Pioneer Story by Simon Pridmore

When his country needed him most, Palauan Francis Toribiong came along and helped the Pacific island nation find its place in the world and become an independent, forward-looking 20th century state. And he achieved this, improbably, via the sport of scuba diving. This is the inspiring tale of an absolutely unique life, written by Simon Pridmore and illustrated with images of the beautiful islands of Palau, above and below the water.



Toribiong was born poor, had no academic leanings and no talent for diplomacy. Yet he was driven to succeed by a combination of duty, faith, a deep-seated determination to do the right thing and an absolute refusal ever to compromise his values. And, as well as all that, he was Palau's first ever parachutist—known by islanders as “the Palauan who fell from the

sky.” In giving him this title, people were speaking both literally and figuratively.

Toribiong was so completely different from all of his contemporaries in terms of his demeanor, his ambitions and his vision, that it was as if he had come from outer space. Palau had never seen anybody quite like him and there was no historical precedent for what he did. He had no operations manual to consult and no examples to follow. He wrote his own life.

Toribiong was the first Palauan ever to seek and seize the international narrative. No Palauan, in any context or field, had previously thought to go out into the world and say: “This is Palau—what we have is wonderful. Come and see!” This is his astonishing story.

Available in paperback or ebook on: **Amazon, Apple, GooglePlay and Kobo**

phenomenal action-filled aquatic circuses when the current picks up.

Current signs

From the surface, the tell-tale signs of a strong current are whirlpools interspersed with suspicious patches of calm. A wavy line of calmer-than-usual water running parallel to the coast is a good indication that there is a current running along the shore. Underwater in the tropics, you know that a site is current-swept if there are plenty of gorgonian fans and sea whips there. The more water that moves past these corals and brings them nourishment, the larger they

grow. If you see them permanently bent like trees in a high wind, you know that currents there are often very strong.

Going with the flow

On a drift dive, the best advice is to go with the flow, resist the instinctive urge to use your fins for anything more than balance, tuck your arms in and enjoy the ride.

The ability to anticipate, quick reactions and good control of your buoyancy and positioning in the water are useful skills to have if you want to stay on course and avoid damaging either yourself or the reef. A good

drift diver needs to be something of a slalom skier and know how to correct direction swiftly and smoothly.

Make yourself as streamlined as possible, and secure and tuck in all your hoses and accessories. You will be moving fast, close to an uneven surface, and you do not want anything to get caught as you pass. Wear a full-length wetsuit with neoprene on your arms and legs to protect yourself from harm in case you do brush against something.

Follow the fish

To get the best idea of how the current is running, look at the fish. They

are the experts.

When there is no current, the fish—large and small—will be milling around all over the place. In a mild current, they will all be facing the same way, into the current, and the stronger the current becomes, the closer to the reef they will be.

As the current increases in strength, the little fish will be spread out close to the coral, waving their tails like crazy to stay in position. When it gets really strong, they will be down in and among the coral structures, and even the big fish will be hovering very close to the reef.

If you want to take a break from

the current during a drift dive, use these big fish as your guide. You will find them behind large rocks or outcrops where they can shelter from the flow. If you are a photographer, this is your opportunity to get up close, as they will be reluctant to move out of their hiding places.

Staying still

When you find a hot spot on the reef or wall where there is lots of action, you may want to stick around and not let the current carry you away immediately. So, you need to find a way of staying in place. Finning like crazy against the current will tire you





CHICKENSDOG / FLICKR COMMONS / CC BY-NC 2.0

out quickly. Instead, you can grab hold of a solid bit of rock—after first making sure that it really is a rock—or, if you have one, you can deploy your reef hook.

A reef hook normally consists of a length of cord passed through the eye of a blunt-ended curved piece of stainless steel that looks like a large fishing hook. A clip is attached to the other end of the cord. The idea is that you wedge the hook into a crevice in a reef, snap the clip on to a BCD harness D-ring and just hang in the current, held in place, effortlessly enjoying the view. Do not be discouraged if at first you find it difficult to find your balance. It may take a little practice over a few dives for you to get completely comfortable with the technique.

Downcurrents

While I am on the topic, I should offer a few tips on dealing with another phenomenon that you may encounter when you dive in a current-fed area. Just the mention of a downcurrent is enough to bring many divers out in a cold sweat as they visualise themselves getting caught by an irresistible force that will drag them down into the abyss with no opportunity for escape.

The natural response when confronted with a downcurrent is to panic, but there is no need. Just as a long-shore current is a relatively narrow river in the ocean, a downcurrent is a waterfall.

When you encounter one, the first thing to do is get out of its pull. To do this, move closer to the reef wall so that the contours offer you shelter. Once out of the flow, relax, exhale,

take a few full deep breaths to calm yourself, check your air supply, depth and decompression status, look around you and plan your next move.

As I mentioned before, use the marine life as your guide. If things look calm farther along the wall, then continue your dive in that direction. If not, then swim laterally out away from the wall towards the blue. If initially you find yourself being carried a little deeper as you pass through the “waterfall,” just stay calm and keep swimming. Before long, you will emerge from its pull and can ascend to make your way back to the reef top.

It is not a good idea to fight a downcurrent. It is a struggle you cannot win. The oft-quoted tactic of inflating your BCD to counteract its efforts to carry you down is potentially dangerous as the downcurrent may

NEW 4 in 1!

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

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

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

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

suddenly release you from its hold and you will find yourself on a runaway ascent to the surface—something that may do you much more harm than the downcurrent ever could. ■

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



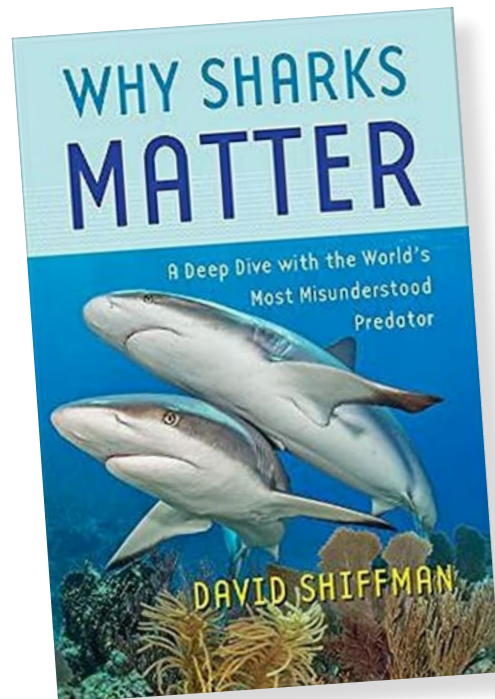
of it unavailable elsewhere; his points often illustrated by real life experiences and cautionary tales. He examines familiar issues from new angles, looks at the wider picture and borrows techniques and procedures from other areas of human activity.

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*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**.*

Edited by
Catherine GS Lim



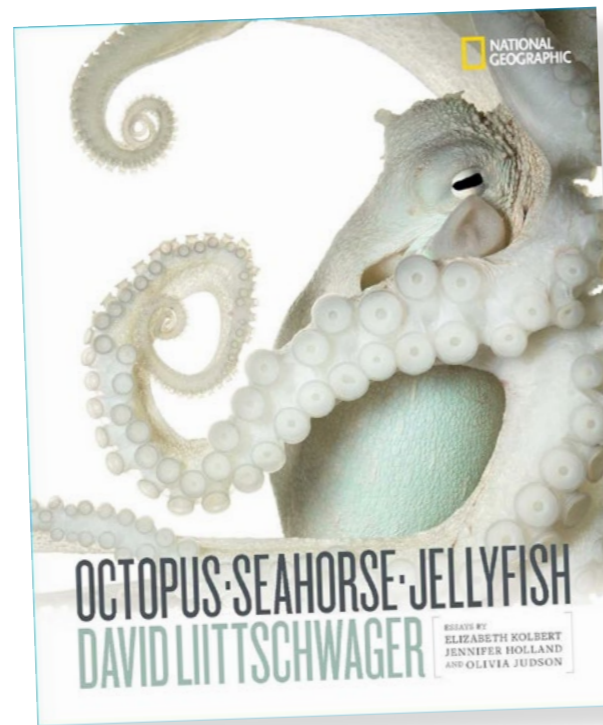
Sharks

Why Sharks Matter: A Deep Dive with the World's Most Misunderstood Predator, by David Shiffman

From Shark Week to shark fin soup, over-fishing to marine

sanctuaries, scientific research to policy-making... David Shiffman, a marine conservation biologist, delves into these topics to come up with an engaging and informative guide into the world of shark conservation. This book shows why healthy shark populations are necessary to support ocean ecosystems and coastal economies. It explains why many shark species are under threat of extinction and what scientists, conservationists and readers can do to help them.

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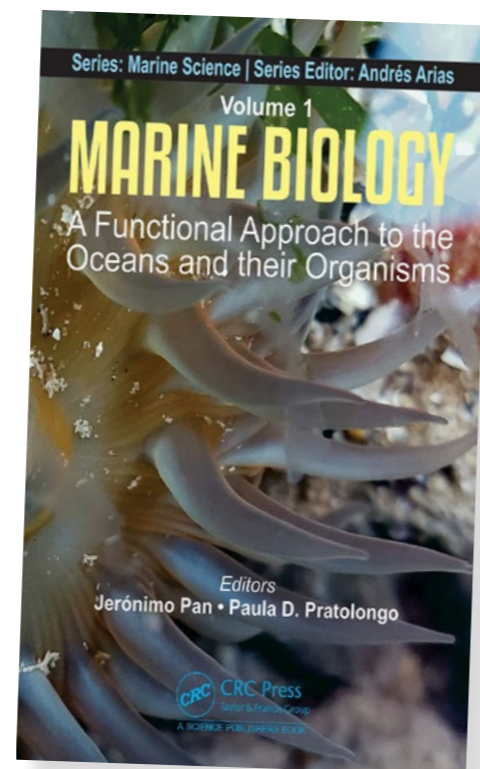


Underwater Photography

Octopus, Seahorse, Jellyfish, by David Liittschwager, Elizabeth Kolbert, Jennifer Holland, Olivia Judson

Enter the world of the jellyfish, octopus and seahorse, and be mesmerised by their pulsating bioluminescence, translucent bodies and ethereal movements. Thanks to specialised portraiture techniques developed over the decades by photographer David Liittschwager, we catch a glimpse into their unique characteristics and charisma. Alongside the 200 photographs in the book, there are essays explaining their biology and cognitive abilities, penned by science writers Elizabeth Kolbert, Jennifer Holland, and Olivia Judson.

