Inspiring People to Care for our Oceans Since 1995

# DIVERS FOR THE ENVIRONMENT

WWW.EMIRATESDIVING.COM | MAGAZINE | MARCH 2026 | VOLUME 22 | ISSUE 1

# TURTLES OF THE SMSRC

## SHARJAH MARINE SCIENCE RESEARCH CENTRE

## FREEDIVING PHOTOGRAPHY, SCIENCE, AND AI ON THE UAE'S EAST COAST

# FOR THE OCEAN

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EDA is a non-profit NGO registered with the Ministry of Community Development and CDA, and accredited by UNEP as an International Environmental Organisation.

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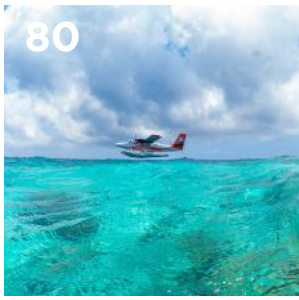



## REGULARS



## NEWS



## REEF CHECK



## YOUTHS CORNER



## PRODUCT REVIEWS



## FEATURES



## UNDERWATER PHOTOGRAPHY

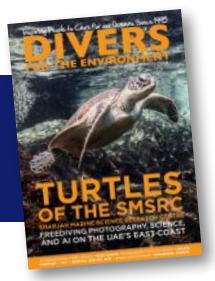


### DIVERS FOR THE ENVIRONMENT

Please note that EDA's magazine, 'Divers for the Environment' includes articles written by individuals whose opinions', whilst valid, may or may not represent that of EDA's. The magazine is a platform for individuals to voice their opinion on marine and diving related issues. You are welcome to suggest an article for the next issue to be released in June 2026. Send your articles, feedback or comments to: **magazine@emiratesdiving.com**

### COVER

PHOTO BY JON LAPEYRA MARTIN
Turtles of the Sharjah Marine Science Research Centre.




DP WORLD This issue is brought to you by DP World

## DIVING DESTINATIONS



## HEALTH & SAFETY




PATRICK VAN HOESERLANDE
Diving opens up a whole new world. Being a writer-diver and co-editor of the Flemish divers magazine, Hippocampus, Patrick personally explores our underwater world and shares his experiences through his articles. You'll find a collection of them on **www.webdiver.be**.

ANTHONY LEYDET
Anthony is a graduate of Marine Biology, an underwater photographer, and writer set on sharing articles and holding conferences dedicated to marine life in order to better observe nature underwater.
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## EDITOR & GRAPHIC DESIGNER

ALLY LANDES
Ally is EDA's Project Director, Event Planner, Graphic Designer, Editor, and Photographer. She created and introduced 'Divers for the Environment' back in December 2004 as a free educational tool to share information by scientists, conservationists, underwater photographers, and other like-minded individuals from all over the world with a passion to conserve and protect our delicate marine life and underwater world.

## THE CONTRIBUTORS

Meet the quarterly contributors who share their passions and stories with our readers. Want to contribute?
Email: **magazine@emiratesdiving.com**

JON LAPEYRA MARTIN
Dr Jon Lapeyra Martin is a marine scientist and tec-diver who blends ocean exploration with cutting-edge research. As an Assistant Professor in the UAE, he combines eDNA, ROV surveys, AI image analysis, and technical diving to study plankton, coral reefs, and sea turtles. Passionate about immersive fieldwork, he champions hands-on marine science through freediving, scuba, and visual storytelling underwater.
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ISHANI PILANKAR COONEY
A MOHRE-licensed private educator with a background in life and forensic sciences, she has resided in the UAE since 1995. Fascinated by microbiology, ocean science, and forensics, she explores how microbes aid ocean conservation, environmental crime investigations, and forensic analysis. Aspiring to become a technical diver, she seeks to uncover hidden microbial networks shaping marine ecosystems.
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DR OSAMA MELIKA WAHBA
Dr Osama Melika Wahba is a marine biologist and coral reef specialist with over 30 years of experience in reef ecology, restoration, and marine protected area management in the Red Sea and the UAE. He holds degrees in marine biology and tropical coastal management (UK) and a PhD in soft coral chemo-ecology. He leads coral restoration programmes and the IUCN Green List process in Sharjah.

SAMER HALWANY
Born in Lebanon, Samer grew up with a great passion for nature. After photography studies at the New York Film Academy, his lens became the perfect medium for him to document the interaction of the natural world. Underwater photography was a perfect fit for Samer since he's passionate about both photography and the ocean, being a scuba diver himself. As a CMAS visual committee member, he uses his images to present wonders of the sea to the world.
**www.samerhalwany.com**
**www.instagram.com/samerhalwanyphotography**

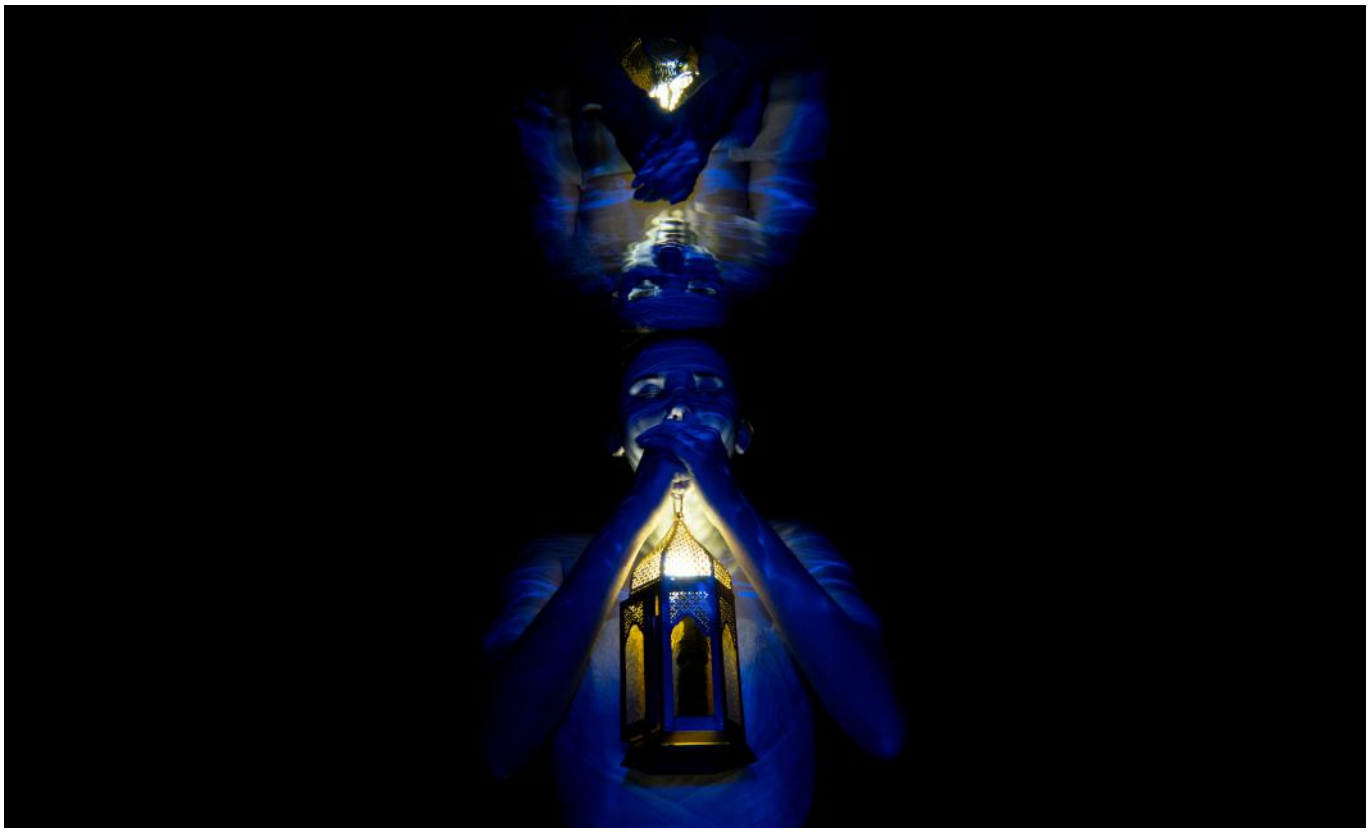


Photo by Hesma Fivaz – Creative Underwater Photography entry to Digital Online 2025.

# RAMADAN MUBARAK!

IBRAHIM AL-ZU'BI
Co-Founder

As we welcome the March 2026 edition of Divers for the Environment, we are reminded why we do what we do – to inspire people to care for our oceans, today and for generations to come.

This issue captures the very essence of our community: science in action, conservation through collaboration, and storytelling that connects us more deeply to the sea. From the powerful marine research unfolding along the UAE's East Coast in Turtles of the Sharjah Marine Science Research Centre, to the official declaration of Al Qalqali as the UAE's newest Marine Protected Area, this edition reflects a nation taking meaningful steps toward safeguarding its marine future.