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Date: 5 April 2022
Hardcover: 256 pages
ISBN-10: 1426221797
ISBN-13: 978-1426221798



Marine Biology

Marine Biology: A Functional Approach to the Oceans and their Organisms, by Jerónimo Pan, Paula Daniela Pratolongo

This book covers the fundamentals of marine biology, focussing on marine organisms and their ecological roles in the oceans. The content is organised based on functional groups, emphasising marine biodiversity (not systematics or habitats). Written and peer-reviewed by international experts, the book contains updated information on topics like the microbial loop and primary production in the oceans, marine megafauna and the impact of projected climate change on marine life and ecosystems. Targetted at upper-level undergraduates and graduate students.

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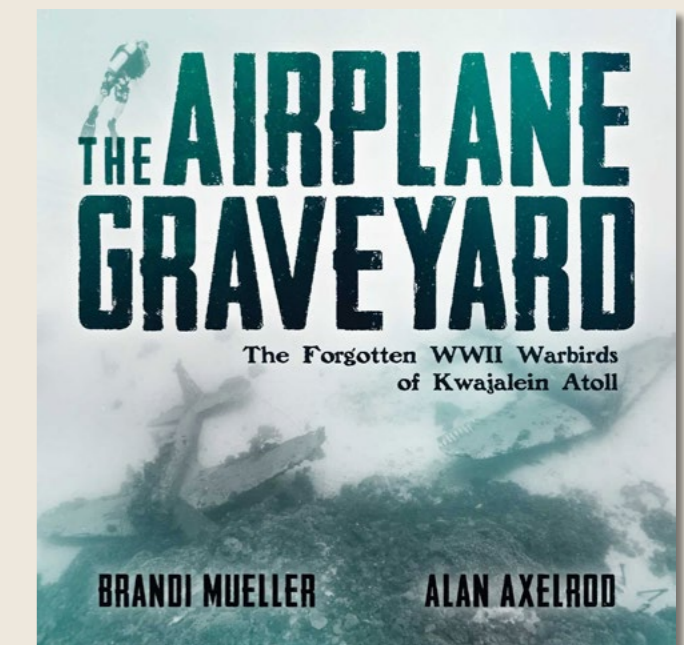
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marine mammals

Edited by
Catherine
GS Lim



Researchers attach a suction-cup tag onto a blue whale in California.

Baleen whales eat more than previously thought

It seems that the question of how much baleen whales eat every day is one that has far-reaching implications not just for the whales themselves, but entire oceanic ecosystems as well.

How much do baleen whales eat every day? Researchers have discovered that baleen whales actually eat an average of three times more food than previously thought. This in turn means that we have been underestimating their impact and contribution to ocean ecosystems. This finding was shared in a paper in a recent issue of the *Nature* journal.

The fact that baleen whales consume much more prey than we had previously thought means that their bodies are

“processing” more prey animals and emitting more whale poop, which is an important source of nutrients in the ocean. In doing so, they help keep key nutrients suspended close to the surface where the poop fuels blooms of carbon-absorbing phytoplankton, the basis of oceanic food webs. Without the whales, these nutrients would otherwise sink to the seafloor, limiting productivity in certain parts of the ocean and this would in turn reduce the capacity of ocean ecosystems to absorb carbon dioxide.

The research involved 321 whales across seven species tagged between 2010 and 2019. In addition to tagging the whales, drone photos of 105 whales were taken to measure their respective lengths. At feeding sites, members of the team also used echo-

sounders to detect sound waves to measure the size and density of krill swarms and other prey species. It was discovered that an adult eastern North Pacific blue whale consumed 16 metric tons of krill daily during its foraging season. For North Atlantic right whales and bowhead whales, the amount was roughly five and six metric tons of small zooplankton respectively.

“Our results say that if we restore whale populations to pre-whaling levels seen at the beginning of the 20th century, we’ll restore a huge amount of lost function to ocean ecosystems,” said co-author Nicholas Pyenson, curator of fossil marine mammals at the Smithsonian’s National Museum of Natural History. ■

Let's talk about diving

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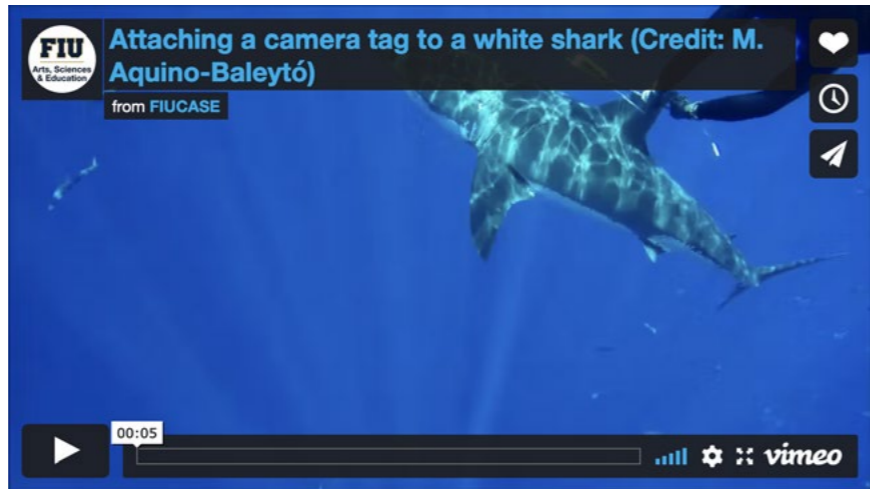
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M. AQUINO-BALAYTÓ / FIU CASE

To see a video of a FIU researcher attaching a camera tag to a great white shark, click on the image above.



MATTHEW MEIER



MSDA FOOD DRIVE

DONATE & HELP - DIVE COMMUNITY

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

What We Need:
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Whatever you can spare, will be greatly appreciated

LOCATION OF CAMPAIGN	
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PULAU PERHENTIAN	KOTA KINABALU

Great white sharks have a secret social life

A new study suggests that great white sharks are more social than initially thought.

Florida International University (FIU) marine scientist Yannis Papastamatiou, Ph.D. candidate Sarah Luongo, and a collaborative team of researchers wanted to uncover some of the mysteries of the white sharks (*Carcharodon carcharias*) that gather seasonally around Guadalupe Island, Mexico.

By employing a combination of tracking tools (activity, cameras and telemetry receivers)—also known as the “biologging package”—to measure social associations and simultaneous behaviour, the team from FIU found out the sharks tend to stick

together when patrolling or hunting for food, like stopping by to check out the seal colonies around the island.

By tracking the speed, depth and swimming direction of three male and three female great white sharks off Mexico’s Guadalupe Island in 2017 and 2018 with cameras and activity sensors as well as telemetry-receivers, the team managed to gain vital insights into the group dynamics.

“Most associations were short, but there were sharks where we found considerably longer associations, much more likely to be social associations,” said Papastamatiou, lead author of the study, which has just been published in *Biology Letters*. “Seventy minutes is a long time to be swimming around with another white shark.”

Why?

Forming social associations might be important because predators are unsuccessful a lot of the time when hunting. The majority of socialising was recorded in close proximity to a group of seals, suggesting that the individuals form groups to take advantage of another shark’s hunting success.

“The important question we still have to answer is what’s the reason for being social for these sharks? We still don’t know, but it’s likely they may stay in proximity of other individuals in case those individuals are successful in killing large prey,” Papastamatiou said. “They aren’t working together but being social could be a way to share information.” ■ SOURCES: *BIOLOGY LETTERS*, FLORIDA INTERNATIONAL UNIVERSITY

There is evidence that white sharks form non-random social associations and may remain in proximity to each other to take advantage of pinniped kills.

Technical diver explores the Laplet slate mine in Vresse Sur Semois (Province of Namur), Belgium. The mine was first opened in 1856; Historical illustration of the Laplet slate mine (below)

Text and photos by Vic Verlinden

For a cave diver, it is always an exciting moment to be the first to dive a location that has not been visited by other divers before. The Laplet slate mine in the Belgian Ardennes was such a location for our small group of explorers.

Belgium's Laplet Slate Mine

— *First Visit in Over 100 Years!*

Historically, in southern Belgium, especially in the 19th century, the extraction of various types of rock from the subsurface was an important industry. In particular, marble and slate were brought to the surface by thousands of workers from numerous mines.

It was a flourishing industry, which provided work for entire villages. The slate was used for various purposes but mainly for roofing. It was hard labour bringing the stones to the surface, sometimes from over 100m deep, and there were often accidents.

The Laplet Mine in Vresse Sur Semois (Province of Namur) was opened in 1856 by Balthazar Hoffman. He held the concession (land grant) for 99 years. It was a thriving business which, through the years, was sold to other owners. Between 1871 and 1881,



COURTESY OF COMPAGNIE DES BOIS



mine was closed for good, and the estate was given over to a different use.

An unexpected discovery

I first heard about the Laplet Mine from my friends Bram Vangorp and Patrik Tuteleers. They had visited the site where the mine was located and

located under the owner's estate. The original building was still there, and right next to it was the current entrance to the mine.

Under a concrete cover, one could descend into the mine shaft via a small ladder. Thirty metres down, the mine was completely flooded. The water looked crystal clear. Laplet was known in the past as the largest mine in the area, and we did not know, at the time, just how far we would be able to penetrate the labyrinth of corridors. Importantly, we got permission from the owner to take photographs and video footage during our dives.

A week later, I joined my friends for our first dive into the system. I teamed up with Bram to do the

more than 2,200,000kg of slate was brought to the surface. But in the early 20th century, it became increasingly difficult to cover the costs of mining. In 1913, the

were kindly received by the current owner. The estate was now operated as a hotel. To their great surprise, there was still an access point to the slate mine, which was



Location of the mine entrance on the estate (top left); Preparing for the dive (top right); Ladder leading down into the mine (above); Entrance to the mine, which was under a cement lid (left)



first exploration of this mine in over a hundred years, and this stirred up quite a bit of excitement!

The first dives

I would be diving with a rebreather and Bram with an open system on this dive. Once we were kitted up

and ready to head out on the dive, the water had already become quite cloudy due to the movements we had made and the silt we had stirred up. It did not look very promising when I stuck my head underwater and could barely see 30cm ahead. The pool we were in was

not very large. We descended a few metres, but we still could not find a passage to the chambers of the mine. Because visibility was getting so bad, I decided to end the dive, and we swam back to the surface.

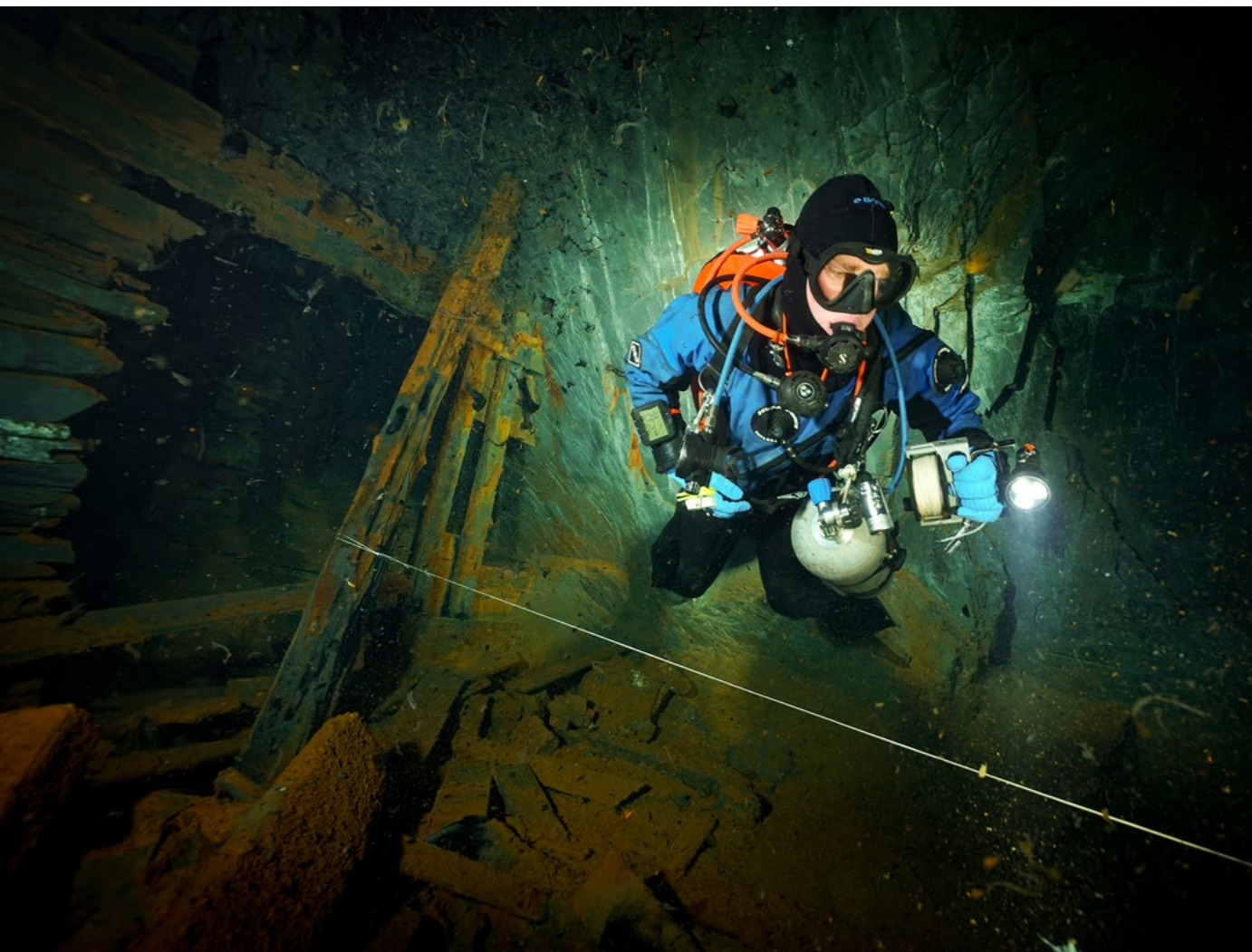
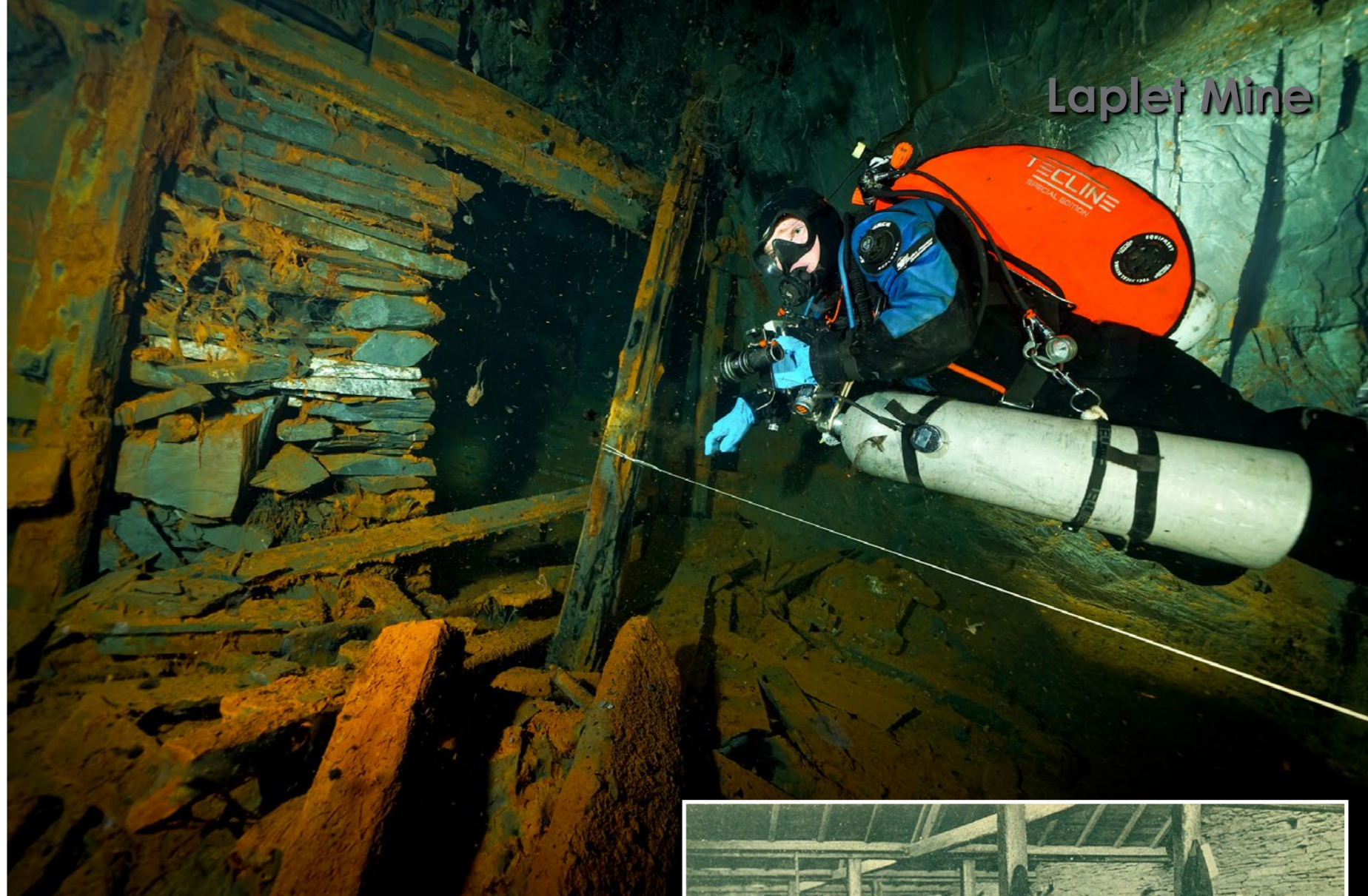
Bram told me that he might have seen a passage, and that he would

check it out in the afternoon. After a few hours of waiting, Bram and fellow diver Kurt Storms started their second attempt to find a passage. They had more success during their second attempt and found a passage to a depth of about 30m. The first part was not so good in visibility, but in the deeper part, it became crystal clear. They had a nice dive and could see that the main chamber had several side corridors. This was a major breakthrough, which allowed the team to do further exploration at this historic site.

The following week, we made another arrangement to dive again. We had also found that it was quite difficult to get all the necessary equipment down into the mine. The descent along the small ladder



Start of the dive (top left); Exploration of the corridors (top right); The crystal-clear waters of the mine (above); Estate buildings now function as a hotel, Compagnie des Bois (left)



Exploration of the large rooms (above)

was difficult and required a lot of strength. It was also a dangerous place to experience a decompression incident after a deeper dive. So, we decided that we needed more help lugging the dive equipment, as well as the photo and video equipment. It was then agreed that one team would dive and the other would help carry the equipment in and out.

Going where no one has gone in over 150 years

I teamed up with fellow divers Wim Verrijcken and Kurt for this dive, to try and take photographs in the large chamber they had seen on a previous dive. So, I decided to

mount a slave flash onto Kurt's rebreather.

I got a signal from the other team members that they were nearly done kitting up, so I lowered myself to a depth of six metres and waited there for the other two divers in my team. However, it took a long time, and as the visibility seemed to be getting worse, I decided to head out on my own. I suspected that the other team members were dealing with a technical problem, but I did not want to wait until the visibility

was zero, as it had been during my first dive.

In the first few metres, the visibility was still bad, but then it became crystal clear, and I could follow the previously laid guide line with ease. I was in a fairly wide corridor, which quickly descended to a depth of 30m. On both sides of this corridor, there were other side corridors of

Ladder found in the mine (top left); Bram Vangorp lays the guide line (above); Historical photo of the workers of the mine (right)



Diver sheds light on slabs of slate inside the mine.

different sizes. In the large corridor, there were thick tree logs, which served as supports. Along the way, I came across several ladders, which had been left behind when the last stonemason had left the mine, over 100 years ago.

At the end of the large room, I saw that there were two more corridors leading to a deeper area, and I decided to follow one of them. The corridor quickly descended deeper again, and along the way, I saw all kinds of objects that I could not immediately identify.