We celebrate the strength of partnerships – whether through Reef Check's expanding monitoring programmes, the remarkable milestone of Abu Dhabi's Sustainable Fisheries Index reaching 100%, or the collective effort behind Cleanup Arabia events that continue to remove hundreds of kilograms of waste from our waters. These are not just achievements; they are proof that when communities, scientists, volunteers, and institutions work together, measurable change happens.

This issue also reminds us that conservation is as much about people as it is about ecosystems. From youth divers discovering Fujairah's underwater treasures, to global collaboration protecting the Gulf's endangered humpback dolphins, the ocean connects us across generations and borders.

As we enjoy the holy month of Ramadan – a season of reflection, may this edition inspire renewed commitment – to dive responsibly, to protect what we love, and to remain curious about the world beneath the surface.

The ocean is not just a destination. It is our shared responsibility!

Happy reading, and safe diving.

Ibrahim Al-Zu'bi

# A CLEANUP ARABIA EVENT

## AN UNDERWATER CLEAN-UP AT D-MARIN PORT DE LA MER

PHOTOGRAPHY BY **ALLY LANDES**

We held our final underwater clean-up on Saturday the 6th of December 2025 making it our 9th clean-up event of the year – concluding, we removed a total of 1,911.026kg last year alone!

We had such a fun morning with D-Marin at Port de La Mer! We had collected 565.2kg at the same location in November 2024 with most of the items being from construction. This year we are still pulling up a lot of construction materials, but it is now mostly a lot of everyday materials we are not responsibly disposing of that are still ending up in our waters. We clearly still have a lot of work to do.

We thank all our members who took part (35 divers out of the 42 registered showed up and we had 8 surface supporters help our divers), thank you to Divers Down, our strategic partner DP World, and our event partners, D-Marin and their support staff, and Imdaad LLC for another very eventful clean-up.

Our divers successfully collected 194.4kg of underwater waste in the hour allocated!

A big shout out also goes out to the Dubai Voluntary Diving Team for the incredible support they always provide to the community.

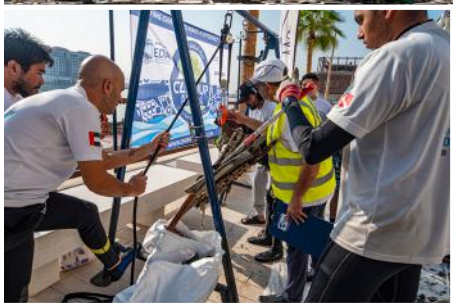
D-Marin thank you for the fantastic morning and team support, and for the delicious spread you provided our team!

**BECOME AN EDA MEMBER**

If you would like to join EDA and get involved in our upcoming events and activities, please Subscribe to our Newsletter to receive all our news and updates straight to your inbox:
**www.emiratesdiving.com**

Membership is just AED100/year and you are able to register to all our activities that interest you:
**www.emiratesdiving.com/membership**

Check out all the membership benefits available to you here:
**www.emiratesdiving.com/membership-benefits**

| DIVE CLEAN-UP \| DUBAI | |
|---|---|
| D-Marin Port de La Mer | |
| 35 **Divers** \| **8 Surface Support** Volunteers | |
| **MOST LIKELY TO FIND ITEMS** | **TOTAL** |
| Grocery Bags (plastic) | 33 |
| Other Bags (plastic) | 3 |
| Beverage Bottles (glass) | 6 |
| Beverage Bottles (plastic) | 10 |
| Beverage Cans | 2 |
| Food Containers (foam) | 1 |
| Food Containers (plastic) | 2 |
| Straws/Stirrers (plastic) | 1 |
| **FISHING & BOATING** | |
| Line, Nets, Traps, Rope, etc | 32 |
| **PACKAGING MATERIAL** | |
| Foam Packaging | 4 |
| Other Plastic Bottles (oil, bleach, etc) | 2 |
| Strapping Bands | 1 |
| **ILLEGAL DUMPING** | |
| Appliances | 2 |
| Construction Materials | 75 |
| **OTHER ITEMS/DEBRIS** | |
| Clothing | 21 |
| Footwear (shoes/slippers) | 1 |
| Other Plastic Waste | 19 |
| Other Waste (metal, paper, etc) | 3 |
| **OTHER ITEMS NOT LISTED** | |
| Ceramic Plates | 3 |
| Sunglasses | 1 |
| Foldable Trolley | 1 |
| Carpet | 16 |
| Clothes Hanger | 1 |
| Mop | 1 |
| **GRAND TOTAL OF ITEMS** | **241** |
| **TOTAL BAGS COLLECTED** | **17** |
| **TOTAL WEIGHT (KG)** | **194.4** |

# A CLEANUP ARABIA EVENT

## AN UNDERWATER CLEAN-UP AT DUBAI HARBOUR

PHOTOGRAPHY BY **ALLY LANDES**

We had such a fun morning with everyone for the first dive clean-up of 2026 on the 10th of January at Dubai Harbour!

Well done to all our divers who successfully brought up 429.4kg of waste in the allocated one hour dive time. Sadly, plastic bottles (356), plastic cups (144), and plastic bags (131) are still in high numbers. Most unusual find on this clean-up was a toilet, a satellite dish, a traffic cone, a supermarket trolley and 3 folding trolleys. There were 7 mobile phones collected in total!

We want to thank our partner, Dubai Harbour for hosting this event in their marina, their team's support, and for organising hot beverages and food from Hubble for everyone, Imdaad LLC our waste management partner for collecting and properly disposing of all the rubbish, The Dubai Voluntary Diving Team for the extra support with logistics, and to our Strategic Partner DP World who enable us to hold all of these events throughout the year. Thank you also to Divers Down / Dive Garage for the well organised kit setup. We've got plenty more lined up in Q2.

37 EDA divers took part in the clean-up, and 7 EDA and 19 Dubai Harbour surface supporters were there to help collect all the rubbish out of the water. Well done teams!

**WANT TO JOIN OUR EVENTS?**

EDA members must register by email to register to the events of their choice. All our upcoming events show up on our website at:
**www.emiratesdiving.com/upcoming-events**

If you need to acquire or renew EDA membership, go to:
**www.emiratesdiving.com/membership**

Check out all the membership benefits available to you here:
**www.emiratesdiving.com/membership-benefits**


| DIVE CLEAN-UP \| DUBAI | |
|---|---|
| Dubai Harbour Marinas<br>37 **Divers** \| **26 Surface Support** Volunteers | |
| **MOST LIKELY TO FIND ITEMS** | **TOTAL** |
| Grocery Bags (plastic) | 57 |
| Other Bags (plastic) | 74 |
| Beverage Bottles (glass) | 145 |
| Beverage Bottles (plastic) | 356 |
| Beverage Cans | 120 |
| Bottle Caps (metal) | 10 |
| Bottle Caps (plastic) | 39 |
| Cigarette Butts | 3 |
| Cups, Plates (foam) | 17 |
| Cups, Plates (paper) | 2 |
| Cups, Plates (plastic) | 144 |
| Food Containers (plastic) | 19 |
| Lids (plastic) | 10 |
| Straws/Stirrers (plastic) | 3 |
| Utensils (plastic) | 8 |
| **FISHING & BOATING** | |
| Line, nets, traps, rope, etc | 49 |
| **PACKAGING MATERIAL** | |
| Foam Packaging | 9 |
| Other Plastic Bottles (oil, bleach, etc) | 8 |
| **PERSONAL HYGIENE** | |
| Gloves & Masks (PPE) | 16 |
| **ILLEGAL DUMPING** | |
| Appliances | 3 |
| Construction Materials | 23 |
| **OTHER ITEMS/DEBRIS** | |
| Clothing | 42 |
| Electronic Waste (phones, batteries) | 7 |
| E-cigarettes | 7 |
| Footwear (shoes/slippers) | 3 |
| Tobacco Products (lighters, wrap) | 7 |
| Toys | 2 |
| Other Plastic Waste | 32 |
| Other Waste (metal, paper, etc) | 50 |
| **OTHER ITEMS NOT LISTED** | |
| Folding Trolleys | 3 |
| Supermarket Trolley | 1 |
| Traffic Cone | 1 |
| Toilet | 1 |
| Satellite Dish | 1 |
| Shower Head | 1 |
| Anchor | 1 |
| Razors | 2 |
| **GRAND TOTAL OF ITEMS** | **1,276** |
| **TOTAL BAGS COLLECTED** | **15** |
| **TOTAL WEIGHT (KG)** | **429.4** |

# A CLEANUP ARABIA EVENT

## AN UNDERWATER CLEAN-UP AT D-MARIN MARSA AL ARAB

PHOTOGRAPHY BY **ALLY LANDES**


Photo by D-Marin

We had an amazing underwater clean-up event to mark the UAE National Environment day at D-Marin Marsa Al Arab on Saturday the 7th of February. Our divers brought up a whopping 807.6kg of waste from our marine environment. That is a record for a single dive site clean-up!