At a depth of 63m, I did not see a next connection right away, so I decided to turn

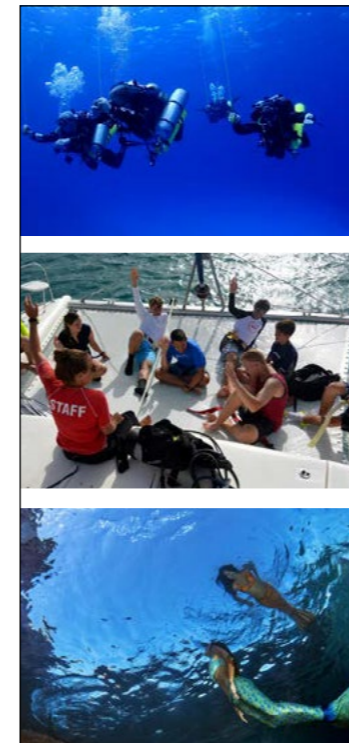
back. On the way back, I met my fellow dive team members who were making their descent. After 15 minutes of decompression, I was back at the surface and could tell my story.

It had been a wonderful dive in a unique location. I had taken some nice pictures, but unfortunately, there were no divers in them.

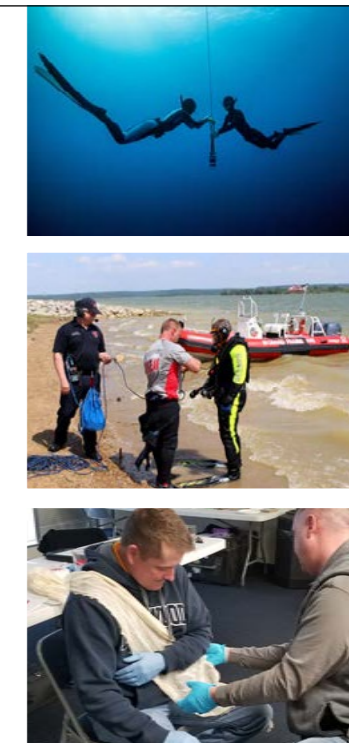
The next weekend, I dived the mine with Bram to explore the different side passages. This was another dive where there were more questions than answers, as we inspected the different rooms. But during this dive, we did manage to take the necessary photos.

I think this mine still hides many secrets, and we shall continue making some nice discoveries there, a place where time has stood still since 1913. ■

Vic Verlinden is a Belgian CCR cave and wreck diver, who has been diving since 1975. He is an underwater photographer and author of four books, including Diving for Treasure, published by Whittles Publishing. In addition, he has written articles for dive magazines in Belgium, Germany, United Kingdom, United States, China and Russia, and has been a guest speaker at all the major technical dive shows. Email: vic.verlinden@skynet.be



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A year-round campaign built on giving back to non-profits dedicated to our nation's greatest heroes - past and present. Each quarter, NAUI will present 1000 limited edition certification cards to all NAUI members for a \$10 donation at checkout. All proceeds will be made on your behalf at the end of each quarter to the non-profit or foundation. Our goal is to donate \$10,000 each quarter... are you in?!



The Pat Tillman Foundation Edition

The first-ever NAUI Hero Certification Card. The Pat Tillman Foundation provides resources and educational scholarship, support to Active Duty Service Members, Veterans, and their spouses.

NAUI & the Department of Defense (DoD) SkillBridge Partnership

On June 1, 2021, the Deputy Assistant Secretary of Defense authorized NAUI to participate in the DoD SkillBridge Program. The SkillBridge Program is an opportunity for Service Members to gain valuable civilian work experience through specific industry training, apprenticeships, or internships during their last 180 days of service.



What does this mean for you?

SkillBridge is an opportunity for you to access and leverage the world's most highly trained and motivated workforce at no cost for up to 180 days. Service members who participate in SkillBridge receive their military compensation and benefits, while you, our NAUI Approved VA Testing Centers, will provide the training and work experience. Our internship allows service members to use your G.I. Bill® to become a NAUI Dive Professional at one of our 65 NAUI VA approved testing centers around the world.

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SCAN FOR MORE INFO!



Anthias shot in Anilao, Philippines. Shooting a compact camera at f/8 and 1/1000s speed while using a strobe can help you to create dark backgrounds even on sunny days.

Text and photos by Tim Ho
Edited by Rico Besserdich

Even though compact cameras have been used in underwater photography for decades, familiarity with the compact camera today is still limited to a mere handful who have really exhausted its buttons, modes, scenes and capabilities.

I figure this is mainly due to the compact camera being "the first foray into underwater photography" for most people. Commonly, once these folks are convinced that they like the game, the upgrade to DSLR and other more complex camera systems happens very quickly, leaving many compact cameras merely serving a short service span.

Talking to a professional underwater photographer, especially one who has spent very limited hands-on time with a compact camera, is likely to create more frustration and failed results due to the differences in the limiting factors and user techniques between DSLR

and compact cameras.

The common response from professional image-makers to these failures is: "It's just a compact camera! You should upgrade if you want to go

further." After upgrading, this would be the same message the former compact-camera shooter tells the next compact-camera user who asks about it.

Let's set a few points straight.

Shutter speed & black backgrounds

A common mistake I encounter when

teaching compact-camera users involves the shutter speed that they have read about, been told to use, or have learnt about on YouTube.

These shutter-speed settings are basi-

Myth Busting: Compact Camera Rules & Common Misconceptions





Flamboyant cuttlefish shot over the sandy seabeds of Anilao, Philippines. Unlike with an interchangeable-lens camera, the Sony RX100 compact camera is able to shoot f/2.8 with a shutter speed of 1/2000s—and still works well with a strobe!

cally what the pros use. The problem is the pros give their advice based on the interchangeable-lens cameras which the professionals use, and not compact cameras, which function differently.

A DSLR or mirrorless camera system is limited by the “flash-sync speed;” hence, it is the fastest possible speed (depending on make and model) that is normally chosen for black backgrounds, while the aperture value is what is tuned to achieve black.

Often, a value like 1/200s or 1/250s is matched with a bigger

f-stop value to achieve black backgrounds. But this is not the case with a compact camera because the f-stop values do not normally push to higher numbers.

Telling compact-camera users to use a 1/250s value, when their cameras can only push to f/8, will not yield them a black background at 12 noon, on a sunny day, at five meters.

While interchangeable-lens camera users are limited to its flash-sync value, 99 percent of today’s compact cameras allow the flash to sync even at speeds

of 1/2000s or 1/4000s.

Considering this, a likely speed setting for a compact camera shooting black backgrounds with a flash or strobe would be in the region of 1/1000s and above.

Personally, I have made 1/1600s my general starting point with f/8 and an ISO of 100. This is my starting point for macro photography with dark backgrounds when using a strobe.

Macro diopter (wet lens)

With the Olympus TG series leading the “entry-level photographer



Mantis shrimp with eggs shot in Anilao, Philippines. Although the Canon PowerShot S95 compact camera has a maximum aperture value of f/8, it is still able to flash-sync at a shutter speed of 1/1000s.



This image of an anemonefish in anemone was captured with a Canon PowerShot S95 compact camera with strobe at f/4.5 and a fast shutter speed of 1/1600s, to catch fast-moving subjects (right).

A whip coral goby photographed when the coral polyps opened (far right). A Canon PowerShot G16 compact camera shoots with strobe at f/8 and a shutter speed of 1/1600s to create a black background.



Compact



The tiny yellow goby often makes its home in a bottle on the seabed.

category" today, another mistake that needs to be corrected is the "advice" to all compact-camera users that they need to buy a macro diopter to enable them to take macro photos.

Indeed, it is true that with DSLR, mirrorless, or more advanced compact-camera systems, super-macro is almost unachievable without the help of a macro diopter. To capture most super-macro images with many compact cameras (except Olympus TG models), one must push the zoom to almost "fully zoomed" levels, adding a diopter to allow focusing within closer distances to the subject.

An example of this would be to fully zoom in with a

Canon G7x or Sony RX100 camera, and then the focusing distance extends to almost a meter away from the subject. This is why in cameras without a macro diopter (wet lens), shooting super-macro would be almost impossible.

The purpose of using the wet lens is to allow you to come in closer to the subject, even while fully zoomed, to capture that super-small subject so it fills the frame. However, this is not the case with the Olympus TG series of compact cameras, which can achieve focus even when 5mm away

from the subject while fully zoomed (utilizing the Microscope mode). Adding a diopter to the TG will actually force you to back up and is counterproductive.

As each wet lens also has its own working distance, adding a wet lens not only minimizes the magnification but also

subjects the user to working within the limitations of the specific wet lens chosen.

If you are going to buy ONE wet lens for your TG, make it the wide-angle lens. That is the only wet lens needed to allow your TG to shoot super-macro to wide-angle photos.



Coleman shrimp living on a fire urchin (left). While an interchangeable-lens camera is limited by its shutter speed due to the flash-sync limitation of this type of camera, a compact camera is not limited by the speed.

about underwater photography can manage.

Aside from the main factor of sensor size in DSLR cameras, which allows for better ISO noise handling, better dynamic range and the ability to actually print billboard-size images, the capability of shooting a photo that is just as beautiful and just as creative with a compact camera lies in the hands and eyes of the user.

However, it is important to note that although the rules of photography are the same in theory, there are differences in the practical application of them. Compact and DSLR cameras can deliver the same results but using

Note: The TG has a default 25mm-wide range, leading the user to buy a wide-angle lens for 24mm or 25mm equivalence. If you buy a wide-angle lens for a 28mm equivalent, you will have to zoom in to avoid the vignetting (black areas around the edges of your photos).

Advantages of compact cameras

While sensor size is the driving factor in why a photographer would move into an interchangeable-lens camera system, the compact camera also has its advantages by allowing the user to shoot both macro and wide-angle on the same dive. It is also easier to pack and travel with. Most importantly, it is within a budget range that most people who are passionate



different settings and working around the unique limitations of each camera type has method and is an art in itself. ■

Tim Ho is a PADI Staff Instructor who has focused on the development of photography throughout his diving career. He is a founding owner of the Anilao Photo Academy. Follow his work on scubatim.com.

Tunicate shrimp live inside these small tunicates and occasionally come out (above). An Olympus TG compact camera does not need to use a wet macro lens as it is counterproductive. Utilizing the Microscope mode allows you to take photos while fully zoomed, even at 1cm distance from the subject (left and above, and yellow goby on previous page).

Lens Beyond Ocean International Photo Competition returns in 2022

Enter the annual international underwater photography competition, Lens Beyond Ocean (LBO), which is in its eleventh year. It is accepting entries from 15 February 2022.

Since 2011, the LBO competition has continued to grow year upon year. It has attracted over a thousand accomplished underwater photographers from all over the globe and awarded high-quality prizes from key sponsors.

Prizes

Enter for a chance to win incredible prizes at world-class dive destinations as well as top-of-the-line dive gear and camera equipment, including dive travel holidays to some of the best dive spots in Asia worth **USD 10,000**.

New developments

Each year, the competition adds new features to its categories and activities to entice, encourage and motivate more and more underwater photographers and videographers from all over the world to capture imagery of the wonder and nature of the underwater realm. Over the years, the final exhibition of the competition in Kuala Lumpur has been open to the

public, featuring the fine photographs and videos by participating artists, increasing awareness and drawing attention to the fragile beauty of the underwater world among divers and non-divers alike.

LBO announced a new category this year, "**Best of Malaysia by Malaysian**," which has been added to its roster of competition categories, including Macro, Wide-Angle, Compact Camera and 3-Minute Video. This new category aims to recognise the talent and excellence in underwater photography by fellow Malaysians who capture imagery in Malaysian waters, highlighting the captivating marine life and beautiful coral reefs found here.

Be a winner

If you are a diver who is passionate about sharing your underwater imagery and experiences with the world, LBO provides a great opportunity for you to show off your talent. First place winners will be selected in each of the following categories: Macro, Wide-Angle, Compact Camera, Best of Malaysia by Malaysian, and 3-Minute Video.

Judges

Winners in each category will be chosen by a select panel of judges.

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Register at www.lensbeyondocean.com

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MIDE MALAYSIA INTERNATIONAL DIVE EXPO

Malaysia International Dive Expo
27-29 MAY 2022
WORLD TRADE CENTRE, KL

NEW CATEGORY ADDED!

BEST OF MALAYSIA BY MALAYSIAN

This is a special category to recognise the excellence and talent in underwater photography by fellow Malaysians of Malaysian waters and its fascinating inhabitants.

Showcase of winning entries

Winners will be announced on **Wednesday, 18 May 2022**, and prizes will be awarded on the main stage at the Malaysia International Dive Expo (MIDE) on **Saturday, 28 May 2022**, at **11:00 a.m.** Furthermore, all winning photos will be displayed in the foyer, and winning videos will be showcased on the big screen of the main stage during MIDE from **27 to 29 May 2022** at the World Trade Centre in Kuala Lumpur.

ing MIDE from **27 to 29 May 2022** at the World Trade Centre in Kuala Lumpur.

Submission deadline

The final date for submission of all entries is **30 April 2022**.

Prize sponsors

Prizes for LBO 2022 are sponsored by Borneo Divers & Sea Sports (Sabah)

Sdn Bhd, Bubble Scuba Worldwide, IST Malaysia, Scubaholics Anonymous, Tenggol Coral Beach Resort, and The Reef Dive Resort & Tours Sdn Bhd.

For more information about how to enter the competition, please visit: lensbeyondocean.com





Hugyfot housing for Nikon Z6/7 II

The Z6/7 housing by Belgium manufacturer Hugyfot is machined out of a solid block AlMgSi1 high strength aluminium. All Nikon Z6/7 II camera controls can be accessed (on/off switch, shutter release, shutter speed, aperture, programme dial, main dial, push buttons, lens release, FN1 and FN2). As is standard, the 100m depth-rated z6/7 housing is equipped with the HugyCheck system, one M16 accessory port, two optical outlets (for two fibre-optic cables), two rigid aluminium handles with one-inch ball mounts, soft neoprene handle for one-handed photography, gearwheel drive for manual zoom or focus control, standard viewfinder, bayonet adaptor for port mounting, and a ball mount on top of the housing. Housings of this new generation are available in various colours, including Graphite Black, Titanium, Blue Titanium and Pink Champagne. hugyfot.com



Nauticam housing for Nikon Z9

The NA-Z9 housing by Nauticam offers a full suite of controls within reach of the integrated handles, including levers for the Fn1/Fn2 customisable buttons and the AF-Mode

button as well as double thumb levers for Playback/Disp and AF-On/Rec. The housing comes with an M24 bulkhead for attaching external monitor/recorders via HDMI 1.4 or HDMI 2.0. Additional features include M16 and M14 bulkheads for strobe triggering and a vacuum system. The NA-Z9 is compatible with Nauticam's water-contact optics such as the WACP-1/2 and CMC-1/2 and also supports Nauticam's N120 port system. Weight on land is 3.76kg, and 0.05kg underwater. The housing is depth-rated to 100m. nauticam.com



Panasonic Lumix GH6

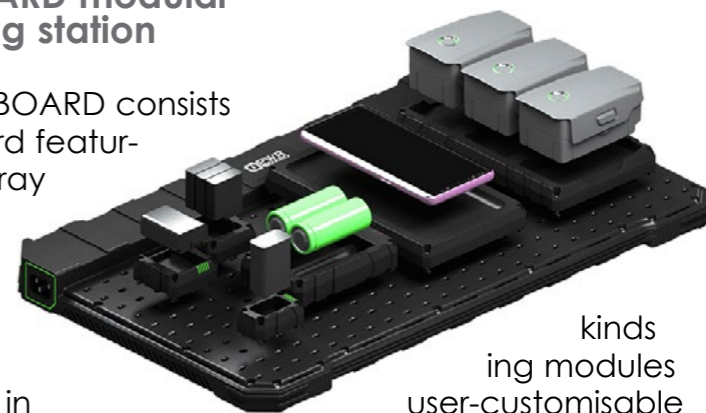
This video-centric Micro Four Thirds camera by Panasonic comes with a new 25.2-megapixel Live MOS sensor combined with the new Venus image processor. It supports an improved in-body image stabilisation (up to 7.5 stops) and upgraded video features. The new sensor delivers 14fps in AF-S mode (8fps in AF-C mode) when using the mechanical shutter, and 75fps (in AF-S mode) with the electronic shutter. The GH6 can record 4K/120p video at 10-bit 4:2:0. Furthermore, full



V-Log/V-Gamut has been added, providing up to 13+ stops of dynamic range. The GH6 features a 3.68M-dot OLED electronic viewfinder and is equipped with dual card slots: a CFexpress (Type B) slot and an SD UHS II slot. panasonic.com

PWRBOARD modular charging station

The PWRBOARD consists of a board featuring an array of holes that accepts various kinds of charging modules arranged in configurations, allowing one to charge literally every kind of battery/akku with one single device. Each charger draws its power from the board and the number is limited only by the available space. The PWRBOARD is available in two sizes: Mini (23cm x 35cm) and Classic (33cm x 50cm). The 30+ different available charging modules (attachable to the PWRBOARD) will support batteries for Canon, Nikon, Sony, Panasonic, Olympus, Fujifilm, GoPro and DJI cameras, various smartphones as well as AA, AAA and V-mount batteries. The device also includes a couple of built-in USB-C and USB-A ports to charge additional gear. The PWRBOARD can be plugged into a wall outlet (110V or 220V) or used with a 12V/14V DC car power input. Important note: PWRBOARD is a crowdfunded product that will be available for purchase once the funding is secured. pwrboard.io



Tokina fisheye lens

The Tokina SZ 8mm f/2.8 X FISH-EYE is a compact, lightweight, fast, ultra-wide prime, manual focus, full-frame fisheye lens designed exclusively for APS-C sensor mirrorless cameras. The line-up includes models for Fuji X and Sony E APS-C size camera mounts. This new lens features a clickless aperture ring for smooth operation during video shooting, a minimum focus distance of 10cm, and a detachable bayonet-type hood to use with full-frame mirrorless cameras for achieving a circular fisheye effect. The lens weighs 280g, and its overall length is 52mm. tokinalens.com



Nansi & David Gallup



P O R T F O L I O

American collaborative artists David Gallup and Nansi Bielanski Gallup create dynamic, compelling and atmospheric paintings of marine life and underwater scenes, rich with color, texture and light, inspired by their adventures under the waves. Well-traveled divers, the husband-and-wife team have dedicated their artistic endeavors to raising awareness and understanding of coral reef and ocean ecosystems. *X-Ray Mag* interviewed the artists to learn more about their artwork, creative process and conservation perspectives.



Jubilation, French grunts off West Caicos Island, by Nansi and David C. Gallup. Oil on wood, 24 x 20in

Eruption of Life, spawning red snappers in Rangiroa (right), 60 x 60in; and *Great White Shark Cage Dive*, 16 x 20in (previous page), oil paintings on wood, by Nansi and David C. Gallup.

Interview by G. Symes
Artworks by David C. Gallup
& Nansi Bielanski Gallup

X-RAY MAG: Tell us about yourselves, your backgrounds and how you became artists.

DG: I think all children love to paint and draw. I simply never stopped, and I never intend to. I grew up in a large family, with four brothers. As much as I love them all, it could be a lot. You know how some kids have imaginary friends? I had imaginary privacy. I would pretend people were not there who really were. Drawing and painting became a way to be alone, to have some space to think, to learn something that was just mine. I continued painting through high school, then went on to graduate from Otis Art Institute in 1990. At this time, there was a resurgence in plein air painting happening here, and I got swept up in it. I was a coastal landscape painter who became frustrated with the lack of originality in the genre... There are only so many scenes of eucalyptus trees on ocean-facing cliffs one can look at before losing interest. By 2005, I was a successful plein air painter who was desperately looking for something else... something bigger and more profound.

NBG: I grew up on the beaches of southern California where I bodysurfed at Encinitas, or surfed at Huntington, and swam at Belmont Shore. It was here that I found a love for the ocean as a California girl. I would spend a long day boogie boarding at Silver Strand, which was followed by a bonfire on the sand, and this was heaven for me, and still is.

A lucky kid who got too much sun and ate too many strips with cheese at Lifeguard station 11, (or Zacks, as it was called by the locals), I was the kid whose bikini was stolen one summer, while



camping at McGrath's State Beach. I wanted to capture these moments, as I grew up, by photographing and painting the majestic seascapes and beaches. In fact, in third grade, I painted my first award-winning beach scene. I still have the prize ribbon hanging up at home.