Our divers headed to the opposite side of the marina on this mission. This clean-up's most unusual items were a lorry tyre weighing 270kg, a metal chain weighing 115kg, another trolley, a large fibreglass storage box, a pillow, 4 screw drivers, and 3 towels. From our count, beverage cans (90) surpassed the number of drink containers in this sweep, but were followed closely by plastic bags (89), plastic cups (71), and plastic bottles (67). There are still plenty of construction materials being found, and we still have more to do when we come back to do the third clean-up next year.

We thank our partner D-Marin Middle East for hosting this event and for their team's help and support, Imdaad LLC our waste management partner for collecting and properly disposing of all the rubbish, the Dubai Voluntary Diving Team for the extra support with logistics (without them we would never have surfaced the 270kg tyre), and a huge thank you to our Strategic Partner DP World who enable us to hold all of these events throughout the year. Thank you also to Al Boom Diving for the well organised kit setup.

Well done to our 36 divers who worked at cleaning up our marine environment, and to our 14 surface supporters for being ready to help remove all that waste. Well done teams!


| DIVE CLEAN-UP \| DUBAI | |
|---|---|
| D-Marin Marsa Al Arab<br>36 **Divers** \| **14 Surface Support** Volunteers | |
| **MOST LIKELY TO FIND ITEMS** | **TOTAL** |
| Other Bags (plastic) | 89 |
| Beverage Bottles (glass) | 18 |
| Beverage Bottles (plastic) | 67 |
| Beverage Cans | 90 |
| Beverage Sachets/Pouches | 1 |
| Bottle Caps (plastic) | 6 |
| Cups, Plates (plastic) | 71 |
| Food Containers (plastic) | 6 |
| Food Wrappers(Candy, Chips, etc) | 15 |
| Lids (plastic) | 13 |
| Straws/Stirrers (plastic) | 2 |
| Utensils (plastic) | 2 |
| **FISHING & BOATING** | |
| Line, nets, traps, rope, etc | 27 |
| **PACKAGING MATERIAL** | |
| Foam Packaging | 5 |
| Strapping Bands | 2 |
| **PERSONAL HYGIENE** | |
| Gloves & Masks (PPE) | 1 |
| **ILLEGAL DUMPING** | |
| Construction Materials | 68 |
| Tyres | 2 |
| **OTHER ITEMS/DEBRIS** | |
| Clothing | 53 |
| E-cigarettes | 7 |
| Tobacco Products (lighters, wrap) | 6 |
| Toys | 1 |
| Other Plastic Waste | 77 |
| Other Waste (metal, paper, etc) | 43 |
| **OTHER ITEMS NOT LISTED** | |
| Trolley | 1 |
| Anchor | 1 |
| Towels | 3 |
| Large Fibreglass Storage Box | 1 |
| Dive Mask | 1 |
| Screw Drivers | 4 |
| Stanley Knife | 1 |
| Metal Chain Weighing 115kg | 1 |
| Spade | 1 |
| Mops and Brooms | 3 |
| **GRAND TOTAL OF ITEMS** | **689** |
| **TOTAL BAGS COLLECTED** | **24** |
| **TOTAL WEIGHT (KG)** | **807.6** |

# A ONE-OFF EDA EVENT
## MASTERING YOUR GOPRO UNDERWATER

PHOTOGRAPHY BY **ALLY LANDES**



Felipe Morales, GoPro's Hero13 Middle East Ambassador gave a fantastic presentation to our members on Thursday the 22nd of January at Deep Dive Dubai on how to make the most of their GoPro settings underwater for best results.

Felipe broke everything down for both photo and video options, starting with how to rig your setup. He gave live editing sessions with step by step instructions on how to colour grade and crop for social media delivery.

**GOPRO MIDDLE EAST WERE ALSO AT THE EVENT:**

- GoPro gave our members exclusive discounts on their cameras and accessories.
- All participants received a free GoPro Sleeve and Lanyard.
- GoPro gave away a GoPro Hero 13 to our lucky winner: Hamid Obaid Al Ali.

Thank you to everyone who made it to the event, it was great to catch up with everyone and meet all our new members.

**UNDERWATER GOPRO SETTING RECOMMENDATIONS**

**FOR VIDEOS:**

You can film vertically or horizontally in a 16:9 frame, or use the 8:7 frame to adapt both orientations from the same footage.

**For larger subjects, or panoramic shots, I recommend the following:**

**Resolution:** 4K (10-Bit)
**FPS:** 60
**Lens:** Wide Angle
**ISO:** 100-1600
**Shutter:** Auto
**White Balance:** Auto

**FOR PHOTOS:**

**Lens:** Wide Angle
**ISO:** 100-3200
**Shutter:** Auto
**Sharpness:** Low
**Output:** RAW (if you plan to edit)

It's always useful to use Burst mode, where you can capture multiple frames per second to capture the perfect moment.

Lastly, it's always helpful to use a diving rig to improve stabilisation underwater and to add lights, which are essential for capturing colours below the surface.

**FELIPE MORALES**

www.instagram.com/nomad.underwater

# INTRODUCING OUR NEW EDA TEAM MEMBER

**We would like to introduce everyone to Kacy, EDA's new Admin team member!**

"I'm Kacy Torres the new Admin at EDA. I keep things running smoothly from answering queries to crunching documents. I'm here to make life easier for our team and members.

I may not have any experience in scuba diving yet, but I'm here to learn more about our marine environment. My goal is to make sure our divers have an unforgettable experience."

**HOW TO GET IN TOUCH WITH KACY**

Kacy is our members' point of contact and we're so happy to have her join the EDA team.

projects@emiratesdiving.com
+971 4 393 9390

# CAN A DIVER WITH A FULL-TIME JOB FINISH 13 MARINE-FOCUSED COURSES IN 4 MONTHS? THAT IS EXACTLY WHAT LALAINE LAO DID

BY **ARWA MOHAMMED**

For most professionals, the hours between work and bedtime are reserved for relaxing and recharging for the next day. But for Lalaine, a dedicated Dive Centre Coordinator, those hours became a portal to a deeper understanding of the underwater world.

Lalaine completed 13 marine-focused specialist courses in just four months – all while managing the daily tasks of pool dives, equipment logistics, and trip coordination. Her journey isn't just a story of time management; it's a reminder that when you put your mind to something, you can truly achieve it. How was she able to do it? The answer lies in the Mastery Loop.

According to Self-Determination Theory, "Competence" is a fundamental psychological need. When Lalaine finished her first course, her brain triggered a dopamine-driven reward cycle. Rather than exhausting her, each "check of the box" provided the mental fuel to tackle the next. This created a positive feedback loop: the more she learned, the more capable she felt, and her "work fatigue" was replaced by "intellectual fire."

As a Coordinator, Lalaine's days are often spent in the logistics of diving. However, these 13 courses – ranging from Wastewater Pollution to Adaptation Design Tools – shifted her perspective from the "what" to the "why."

"What struck me the most was how interconnected everything is," Lalaine shares. "I realised that coral reefs are far more than beautiful diving spots; they are living systems responding to countless pressures. Even working behind the scenes, I could see how every small action – mindful diving or equipment handling – contributes to reef health."

Lalaine's curriculum took her beyond the shoreline. Courses on Sustainable Commodity Supply Chains and Land-to-Sea Connections revealed the invisible threads connecting our daily choices to the health of the ocean.

"Learning about land-to-sea connections was incredible," she notes. "It reinforced that marine conservation is not limited to what happens underwater; it's part of a bigger interconnected system. Every choice we make, even on land, directly affects the marine health we love."

Lalaine's 4 months sprint proves that curiosity is the ultimate antidote to burnout. By the end of her 13th course, she didn't just have a stack of certificates; she had a renewed sense of purpose.

"The ocean is not just a playground," Lalaine concludes. "It is a living, delicate system that needs understanding and action. I recommend these courses to anyone – they go far beyond certification; they teach awareness and stewardship."

If you are curious about the specific classes Lalaine took online for free, you can check out her personal notes and feedback on each course. We hope her insights inspire you to choose a topic you love and start your own journey toward knowledge development about our mysterious big blue ocean. After all, the best way to protect the ocean is to understand it.

**LINK TO LALAINE'S NOTES:**
https://linktr.ee/xphotodxb

# ENVIRONMENT AGENCY – ABU DHABI
## ENGAGES AUS STUDENTS IN MISSION ABOARD RESEARCH VESSEL JAYWUN

The Environment Agency – Abu Dhabi (EAD) hosted six students from American University of Sharjah (AUS) for a hands-on marine research experience aboard its state-of-the-art research vessel 'Jaywun'. The mission provided the students the opportunity to conduct real-world fieldwork alongside leading UAE scientists studying the nation's coastal and marine ecosystems.