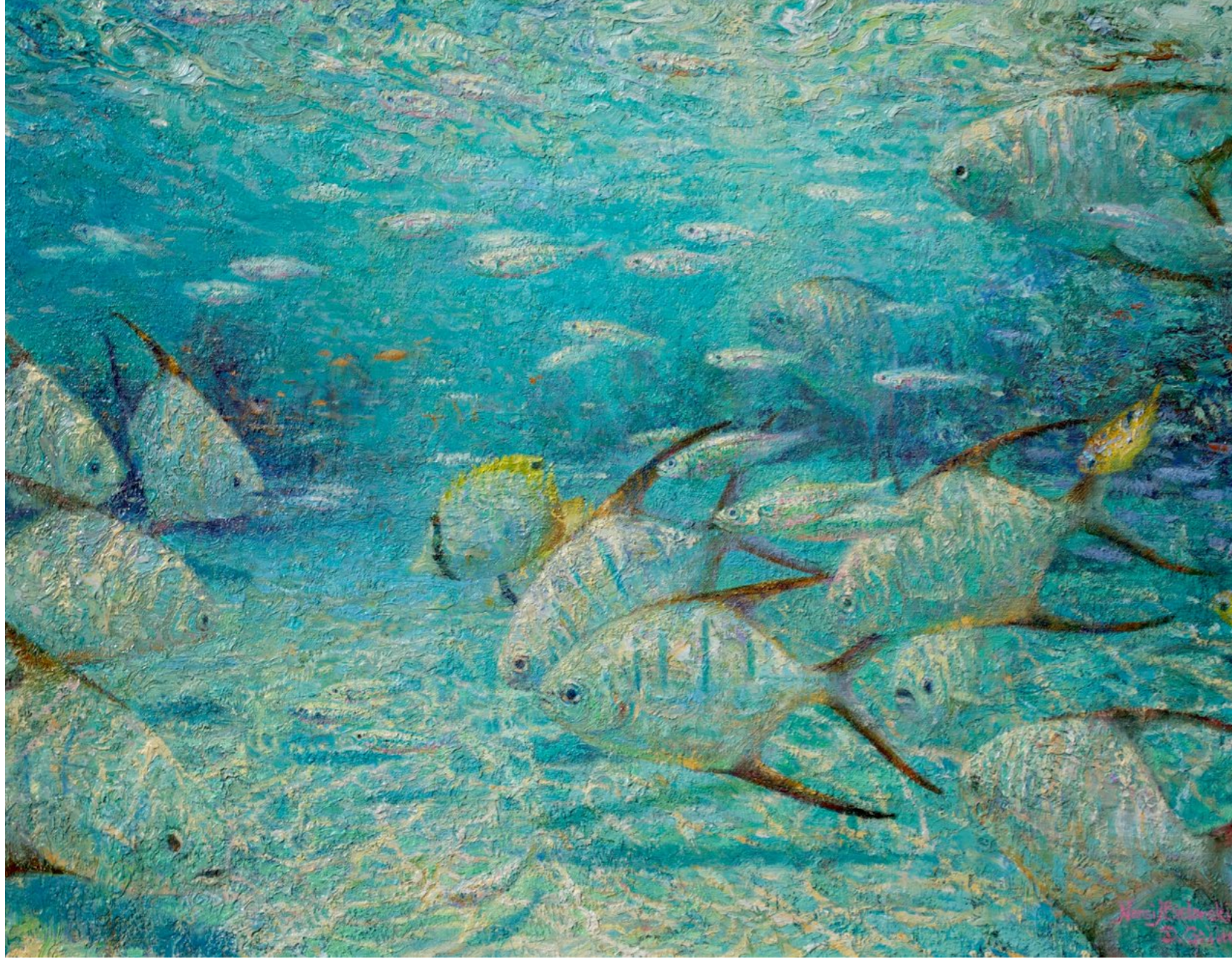
X-RAY MAG: Why marine life and how did you develop your style of painting?

DG: I was given my first solo museum exhibition in 2011 for a series of paintings of Channel Islands National Park and Marine Sanctuary in California, which I was producing with the assistance of the National Park Service. It occurred to me that to paint this park, which is two-thirds under-

water, I should learn to dive. On my first dive after certification, I had a sea lion come and play with me... shadowing me, zipping around like a rocket, and showing off. My world had changed, just like that—I had found the "something bigger," which I had been looking for. I painted that encounter from memory, and it still hangs in our house today. A year later, the Carnegie Museum gave me my second solo museum exhibition, "Beneath the Surface—A Closer Look at our Oceans." I have been painting mostly underwater scenes ever since.

NBG: After getting my Master of Fine Arts degree at Loyola Marymount University, I became a producer of television

Life Opalescent, 22 x 28in, oil on linen (left); and *Coral Garden with Grouper*, 16 x 16in, oil on panel (below) by Nansi and David C. Gallup



the regional voices of southern California's rich artistic heritage: Edgar Payne, William Wendt and Maurice Braun. I also studied contemporary academia, like the works of Alex Kanevsky and contemporary impressionism like that of Fred Cuming. All of these works were very representational or impressionist. And then I met Nansi.

Nansi had a passion for contemporary figurative work and abstraction, a deep understanding of the unseen psychologi-

cal power of the spiritual and conceptual aspects of painting... less technique and training, more raw emotion and animalistic pleasure in moving paint across canvas. She taught me to appreciate modernism and postmodernism, all the way through to the present: Pablo Picasso, Georgia O'Keeffe, Damien Hirst, Franz Kline and Jasper Johns. I am even trying to like Cezanne.

Anyway, I had been working so hard at getting things to look "right," as if



commercials. This job took me around the world, including living in Budapest, Hungary, for three years. I have seen firsthand entire populations suffering under poverty, lack of education, corruption and greed. I have also seen the human spirit shining through all of it, acts of faith, courage and kindness, which prevailed even in the darkest situations. By the late '90s, I returned to my first love of being an artist full-time. I wanted to do work that mattered.

What could matter more than trying to save our oceans? Most urgently, perhaps, our coral reefs. While they vanish at a ter-

rifying rate, they provide food and income for a billion of the world's poorest inhabitants. There is a humanitarian crisis coming that is being overshadowed by the many urgent crises that already exist. Of course, we care about saving the beauty of the coral reefs, saving the sharks, fish and turtles, but ultimately, our real work is to prevent the human suffering and conflict that will happen if we cannot find a way to live in harmony with our oceans. Why paint the ocean? What else would I paint?

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

DG: As a child, all I wanted to do was paint animals. As I matured and headed to art school, I became interested in classical and impressionist work, like the paintings of John Singer Sargent and Claude Monet. My major was illustration, so I was also exposed to the work of people like William Stout, Frank Frazetta and N. C. Wyeth. I had the good fortune to meet William Stout about 20 years ago, and we became friends. He showed me the work of the great underwater illustrator and artist Stanley Meltzoff and helped me write my museum exhibition proposals.

Also, I became well versed in

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such a thing existed. My work was a triumph of patience... accurate, but often forgettable. Nansi brought Fire. Rebellion. Lust. Passion. Boldness. Courage. Purpose. She paints like life is short. I met Nansi when she took a class from me. Now, I am her humble student, so lucky to be able to work with her and learn from her every day.

When we share a canvas, something happens where one plus one does not just equal two, it is more like one plus one equals a hundred. The collaborative paintings we have done together are some of my favorite paintings ever created. Like a wildfire that chooses to

carefully burn around all of the houses on its own terms, they contain the illusion of accidental precision. She is by far my greatest influence.

NBG: As a teenager, I traveled to the Museum of Modern Art in San Francisco. I remember being captivated by Matisse, especially the colors! In my early twenties, I went to the Metropolitan Museum of Art in New York. That is when it really clicked... Sargent, Cezanne, Monet, Gauguin! Gauguin is perhaps one of the reasons we are so interested in painting the reefs of Tahiti. The more I studied and the more I traveled,

the more I was exposed to new and exciting influences, while never losing my inspiration from the original ones. I found Frida Kahlo, Georgia O'Keeffe and Joan Mitchell. I fell in love with sculpture too, by Niki de Saint Phalle, Rodin, Camille Claudel and all of the beautiful Italian marble figures from Michelangelo and Da Vinci.

I did my undergraduate work in communications, painting and sculpting all the while. Later, I got my Master of Fine Arts degree from Loyola Marymount University and was really moved by the work of Gustav Klimt and the Symbolist movement in general. The spirituality of Chagall's bold visions, the sensuality of Egon Schiele, and the eroticism of Balthus all became powerful influences in my work and are still there today, if you know where to look.

By the time I returned to painting full-time, I was lucky to work with some of the regional masters of the late '90s. I studied the figure with Jove Wang, Jeremy Lipking and Aaron Westerberg. I sculpted the figure at every opportunity, learning to work in clay and cast in bronze. One day, I walked down to the Weisman Museum in Malibu and saw David's exhibition on the Channel Islands. I was blown away at the work and signed up for his upcoming workshop: plein air painting from a chartered liveaboard dive boat, with a group of 30 artists. I watched David go for a

dive, come back up, and paint the kelp forest from memory. It was one of the most impressive artistic acts I had ever witnessed. Five years later, we were married, and we paint together nearly every day. What influence could ever be bigger than that?

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

DG & NBG: We work the same way, so we can answer this together. While

there are no "rules" for us, we typically have an experience from a shared dive, which interests us visually, conceptually or spiritually. These seeds sit in our heads until the shells cannot hold them any longer, and they burst onto the canvas of their own will, trampling their way into life, oblivious to the upheaval they might be causing to our schedules and plans. Often, we will be near the end of one painting when a new one barges in and turns the studio upside-down.

A Deeper Love, 38 x 32in, oil on mounted canvas (right); and *Guernica Reef*, 60 x 60in, oil on wood (bottom left), by Nansi and David C. Gallup



Fiji Shark Diver (Nansi's Dive), 34 x 40in, oil on wood (left), by Nansi Bielanski Gallup; Shark Feeder, 10 x 10in, oil on copper, by David C. Gallup (below)



the friendliest wild dolphin pod in the world, sharks everywhere—and that is just in one dive alone! The next dive might be oceanic manta rays, hammerhead sharks, tiger sharks and clouds of damselfish so thick you cannot see your own flippers. The next dive might be with a whale, a school of tuna, or just about any creature you can think of.