Under the supervision of marine experts from EAD and AUS, students participated in fish identification, sampling and collection and analysis of water and sediment samples, They also explored the operation of advanced onboard instruments and learned how marine data feeds into national environmental monitoring networks.

Maitha Mohamed Al Hameli, Director of Marine Biodiversity Division at EAD said, "At the Environment Agency – Abu Dhabi, we are deeply committed to empowering the next generation of environmental leaders through real-world scientific experience. Inviting American University of Sharjah students aboard 'Jaywun' offers students a first-hand understanding of how field research and data collection guide conservation policies and decisions work. By opening our research platforms to young scientists, we aim to ignite curiosity, foster innovation and inspire future careers in environmental science to ensure that our collective efforts to safeguard the UAE's natural heritage continues well into the future."

"This was a truly unique opportunity for our students to experience the daily realities of marine field research," said Dr Sandra Knuteson, Senior Lecturer in Environmental Sciences in the Department of Biology, Chemistry and Environmental Sciences. "They gained first-hand knowledge of how scientists use data to understand and protect the UAE's coastal and marine environments, while also seeing how multidisciplinary teams collaborate on large-scale environmental projects."

She added, "Partnerships like this are essential for preparing the next generation of environmental scientists. By working alongside EAD researchers, our students developed the skills and curiosity that drive meaningful environmental stewardship."

"I had an amazing experience aboard the Jaywun research vessel! It was an incredible opportunity to gain hands-on exposure to marine fieldwork and learn about new research tools and techniques used in environmental monitoring. The trip was filled with learning, collaboration, and wonderful moments of bonding with my fellow Environmental Sciences and Sustainability students!" said Zeina Iskandarani, who is currently studying for a BSc in Environmental Sciences and Sustainability at AUS.

Operated by EAD, the Jaywun is one of the most advanced marine research vessels in the region. It supports studies on biodiversity, water quality and sediment dynamics to strengthen the scientific understanding of Abu Dhabi's marine ecosystems. It offers collaborative research platforms for ocean monitoring and for understanding how climate change is impacting marine biodiversity, in the UAE and the region.

# ENVIRONMENT AGENCY – ABU DHABI PARTNERS WITH INPEX JODCO FOUNDATION **TO ADVANCE MANGROVE RESEARCH AND MITIGATE CLIMATE CHANGE**

As part of Abu Dhabi Climate Change Strategy and under the framework of the Abu Dhabi Mangrove Initiative (ADMI), the Environment Agency – Abu Dhabi (EAD) and the INPEX JODCO Foundation (the Foundation) have collaborated on a joint research initiative aimed at conducting pioneering, innovative studies focused on mangroves in Abu Dhabi.

The Memorandum of Understanding (MoU) was signed by Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of EAD, and Mr Hiroshi Fujii, Representative Director of the Foundation.The agreement will establish a robust framework for studying the carbon storage, above-ground and below-ground sequestration rates of Abu Dhabi's mangrove ecosystems, with a focus on assessing, as well as comparing natural and planted sites – a critical step in supporting global carbon mitigation efforts.

Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of Environment Agency – Abu Dhabi said, "Mangroves are vital allies in our fight against climate change, offering unparalleled coastal protection and exceptional carbon sequestration capabilities. This partnership underscores the power of international collaboration in advancing environmental research. United in purpose, we strive to blend innovation with collective knowledge to safeguard these priceless ecosystems, strengthening Abu Dhabi's dedication to sustainability and charting a course toward a vibrant and sustainable tomorrow."

This partnership underscores the shared commitment of EAD and the INPEX JODCO Foundation towards advancing environmental conservation and the findings from this research will contribute to a global effort addressing climate change through cutting-edge research and innovation. These ecosystems play a vital role in maintaining biodiversity, supporting coastal resilience and mitigating the impacts of climate change by promoting nature-based solutions.

Reflecting on EAD's ongoing commitment to enhancing social and environmental contributions in the UAE, the partnership will also reinforce its mission to strengthen relations and promote mutual understanding between Japan and the UAE.

Mr Hiroshi Fujii, Representative Director of the Foundation said, "We are honoured to work in partnership with the Environment Agency – Abu Dhabi to explore the carbon sequestration potential of mangroves, one of the UAE's most valuable ecological assets.

"At the Foundation, we are deeply committed to environmental conservation, and this research builds upon our mission to combat climate change with the UAE. Through our collaboration, we aim to bring to light new insights about the climatic benefits of preserving and enhancing these critical habitats. Our partnership with EAD signifies the joining of shared visions for a more sustainable future, and we look forward to pushing the boundaries of environmental science and expanding environmental activities together."

The research initiative is part of EAD's broader mandate to protect and study Abu Dhabi's natural ecosystems, enhance biodiversity and apply the best global technologies and innovations to environmental management efforts. It will also further demonstrate the emirate's sustainability pledges and its alignment with international climate goals.

The Abu Dhabi Mangrove Initiative (ADMI) is the comprehensive programme that encompasses all mangrove and blue carbon ecosystem restoration and research projects in the emirate. It aims to advance scientific restoration efforts based on six key principles: education, engagement, research, protection, partnership and innovation. The initiative was announced in February 2022 during a meeting between His Highness Sheikh Khaled bin Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Chairman of the Abu Dhabi Executive Council and His Royal Highness Prince William, the Prince of Wales, at the Jubail Mangrove Park.

To achieve its goals, the initiative has launched an open partnership programme that invites governmental and non-governmental entities to join and adopt core principles in the areas of environmental conservation, education and restoration. At the local level, the initiative works with businesses, governmental institutions and community organisations to highlight the vital role of these natural habitats as nature-based solutions, as well as to guide all mangrove restoration projects and ensure their implementation according to scientific best practices to achieve evidence-based restoration. To date, the initiative has succeeded in attracting 15 local and eight international partners – all united by the goal of protecting and ensuring the sustainability of these unique ecosystems.

# ABU DHABI ACHIEVES A HISTORIC MILESTONE **AS THE SUSTAINABLE FISHERIES INDEX REACHES 100%**

Environment Agency – Abu Dhabi (EAD) has recorded a significant increase in its Sustainable Fisheries Index, reaching 100 per cent by the end of 2025, up from 8 per cent in 2018. The achievement reflects the effectiveness of Abu Dhabi's approach to restoring marine resources through scientific policies, habitat protection and the development of a sustainable system to enhance fish stock abundance.

The progress reflects Abu Dhabi's environmental management model and its ability to rebuild fish stocks in line with the highest international standards.

His Highness Sheikh Hamdan bin Zayed Al Nahyan, Ruler's Representative in Al Dhafra Region and Chairman of EAD, affirmed that the achievement reflects the support received from His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the United Arab Emirates, and the directives of His Highness Sheikh Mansour bin Zayed Al Nahyan, Vice President, Deputy Prime Minister and Chairman of the Presidential Court.

His Highness noted that the achievement is the result of an integrated research and development project supported by the Presidential Court, which developed advanced scientific methodologies for monitoring fish stocks and analysing marine ecosystems. The project applies modern, data-driven technologies to support policies and legislation and reflects a commitment to natural resource sustainability as an essential pillar of comprehensive national security, and the belief that protecting marine resources is not merely an environmental obligation, but a national strategy to enhance food security and reduce reliance on imports.

His Highness said, "What has been achieved over the past few years is the fruit of a vision based on knowledge, innovation and regulating maritime practices in a way that preserves the balance of the sea and ensures the sustainability of its bounty for future generations."

His Excellency Mohammed Ahmed Al Bowardi, Vice Chairman of the Board of Directors of EAD, said the increase in the Sustainable Fisheries Index resulted from an integrated framework of legislation, policies and scientific procedures that contributed to rebuilding fish stocks within a short period by global standards. He said the progress reflects meticulous planning and implementation and supports the sustainable use of marine resources as a fundamental component of long-term sustainability and societal well-being.

Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of EAD, said achieving a 100 per cent Sustainable Fisheries Index represents a global reference point for marine resource management. She said the outcome reflects collaboration between EAD, the National Guard, the Fishermen's Association and community stakeholders, supported by scientific data.

She said, "We have moved from a protection phase to a prosperity phase. The trust placed in us by leadership and the commitment shown by our partners have created an unprecedented success formula. We are now not only protecting the sea, but also rebuilding it faster and stronger."

Her Excellency said the achievement marks the beginning of a longer-term programme, supported by the Sustainable Fisheries Policy and technologies including artificial intelligence and the research vessel Jaywun.

EAD continues to enhance the protection of productive marine habitats through an integrated system of projects focused on rehabilitating ecosystems, increasing marine productivity and restoring ecological balance. These include rehabilitating natural habitats, restoring ecosystems and implementing extensive programmes to enhance biodiversity. EAD is also developing Abu Dhabi's coral gardens and deploying 40,000 artificial reef modules to create attractive environments for fish. In parallel, EAD is strengthening its regulatory and monitoring framework by leveraging artificial intelligence and smart systems to monitor fishing activities and environmental data. This is supported by the research vessel Jaywun, which provides accurate scientific data to inform decision-making.

EAD also relies on a wide network of monitoring and analysis programmes and values the vital cooperation of partners, fishermen, volunteers, and community members to support the long-term sustainability of fish stocks.

As part of fish stock recovery efforts, Abu Al Abyad Island continues to implement an advanced programme to release fish fingerlings produced in specialised ponds, directly contributing to rebuilding marine resources. The programme works to compensate for losses resulting from natural pressures and overfishing by releasing fingerlings raised in a controlled, healthy environment, thus enhancing their ability to adapt, grow, and reproduce in the sea. This effort contributes to supporting biodiversity, restoring damaged marine habitats, and establishing sustainable fisheries, thereby strengthening environmental protection and sustainability efforts.

These efforts solidify Abu Dhabi's position as a global model in the sustainable management of natural resources through innovative policies based on scientific data, partnerships, and advanced technologies, ensuring continued recovery and achieving the emirate's goals of building a balanced marine system capable of renewing its resources for the benefit of society and future generations.

# EAD LAUNCHES HAMDAN BIN ZAYED: THE WORLD'S RICHEST SEAS INITIATIVE TO INCREASE FISH STOCKS AND SUPPORT FOOD SECURITY

The Environment Agency – Abu Dhabi (EAD) has launched the Hamdan bin Zayed: The World's Richest Seas initiative. This programme aims to significantly increase fish stocks in the emirate, seeking to achieve one of the highest densities globally by 2030.

The announcement was made on the occasion of the UAE's National Environment Day and coincided with a major environmental milestone for Abu Dhabi with the achievement of 100 per cent in the Sustainable Fishing Index by the end of 2025, compared to just 8 per cent in 2018, during the meeting of the Global Councils for Sustainable Development Goals, held on the sidelines of the World Government Summit 2026, which was chaired by Her Excellency Ohood bint Khalfan Al Roumi, Minister of State for Government Development and the Future, Chair of the Global Councils for Sustainable Development Goals. The heads of the global councils from 17 countries and the vice-chairs of the councils – mostly high-level UAE government officials – were also present at the meeting.

This transformative progress reflects the success of the integrated regulatory and scientific approach adopted by the emirate over recent years. It has played a pivotal role in safeguarding and sustaining marine resources, while strengthening the national food security ecosystem by increasing the abundance of local fish stocks and ensuring the availability of natural, renewable food sources for the community.

His Highness Sheikh Hamdan bin Zayed Al Nahyan, Ruler's Representative in the Al Dhafra Region and Chairman of the Board of the Environment Agency – Abu Dhabi, affirmed that this achievement reflects the strong support the agency receives from His Highness Sheikh Mohamed bin Zayed Al Nahyan, President of the UAE.

His Highness noted that achieving a 100 per cent Sustainable Fishing Index marks a pivotal milestone in Abu Dhabi's journey to safeguard its marine resources. His Highness said, "The launch of this initiative represents a continuation of an approach grounded in science, innovation and the regulation of marine practices – one that enhances the sea's productivity while preserving its natural balance for the benefit of future generations and contributes to strengthening our food security."

As part of efforts to enhance productive marine habitats, Abu Dhabi Coral Gardens is one of the initiative's flagship projects. The programme aims to establish new marine sites and underwater gardens through the deployment of 40,000 artificial reef modules, with the number set to rise to 80,000 by 2030, supported by partnerships across multiple sectors.

These efforts will create a resilient marine infrastructure capable of attracting fish, increasing biodiversity and strengthening natural productivity across the emirate's waters.

These efforts are reinforced by a suite of complementary initiatives, most notably the Coral Rehabilitation Project, which aims to increase the number of cultivated coral colonies to four million, alongside the Abu Dhabi Mangrove Initiative, which targets the planting of 50 million mangrove trees by 2030.

Together, these initiatives harness advanced technologies and artificial intelligence applications for monitoring, analysis and the identification of optimal development sites, ensuring the greatest possible environmental impact. In doing so, they contribute to building a sustainable food system rooted in healthy marine ecosystems.

His Excellency Mohamed bin Ahmed Al Bowardi, Vice Chairman of the Board of the Environment Agency – Abu Dhabi, affirmed that the initiative represents a natural extension of the emirate's achievements in fisheries management. He noted that the remarkable rise in the Sustainable Fishing Index – from 8 per cent to 100 per cent in just six years – demonstrates the effectiveness of the regulatory policies adopted by Abu Dhabi.

His Excellency said, "The initiative provides an integrated framework that brings together the protection of marine habitats with the development of fish stocks. It strengthens the sustainable use of natural resources in line with the highest international standards, firmly anchoring the contribution of fisheries to national food security."

Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of the Environment Agency – Abu Dhabi, said, "The initiative embodies a clear vision to build a more productive and sustainable marine ecosystem, guided and supported by the direction of our wise leadership. Expanding the network of protected areas to cover 20 per cent of the emirate's total area represents one of the initiative's core pillars, providing effective protection for sensitive habitats and strengthening their capacity for natural regeneration.

"The agency continues to implement high-impact programmes grounded in science and innovation, including the establishment of Abu Dhabi Coral Gardens, the deployment of artificial reef modules, the regulation of fishing practices and the enhancement of fish stocks. This will ensure the achievement of the initiative's goals by 2030."

The Hamdan bin Zayed: The World's Richest Seas initiative further cements Abu Dhabi's position as a global benchmark for the sustainable management of natural resources.

By strengthening scientific monitoring and assessment programmes, building local and international partnerships that safeguard marine ecosystems and ensure their long-term resilience and supporting the national food security system through the sustained growth and renewal of natural resources, it ensures that the sea will remain a vital lifeline for the community for generations to come.

# Reef Check
## UNITED ARAB EMIRATES

# *Join the Reef Check*
# ECODIVER CERTIFICATION COURSE

LEARN TO CONDUCT REEF CHECK SURVEYS TO COLLECT DATA ON REEF HEALTH, AND HELP ASSESS CLIMATE CHANGE IMPACTS

*When you join a Reef Check EcoDiver Training Course, you will learn about our local ecosystems and you will be able to participate in our regular survey dives which will help us to understand the threats our corals are facing by providing important data.*

EDA
جمعية الإمارات للغوص
Emirates Diving Association

**EMAIL:** reefcheck@emiratesdiving.com **WEBSITE:** www.emiratesdiving.com/events/reef-check

EDA IS A NON-PROFIT NGO ACCREDITED BY UNEP AS AN INTERNATIONAL ENVIRONMENTAL ORGANISATION

# 2025 YEAR IN REVIEW


**Top Row L-R:** Southern California had the honour of completing the 2,000th kelp forest monitoring survey at Cathedral Cove off Anacapa Island; Participants from the Los Angeles and Antelope Valley Dive into Science programme on Catalina Island during their Open Water scuba certification; The newest cohort of Reef Check kelp forest divers after finishing their Northern California training in Fort Bragg.

**Bottom Row L-R:** After powering through cold water and low visibility with positivity and enthusiasm, these trainees joined the Reef Check Washington family this season; Reef Check EcoDivers from across the US gathered in Barbados for a collaborative mission between CARES and Barbados Blue to save the local coral reefs (Photo by Kramer Wimberley, DWP-CARES); Reef Check Trained Restoration Divers "Kelp Forest Defenders" removing urchins from Nellie's Cove, Oregon.

As the year comes to a close, I want to extend my sincere gratitude for your support. Thanks to our global network of volunteers, donors, and partners, 2025 has been a milestone year for Reef Check.

We celebrated the 20th anniversary of our Kelp Forest Monitoring Programme, completed our 2,000th kelp survey, and launched a new monitoring programme in Chile. We also strengthened our team by hiring a Dive into Science Programme Coordinator and new Volunteer Coordinators in Oregon and Washington, expanding our reach along the West Coast.

Across our coral reef programmes, we welcomed Aqualink as an official Global Reef Tracker partner, contributed data to the GCRMN Pacific assessment of coral reefs, and held our first tropical EcoDiver/Kelp Forest crossover course in Hawai'i.

Our education and community programmes grew as well, with 53 new scuba certifications, expansion of Dive into Science into Oregon with ORKA and the Coquille Indian Tribe, and the completion of a Kelp Forest Monitoring course with the Coastal Chumash and Tongva Community programme.

In restoration, we launched Oregon's first Kelp Defenders training programme and completed 33 surveys across ten restoration sites – important steps toward rebuilding resilient kelp forests.

If you are able, I respectfully ask you to consider making a year-end donation to help sustain and expand this vital work. To help amplify your impact, all donations – whether made as a one-time gift or as a new monthly contribution – will be matched dollar for dollar up to $7,500.

Thank you for being part of the Reef Check community. I look forward to what we will accomplish together in the new year.