If I were to give a story of a particular interaction with marine life, I would have to mention a dolphin encounter at Tiputa Pass.

Nansi and I were diving with a small group at about 15m. One of the divers was brand new and was struggling a bit with control and buoyancy. Twice, she had drifted into me, once pulling my regulator out of my mouth with her wild hand movements as she tried to keep her position.

So, it was with a subtle eye roll that I felt her sinking onto my head while we were in the blue, looking for dolphins. I put my hand up over my head to protect myself from the



We know a lot of artists, and occasionally one will confide that they do not know what to paint. We cannot understand this feeling. We live with piles of seeds in our heads, trying to keep them contained until we can finish raising the seedlings already climbing out of their pots and spilling out into the garden. These ideas push us around mercilessly, and painting is the only way we have found to deal with them.

X-RAY MAG: How have your experiences underwater influ-

enced your art? Where have you had your favorite experiences?

DG: The kelp forests of southern California are so beautiful, and I have a real connection with them. California's waters are where I learned to surf, sail, kayak and snorkel. My brother taught me how to spearfish there, I got my dive certification there, and you could even say that Nansi and I fell in love diving the kelp forests together, searching for inspiration for our paintings, and finding a different kind of inspi-

ration entirely. But here is my confession: I like to dive in warm water. I mean, really warm, like a beautiful bath! Plus, in the tropics, you get the visibility, the corals and sponges, and those really, really beautiful fish and sharks... it's the best!

I think rather than giving a specific dive, which was the best, I would give a place: Tiputa Pass, on the Atoll of Rangiroa in French Polynesia. Barracuda in numbers that overwhelm the senses, spawning fish on the outgoing tide at sunset on a full moon,





Rhythm of Life, sea lions at Anacapa's kelp forest, 60 x 48in, oil on canvas (left); and *Tiputa Pass Snorkel*, 48 x 48in, oil on wood (bottom right), by David C. Gallup

coral reefs to explore, learn and find new inspiration. The visual opportunities for an artist on a coral reef are beyond inspirational, of course, but the opportunities run much deeper than colors and textures.

It is easy to find meaning in the oblique confrontation with the circle of life... spawning groupers, hunting predators, symbiotic shrimp/fish partnerships, and languid turtles are powerful and charismatic characters that all have roles to play in our painted novels. And sharks! What a grasp sharks have on the subconscious of even the most landlocked humans. If art is a vehicle for using images to create emotion in the viewer, what could be more powerful than a shark?

Like most of us, I grew up fearing sharks and hoping never to meet one. We still see it everywhere, the image of the bloodthirsty man-eater, stalking us in the shadows. The reality could not be more different. While the media is fixated on sensationalizing the seven to 10 fatal shark attacks globally per year, it has remained utterly silent about the fact that we are quietly and rapidly erasing sharks from our entire planet at a staggering rate of one hundred million per year in an unsustainable and sometimes legal act of ignorance and greed.

So why are my paintings of sharks so hopeful? Because now, I LOVE swimming with sharks. Because if I can overcome fear with understanding, so can others. We can

educate ourselves and others, we can embrace knowledge over cultural programming and overcome fear with love. My portraits of divers with sharks are my testimony to that basic human ability, and that is a cause for hope.

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

DG & NBG: It would be nice to think

that a painting can change the world. Something should. The two of us have been changed by paintings to be sure, and what else does changing the world mean other than changing each person a tiny bit?

Before the onset of commercial whaling in the 1600s, humans and the ocean lived in a sustainable (if tenuous) harmony. The sea was the master, and the human, the insignificant mortal who marveled at the power



impact, only to find that it was not her at all. My hand was on the rubbery belly of a teenage dolphin who came in for a belly rub!

Of course, I had heard of these local dolphins who crave human contact, but I did not really think it would happen to us. I felt the scars of a propeller along its back, and others from various fights or struggles along its side, and soon it drifted down out of my reach before swimming to another diver and

giving her the chance to have an encounter, which will stay with her forever. If I am lucky enough to meet my grandchildren someday, I will certainly be telling them that story.

NBG: I would describe our relationship with the ocean, and coral reefs in particular, as "profound." Currently, we are raising teenagers in California where we have our home and studio. At every opportunity, we head to the



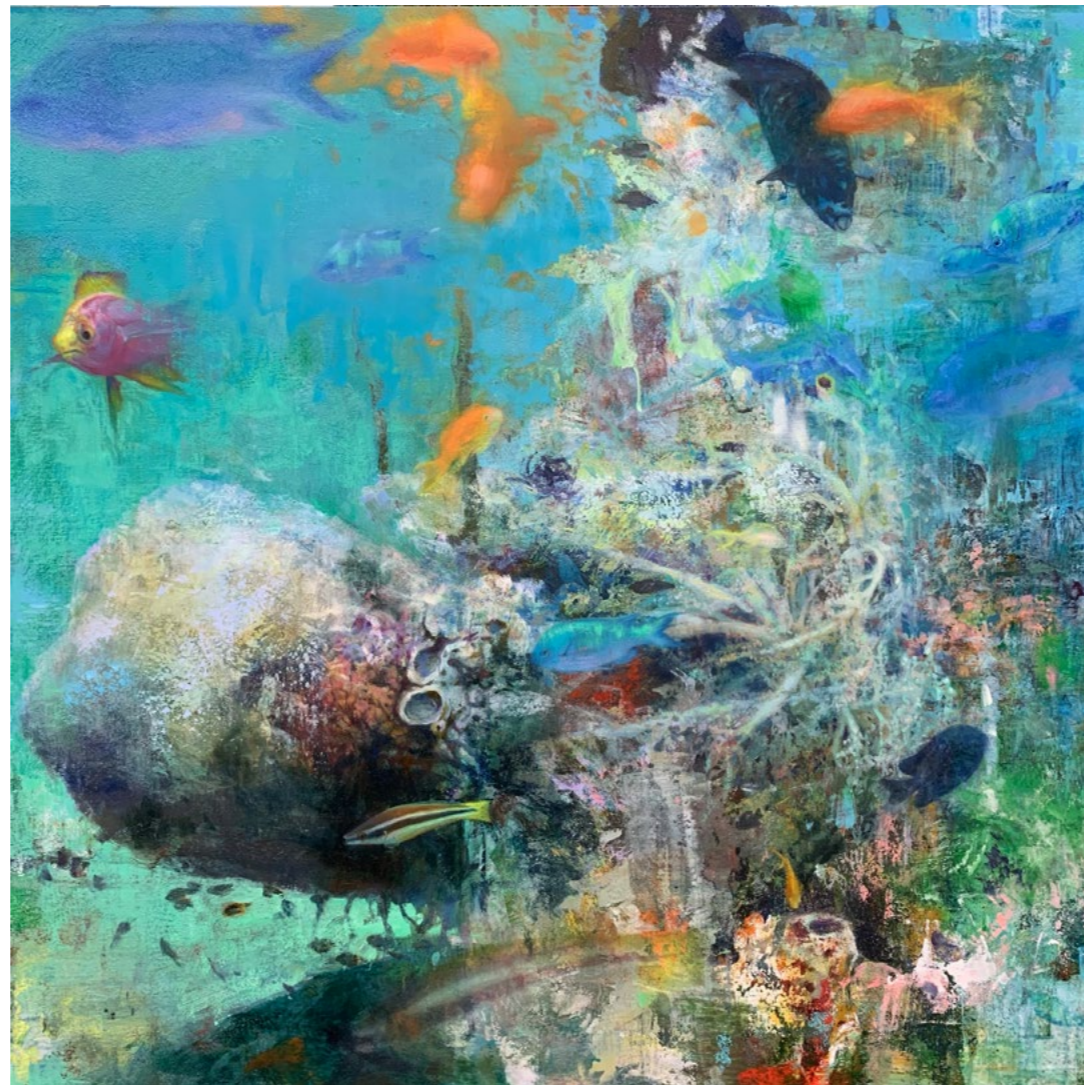
Rainbow Reef Snorkel, Fiji, by David C. Gallup. Oil on panel, 24 x 24in

of the monsters that surely dwelled in her depths. The idea that we, puny humans, should protect the indestructible sea was laughable.

In the relatively short time since then, we have learned to catch entire shoals of fish, leaving no survivors. We have learned to scrape the ocean floor clean of coral reefs and other habitat in search of shrimp at a rate of miles per hour per boat. We use dynamite and cyanide to bring fish to the surface, destroying their habitat and breeding areas. We kill and consume animals, which provide only a few meals, though they may

not been good roommates. Sadly, when we talk about ocean conservation, some people are still laughing at the idea that humans can kill the ocean. Our primitive minds cannot imagine it until we see it firsthand. People who live close to the sea know what is happening, as does every diver we have ever met.

We believe that saving our oceans, and coral reefs in particular, is one of the most important goals of our generation. Our reliance on oceans, reefs and the life they produce is essential to the survival of nearly every person on the planet. Now, scientists tell us



Bora Bora at Three Meters, by David C. Gallup. Oil on wood, 24 x 24in

take decades to reproduce.

We have

that without urgent action, coral reefs are likely to be the first entire ecosystem erased by human activity, the effects of which will be felt by every human on the planet.

That is why we have spent the past few years working on paintings of the coral reefs for an international museum exhibition, kicking off a world tour in April of 2024 at Iconic Museum outside of Houston, Texas. We are looking into venues around the globe, trying to raise awareness of the perils facing our planet if we do not act with urgency.

We are putting together a team of nonprofit organizations to help us with research and outreach, and we are currently seeking relationships with museums around the world to bring



The Pink Reef, by David C. Gallup. Oil on mounted linen, 40 x 40in

our message to as many people as possible. That message: "Our reefs are essential to human survival as we know it, they are in peril due to human activity, and all of us must help."

X-RAY MAG: What is the message or experience you want viewers to get?

DG & NBG: Being underwater in a coral reef environment is one of the most thrilling experiences a person can have. One is immediately imbued with the desire to share the marvel, to learn more, and to make sure nothing ever happens to prevent future generations from being able to have that experience.