With heartfelt gratitude,

**Jan Freiwald**
Executive Director
Reef Check Foundation

## 2025 SUCCESSES

### ORGANISATIONAL

- Hired Dive into Science Programme Coordinator.
- Hired Volunteer Coordinators for Oregon and Washington.

### KELP FOREST PROGRAMME

- Celebrated the 20th anniversary of Reef Check's Kelp Forest Monitoring Programme.
- Marked the milestone of the 2,000th Kelp Forest Monitoring Survey.
- Launched a new kelp forest monitoring programme in Chile.

### CORAL REEF PROGRAMME

- Announced Aqualink as an official Global Reef Tracker partner for Reef Check's coral reef data.
- Shared data for Global Coral Reef Monitoring Network (GCRMN)'s new regional assessment of the Pacific.
- Conducted first-ever EcoDiver/Kelp Forest Crossover Course in Hawai'i.

### EDUCATION PROGRAMME

- Achieved a total of 53 scuba certifications across all programmes.
- Successfully completed a Reef Check Kelp Forest Monitoring certification course as part of the Coastal Chumash and Tongva Community programme.
- Expanded Dive into Science programme into Oregon in partnership with ORKA (Oregon Kelp Alliance) and the Coquille Indian Tribe.

### RESTORATION PROGRAMME

- Launched our first restoration training programme in Oregon; the "Kelp Defenders" were trained to monitor restoration sites and remove urchins from restoration sites.
- Monitored 10 restoration sites and completed a total of 33 restoration surveys.

# DIVE INTO SCIENCE:

## YEAR OF GROWTH, LEADERSHIP AND OCEAN STEWARDSHIP

BY **MORGAN MURPHY-CANNELLA, DIRECTOR OF EDUCATION PROGRAMME**


This year has been one of our most impactful yet, with Dive into Science programmes flourishing across the state of California. From the North Coast to Southern California, Tribal communities, foster youth, and emerging ocean leaders gained hands-on experience in diving, marine science and ocean stewardship.

The Ghvtlh-k'vsh shu'-srnelh-'i~ (Kelp Guardians) programme with Tolowa Dee-ni' achieved major milestones this year, completing the Advanced scuba certification including their first ocean and boat dives. Participants strengthened their skills in deep diving, navigation, ocean safety and advanced shore diving, all of which are foundational for a strong scientific dive team in the rough waters of Northern California and Southern Oregon. We are excited to support this group as they work towards their AAUS (American Academy of Underwater Sciences) and Reef Check Kelp Forest Monitoring courses next season.

Our North Coast Tribal Community programme had a standout year, with a new group of participants completing both Open Water and Advanced scuba certifications. Participants learned sustainable scallop harvesting techniques and are preparing for Rescue Diver training in the coming year. Youths also participated in tide pool education and abalone population survey training, connecting scientific monitoring to Traditional Knowledge and cultural practices. In partnership with the Sherwood Valley Band of Pomo, we introduced pathways into marine science and restoration careers, supporting a future workforce in ocean stewardship. We anticipate welcoming a new group of youth divers next season as the programme continues to grow.

In Southern California, our Chumash and Tongva Community programme reached advanced milestones this year, completing their Rescue Diver Certification and the Reef Check Kelp Forest Monitoring course in the gorgeous kelp forests of Pimu (Catalina Island). Participants gained scientific diving survey skills that will directly support the development of a Tribally-led kelp forest monitoring programme. We are excited to continue to build on their technical scientific dive skills by completing an AAUS course in Spring 2026!

In Los Angeles and the Antelope Valley, our foster youth initiative continues to thrive with two full cohorts completing Open Water and Advanced certifications this season. Participants experienced unforgettable hands-on stewardship trips to the Channel Islands, practicing proficiency and species ID dives at both Anacapa and Santa Cruz Islands helping them build confidence and teamwork amongst the cohort. Youths attended the Seaweed Festival in Long Beach, an event that brought together scientists, kelp restoration practitioners, Tribal leaders and ocean advocates. This event broadened their perspectives and helped envision future roles in ocean and climate leadership.

Across all programmes, Dive into Science continues to expand equitable access to scuba training, marine science education and ocean stewardship. This season showcases the power of community, partnership and culturally-relevant science education.

Thank you to our funders and partners: California Ocean Protection Council and Sea Grant, The Coastal Conservancy, California Coastal Commission, California Natural Resources Agency, California State Parks, Sherwood Valley Band of Pomo, Tolowa Dee-ni', Sunken Seaweeds, Cal Poly Humboldt, Catalina Island Marine Institute (CIMI), and Stepping Forward LA.

# GROWING THE KELP DAY FAMILY:

## A COMMUNITY-CENTRIC KICKOFF TO SCIENCE AND CONSERVATION

BY **JESSICA PANTOJA, REEF CHECK BAJA CALIFORNIA REGIONAL MANAGER**


Photo by Meliza Le

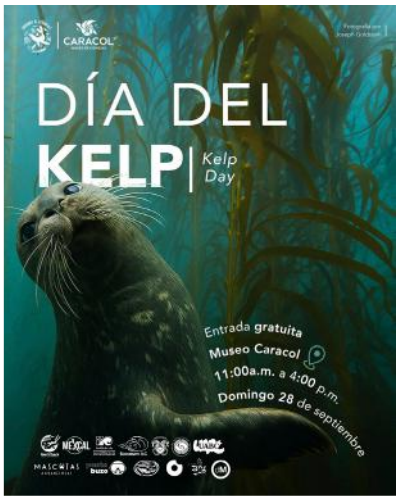




Photo by Daniela Cruz

Kelp Day is an annual celebration dedicated to raising awareness about the ecological and cultural importance of underwater kelp forests and to promote collaborative efforts for their conservation and restoration. These events highlight the vital role that kelp ecosystems play in temperate coastal regions, especially along the Californias, and the urgency of addressing the combined impacts of climate change and human activity.

Through interactive exhibits, talks, art, and community activities, Kelp Day connects people of all ages and backgrounds – from divers and fishers to students, scientists, and families – creating opportunities to learn, share, and take action for these ecosystems and the ocean.

Kelp Day has become an opportunity to celebrate both the science and the communities connected to these ecosystems. Through educational activities, community events, and interdisciplinary collaborations, this celebration seeks to inspire concrete actions to protect and restore the world's kelp forests.

In Baja California, the second annual Kelp Day was celebrated in Ensenada, at the Caracol Museum of Science. Local organisations, universities, and community groups came together to honour the kelp forests that sustain life along the peninsula's coast. What began as an initiative of the Ecosystem Management Group for the Californias (MexCal) at the Universidad Autónoma de Baja California (UABC – in collaboration with Reef Check – has now evolved into a growing community effort that bridges science, education, and conservation.

Cuidemos el Océano AC and the Caracol Museum of Science have played a crucial role in ensuring the continuity of Kelp Day celebrations. They have promoted the integration of local fishers, dive centres, government agencies, universities, civil society organisations, as well as artists and local producers. This diversity of participants reflects the core spirit of Kelp Day: connecting people from different sectors to strengthen the collective effort to protect and restore coastal ecosystems.

The weekend of activities began on the 28th of September, when divers and volunteers carried out urchin removals at a local reef. Cuidemos el Oceano coordinated the removal while the MexCal team performed an underwater survey to evaluate the collective restoration actions before and after the removal. Meanwhile, the Reef Check Baja team conducted its annual monitoring survey at this historically significant site. Campo Kennedy, one of Ensenada's most visited dive sites, used to have a lush kelp forest. Now, it is one of the best examples for restoration. The dive day set the tone for a weekend devoted to reconnecting people with the sea and the ecosystems that define Baja California's coast.

This year, the community honoured Guillermo Torres Moye as the Kelp Champion, an award given to individuals who demonstrate exceptional commitment to the protection and restoration of kelp forests. This recognition highlights Guillermo's dedicated efforts and passion in supporting marine conservation.

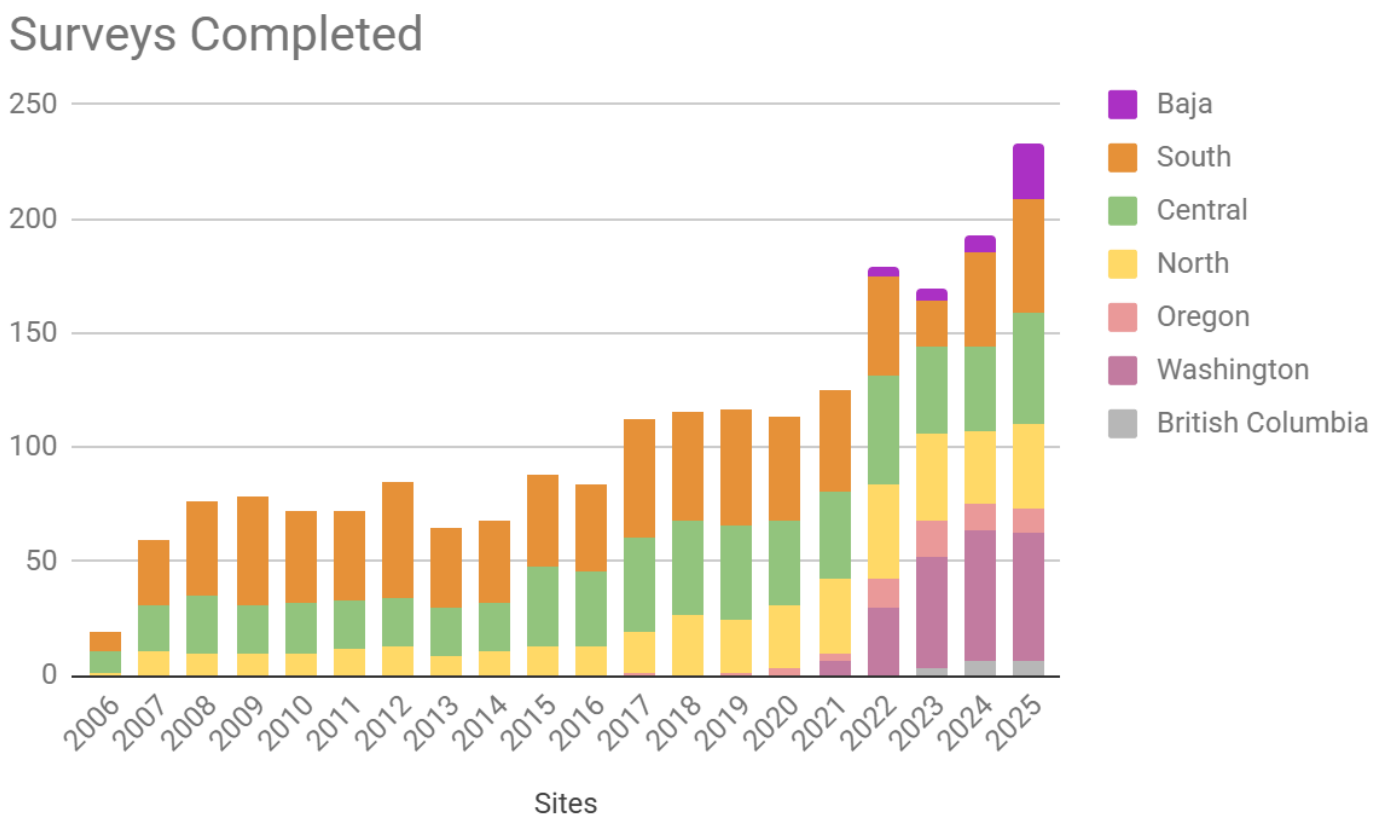
"I had never heard much about kelp before," shared one participant. "Seeing it underwater and learning how important it is for marine life and for us changed how I look at the ocean."

Moments like these capture what Kelp Day is all about – creating spaces where science, community, and shared experiences come together to inspire ocean stewardship.

As the celebration continues to grow, so does the network of people committed to preserving and restoring Baja California's kelp forests. Each year, new collaborations, stories, and experiences emerge, strengthening the connection between communities and the sea. Kelp Day reminds us that meaningful conservation begins locally – with people who care, act, and work together to protect the ocean we all share.

# KELP FOREST MONITORING PROGRAMME: A MASSIVE TEAM EFFORT RESULTS IN A RECORD YEAR

BY **DAN ABBOTT, DIRECTOR OF KELP FOREST PROGRAMME**




On the 10th of December, Reef Check finished their 2025 kelp forest survey season. This was our 20th season surveying kelp forest, and for the first time, we completed over 200 surveys in a season, including our 2,000th survey! This was a monumental effort and we could not have done it without our 250+ amazing volunteer divers who completed roughly 3,000 dives to collect this vital data. They braved cold water, long swims, rough boat rides, difficult shore entries, poor visibility, and heavy surge and current, to measure the health of these amazing ecosystems. Thank you all for your passion and dedication!

This truly was a team effort! In addition to our amazing volunteers we'd like to thank all of our partners from aquariums, non-profits, universities, tribes, and government agencies, who collected data on our behalf. We want to give a huge shout-out to our supporters in the diving community, including all of the dive shops that generously donated air fills to our volunteers so they could complete this work. We'd like to thank all the boats and captains who got us safely to our sites with a special mention to long-time Reef Check supporter Phil Sammet who captained us for almost 30 days this year and donated his boat and time on several occasions. Lastly, we want to thank the California Department of Fish and Wildlife who gave us time on the RV Garibaldi that enabled us to access almost half our sites in Southern California. We could not have done this without all of you!

Finally, we want to thank all our funders who made this work possible including all of our volunteers who went above and beyond volunteering and donated money so we could survey sites that we otherwise would not have been able to! One volunteer in particular deserves special thanks. Louise and Jim Wholey's generous donation in 2025 enabled us to survey a large number of sites on the Central Coast of California that we otherwise would not have been able to get to. Thank you Louise and Jim, and thank you all!

This impressive effort makes a significant contribution to the conservation and protection of our kelp forests, which are under stress due to multiple, often poorly understood stressors. In 2025 Reef Check data was used in dozens of scientific papers, reports, and presentations. This data, that we collected over the past 20 years sheds light on the fate of these ecosystems so scientists, managers, and ocean dependent communities can take action to protect and conserve the ecosystems. A huge thanks to the massive team that worked together to make our ocean healthier. You rock!

Below are messages from our regional managers addressed to their teams. Enjoy reading their highlights of the season.

## WASHINGTON

BY SHAWN AUGUSTINE, VOLUNTEER COORDINATOR

The 2025 survey season has come to an end, and I want to thank everyone who came out and participated in surveys this year, as well as our partners and the boat captains who got us out to some of our sites.

We certified 30 new volunteers and recertified 22 returning volunteers who, along with our partners, surveyed 62 sites, including 6 in British Columbia. Special shout-outs to our Rookie of the Year, Sofie Broznowski, who never failed to bring the positive vibes and our Golden Slate winner with 19 survey dives,

Michelle Halpin, who stepped up to attend some of our last-minute dives.

### OREGON

**BY DIANA HOLLINGSHEAD, REGIONAL MANAGER**

Thank you for a fantastic 2025 season. We are already starting to plan 2026. Additional sites, more volunteer opportunities, more restoration opportunities, more camaraderie and fun! ORKA (Oregon Kelp Alliance) has put together a snapshot of how Reef Check divers contributed to their work this year. Be proud of yourselves! You made an impact.

### NORTHERN CALIFORNIA

**BY IAN NORTON, REGIONAL MANAGER**

The 2025 Field Season has come to a close and I want to thank you all for your help and camaraderie. A lot of our sites on the North Coast are quite rural, and many of you commuted several hours or more to lend a hand with our annual surveys. Your dedication to helping us collect this important data is greatly appreciated!

I'd like to congratulate our Golden Slate winners: Morgan Wren and Lauren Nutt with 9 survey dives each! This year, we had a record number of volunteer dive days on the North Coast with 104, a testament to the tenacity of our divers.

### CENTRAL CALIFORNIA

**BY TRUE BARNES, REGIONAL MANAGER**

Although we started the season with less resources and funding than in typical years, due to the tenacity and generosity of our volunteers, we had one of the most productive years ever! This year, we overcame a lack of typical boat diving by using kayaks, DPVs (Diver Propulsion Vehicles), difficult shore entries and swims, as well as some boat-use donations from our friends, captains, and partners.

However, it was our volunteer Louise Wholey (and her husband, Jim), whose incredibly generous donation allowed us to survey every Reef Check site in the Central Coast including San Luis Obispo which had not been fully surveyed since 2022. Louise also attended some of our most interesting surveys including some deep boat dives, difficult entry shore dives, and two DPV surveys with her daughter, Mary.

This season we completed 49 sites from shore with kayaks, boats and DPVs, the most ever done on the Central Coast!

Each year, two big awards are given out, the Golden Slate Award for the highest number of volunteer days goes to Philine Marchetta with 17 Days! And the Rookie of the Year Award for the highest number of volunteer days attended by a brand new participant goes to Dachuan Zhang with 20 Days! Both divers showed extreme dedication, attending surveys across all three California regions with no discrimination on sites or entry methods.

A final thank you to our partners and boat captains whose contributions in time and resources made this season the success that it was! Special thank you to Rick Rowett, Mike Albers, and of course Phil Sammet, who personally captained us out 27 days this season in Monterey, Half Moon Bay, and Morro Bay!

### SOUTHERN CALIFORNIA

**BY JACLYN MANN, REGIONAL MANAGER**

As 2025 comes to a close, I want to take a moment to congratulate you all on another stellar survey season! This year we were able to complete 50 surveys in Southern California, which is quite the feat and is only possible because of your continued commitment to Reef Check's monitoring programme. Thank you for the hours, upon hours of hard work you put in this year, the early mornings, and the long drives throughout the region that made all of this possible. You're all rock stars and I'm looking forward to seeing what we can accomplish together next season!