The great California painter Daniel Pinkham once told us that it is the abstract shapes, colors and patterns

that speak to the subconscious of the viewer. We believe that. Paintings, it would follow, show not only what a camera can show, but by combining realism with the power of the abstract, paintings can drive the emotional and spiritual experience of the viewer in ways that would be very difficult to arrange in a camera. It would be tough to get a fish, for example, to move two feet to the left into better light while the mantis shrimp in the foreground cocks its head. As painters, we are free to create whatever shapes and textures and colors we choose, and then use that to create an emotional context in an abstract painting, before turning those shapes and colors into any of the reef life we choose. This is a difficult task, but together, we have had some success.

Our hope is that viewers will enjoy



Regeneration, giant clam with bubble-tip anemone, 36 x 36in (left); and *Schooling Butterflyfish*, Raja Ampat, 24 x 30in (below), oil paintings on wood, by David C. Gallup

My advice to aspiring or emerging ocean artists would be to remember that you are an artist first, and the subject is secondary to the message of your painting. Study all styles and periods of art, for they all have much to teach us... abstraction, expressionism, you name it. Keep changing, be ruthless with yourself, regarding quality of work. Remember you are not a painter of things; you are a poet expressing your thoughts and emotions through paint.

NBG: One of the benefits of being an artist is that we have a voice. This has been true for me as a filmmaker, as a writer, as a sculptor, and as a painter. Of course, we all have voices... but it is the arts that let us use them as a force for change. My advice to emerging ocean artists would be to stick with it; do not judge your work too much but just keep getting better. Like a shark, you have to keep moving forward to survive.

X-RAY MAG: How do people respond to your works?

DG: There has been such a variety of responses to my work, this is difficult for me to answer. I try to keep as much mystery in a painting as possible, letting the viewer give meaning to the marks. This may sound strange, but

it honestly replicates the way we experience the world. Most of what we "see" happens in the mind, not the eye.

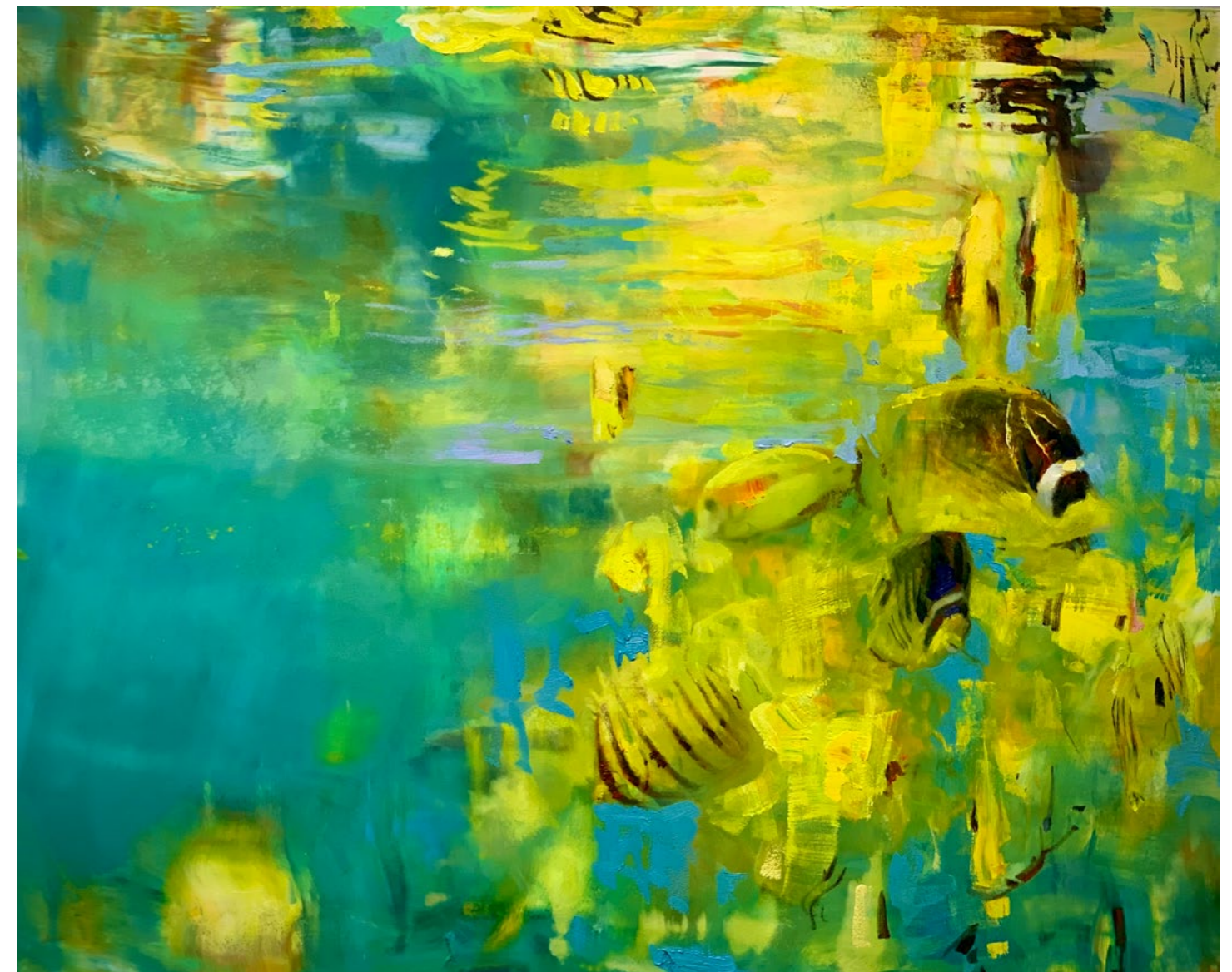
As I look out my window now, in just a quick glance, I see mountains, trees, my backyard and furniture there. But I do not really see all of that with my eyes. I do not have time to study every tree, every leg on a patio chair. Most of what I see is an interpretation of out-of-focus objects, color blobs and shadows, which my brain fills in based on my many years of personal experience.

When I look at the nearby chair, the hills in the distance are blobs of dark

and light green. I do not even need to look at them to "see" the trees covering a hillside because we experience the world as our minds believe it to be.

If you think about it, that is the only way vision could possibly work, or else we would never be able to safely run upstairs or jog down the street... We would be stuck carefully observing every step, crawling slowly to really know what is beneath our feet. This shorthand, our true perception, is what gives viewers the chance to see their world in my painting.

I have had marine biologists approach my paintings and be



the colors of the coral reef... they are so profoundly beautiful and different from anything else we are likely to see on land. The purples of corals and anemones; the yellows and iridescent blues of the fish; the deep, rich reds of sponges and echinoderms; the magical blue of the ocean from below... These colors profoundly affect mood and set up the viewer for the experience we choose to present. If we really do our jobs well, each painting is intended to affect the viewer in a different way, so there will not be an answer that fits all paintings. Some emotional reactions we commonly strive for would be peace, danger, excitement, awe, surprise and curiosity.

X-RAY MAG: What are the challenges or benefits of being an artist today? Any advice for aspiring artists?

DG: I suppose the challenges for ocean artists today are completely up to the artist... I am not sure what else they could be. Am I challenging myself to paint a convincing shark? To sell a painting for a certain price? To create a particular emotion in the viewer? To change or expand someone else's mind about conservation? To invent a new technique or accomplish something artistically, which has eluded me? The wonderful thing about being an artist of any kind during any time period seems to be that we create our own challenges, goals, even problems to solve.

portfolio

thrilled to recognize a species of seagrass in what, to me, was just a spot of green, which I invented to set off the orange of a fish nearby. They could go on and on sometimes, talking about how perfectly it is situated in the scene to replicate the true behavior of the species. They are seeing their world in my painting.

A child might think that a

fish is smiling or frowning, projecting human mannerisms onto the fixed mouth of a fish. Again, they are projecting their world onto my painting.

Even my most intentional marks—light coming down from the surface, for example—is really just light paint streaked on canvas... It is the viewer who must make it into a scene. Because I take such



pleasure in letting paintings be mysterious, pulling the viewer in and out of focus through the piece, it is truly a pleasure to see the stories and subjects that come to life in the minds of the viewers.

NBG: I love emotional reactions the best. One of my favorite reactions is “wonder.” Not everybody is able to dive or snorkel, and I like to use my work to share the genuine emotions I felt during a moment of a dive with those who have not had that experience.

No matter how much I dive or snorkel the coral reefs of the world, I never stop being surprised—surprised by the myriad shapes, colors and habits of fish and corals; surprised by behavior and symbiosis; surprised at the alien designs of the creatures I see. I think adults are surprised at what we show them of the reef, where children experience wonder. One of my greatest goals is to make an adult feel wonder.

One of my favorite encounters with the public happened at a show I had in Laguna, where an older woman was looking at a coral reef painting with a freediver in it. She bought the painting, and while it was being wrapped, we had a brief conversation. It turns out that as a child, she had been an avid snorkeler, and throughout her adult life had moved away from the ocean, had a career, and raised a family. She told me that she

Blue Octopus, 30 x 24in, oil on wood (right); and *Union of Seahorses*, 8 x 10in, oil on wood (bottom left), by David C. Gallup

needed to have this painting because it reminded her of the sense of wonder she felt as a child, snorkeling the local reefs of California. It was the greatest compliment she could have given me.

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

DG & NBG: For the past few years, the two of us have been conceptualizing and creating paintings of the world's coral reefs with the goal of a traveling museum exhibition. We want to use our work not to generate gallery sales, but to show the world the beauty and mystery of the ecosystem we, as a species, are poised to destroy.

We are also planning to release a hardcover catalog of the work to accompany the exhibit. We have just set opening dates for the tour at Iconic Museum in Texas in April of 2024, and we are in the process of lining up dates at more museum venues around the world. We plan to use approximately 50 paintings of various sizes to give just a taste of the variety and beauty of the world's coral reefs.

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



DG & NBG: We know that we have been incredibly fortunate to travel the world in search of nature's most spectacular beauty. It has been equally wonderful to meet the warm and generous people who inhabit the ocean nations. These people live simple lives, mostly as fishermen, farmers, or in the tourist-service industry.

They are only now beginning to confront the challenges of population density, overfishing

and global climate change, which are now almost certain to increase poverty, hunger and displacement over the next few generations. We want people to know that we are not prioritizing fish over people, or sharks over people, as is sometimes said of ocean activists. We are prioritizing people over greed, love over fear, and truth over fiction. ■

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