Super special shout-outs to our Golden Slate winners, Jonah Rubash and Svetlana Isaeva, who rarely missed an opportunity to dive with a total of 28 survey days each. Earning an honourable mention is Roland Azurin with 27 survey days. These three divers are absolute workhorses and great mentors to our less experienced surveyors. Congratulations also goes out to our Rookie of the Year, Saam Shams, with 15 survey days. Saam was fully committed to improving his survey skills this year by diving as much as he could, and his hard work totally paid off!

## 2025 REEF CHECK DATA IN ACTION

**(Using 2024 or earlier data)**

### SCIENTIFIC REPORTS AND PAPERS

- Drivers of spatiotemporal variability in a marine foundation species. Ecological Applications, February 2025. Anita Giraldo-Ospina, Tom Bell, Mark H. Carr, Jennifer E. Caselle.
- Kelp in the Salish Sea: Spatial Patterns of Persistence, Loss, and Data Gaps Using a Harmonized Dataset. WWU Graduate School Collection, Spring 2025. Lamai S. Larsen.
- How establishing a marine protected area network has shaped community and citizen science along California's coast. Frontiers in Marine Science, May 2025. Todd A. Harwell, Ryan M. Meyer and Heidi L. Ballard.
- Multiscale analysis of zoo archaeological data to reconstruct past kelp forest productivity for the Northern Channel Islands, California USA. Estuarine, Coastal and Shelf Science, May 2025. Jeremy D. McFarland, Amira F. Ainis, Christopher S. Jazwa.
- Reef Check Washington Report: The State of Kelp Forests in Puget Sound 2023-25. Reef Check Foundation, June 2025. Jan Freiwald, Jackie Selbitschka, Dan Abbott.
- Reef Check Kelp Forest Monitoring California Report 2024. Reef Check Foundation, June 2025. Jan Freiwald, Dan Abbott, Annie Bauer-Civiello.
- Developing a Status and Trends Assessment for Floating Kelp Canopies across Large Geographic Areas. Environmental Science & Technology, November 2025. Christina A. Frieder, Tom W. Bell, Helen Berry, Kyle Cavanaugh, Danielle C. Claar, Jan Freiwald, Benjamin Grime, Sara Hamilton, Henry F. Houskeeper, Nicholas Lombardo, Scott Marion, Tristin Anoush McHugh, Gray McKenna, P. Ed Parnell, Pike Spector, Stephen B. Weisberg.
- Creating a global kelp forest conservation fundraising target: A 14-billion-dollar investment to "help the kelp". Biological Conservation, January 2026. Aaron M. Eger, Julia K. Baum, Tom Campbell, Bruno Cevallos Gil, Hannah S. Earp, Annalisa Falace, Jan Freiwald, Sara Hamilton, Steve I. Lonhart, Keith Rootsaert, Makena Åsa Rush, Jasmin Schuster, Brian Timmer, Adriana Vergés.
- Synthesis of Existing Data: A report from the 2024-2026 kelp resilience project. Washington State Department of Natural Resources, December 2025. Claar et al.

### SCIENTIFIC PRESENTATIONS

**(Western Society of Naturalists, November, 2025)**

- Pycnopa ooza! A case study in the rapid mobilisation to document and capture sunflower star recovery. Rachael Karm.
- Looking into the crystal ball: Forecasting future kelp hotspots and coldspots in California. A.C. Balbar.
- From collapse to comeback: Evaluation combined techniques for rapid kelp forest recovery. T.A. McHugh.
- On the road from wasting to recovery: Sunflower sea star eDNA characterisation and survivorship studies in California. A. Kidd.
- Get to work: Updates on Oregon's expanding kelp forest restoration programme. S.L. Hamilton.
- Extreme marine heatwaves onset kelp forest alternative stable states in Baja California, Mexico. J. Bauer.
- Eyes on Kelp: Environmental monitoring of Puget Sound bull kelp forests to improve restoration. K.M. Inch.
- ROV Surveys within kelp forests and open-source Machine Learning (ML) algorithms to (1) process survey images and (2) extract data. Z. Randell.
- Can fish keep supplying micronutrients in changing coastal ecosystems? P. Filz.
- Heatwave Impact on Fish Community Changes in Northern and Central CA. Annie Bauer-Civiello.
- Spatial and Temporal Variation in Kelp Communities Acroos the Salish Sea. Jackie Selbitschka.
- Diving for Data: Citizen Science and Oregon Kelp Forest Restoration (poster). Faith Townsend.

# DIVING IN THE UAE: MY FUJAIRAH ADVENTURES

BY **ISAAC AL-ZU'BI – A PADI JUNIOR OPEN WATER DIVER**

Issac diving with a curious clownfish.

People who have never visited the country mistakenly think that the UAE is just desert and tall buildings. When I'm travelling with my family and I meet new people, they are always surprised to learn that diving in Fujairah is honestly one of the best experiences and coolest things you can do. Fujairah is on the east coast of the United Arab Emirates, next to the Gulf of Oman, and the water there is full of amazing sea creatures. My dad taught me that it has some of the best diving spots in the country, and when I jumped in for the first time, it felt like entering a secret underwater world.

I love the diving community; I get to meet people from all over the world who all share the same love of the Ocean. I really enjoy it when after a dive, we all meet back at the boat and over some fresh slices of orange we all share what we've spotted on our dive. I'm only 10 years old now, but my dream when I grow up is to be a Marine Biologist. When I dive with my dad, I always challenge him as to who can spot the most species of fish. Fujairah is a treasure trove of marine life, and if you haven't dived there yet, I wanted to share with you some of the wonderful creatures you might be lucky enough to spot.

One of the coolest things about diving in Fujairah is the coral reefs. Corals might look like colourful rocks, but they are actually tiny animals called polyps. These tiny animals build hard skeletons made of calcium, and over time they create huge reefs. The reefs in Fujairah are home to tonnes of fish and other sea creatures. Some common dive sites include Snoopy Island (which looks like Snoopy lying on his back) and Dibba Rock (my favourite spot).

When you dive there, you can see clownfish swimming around in sea anemones. Clownfish are famous because of the movie Finding Nemo, but in real life they are super interesting. They have a special mucus layer on their skin that protects them from the stinging tentacles of sea anemones. In return, clownfish help keep the anemone clean and chase away predators. This is called a symbiotic relationship, which means both animals benefit. I have seen clownfish swimming alongside Blu Tang fish which I always find really funny. I took a photo of Nemo and Dory together, and my Nain loved it so much she printed it out and keeps it on her fridge!

Another awesome animal you might see is the green sea turtle – one of my favourite animals. My mum has an amazing photograph of me when I was about 3 years old. I was swimming in Dibba Rock with my dad. I had my life jacket on, but I also had a lifebuoy ring around me. Suddenly a bale of turtles came up to say hello and a small one popped his head up inside the buoy! My mum quickly took a photo of my little friend next to me. She loved the photo so much that she sent it to David Attenborough. She was so happy when he sent her a letter back! Seeing one while diving is always really special.

Reef sharks also live in the waters around Fujairah. Don't worry – most reef sharks are not dangerous to humans. I've been lucky enough to swim close to a blacktip reef shark, but I can't get too close as they are so shy and

Issac diving alongside a friendly green turtle.

Parrotfish

Getting ready to dive at Dibba Rock.

swim away fast. Sharks are important because they are apex predators, which means they help keep the ocean ecosystem balanced by controlling fish populations.

A cool fish I see a lot of in Fujairah is the parrotfish. Parrotfish are bright and colourful, and they have teeth that are fused together to make a beak, just like a parrot. I love to watch them using their strong beaks to bite algae off coral. When they chew coral, I see how they help to make sand. I also love spotting the black and white domino fish darting around the reef. They really make the reef come alive!

One fish my dad always warns me about before we jump into the water is the stonefish as they are one of the most poisonous fish in the world. They look exactly like rocks, which makes them very hard to see. They have sharp spines on their backs that can inject venom if someone steps on them. Even though they are dangerous, they don't chase people. They just sit still and wait for small fish to swim by so they can eat them. I see many stonefish so I'm always careful to keep my distance.

One of my dad's favourite fish is the triggerfish. They have strong teeth and can crush shells of crabs and sea urchins. Some triggerfish can be territorial, especially during breeding season. If a diver swims too close to their nest, they might try to chase them away. But they are also very interesting to watch because they can move their eyes separately and even lock their dorsal fin in place to wedge themselves into rocks for safety.

Besides fish, there are also moray eels hiding in the rocks. My mum is scared of them because they look fierce when they open and close their mouths, but I have to remind her that they're actually just breathing! They have a second set of jaws called pharyngeal jaws, which help them grab and hold onto their prey. That's kind of creepy, but also quite cool.

Whale sharks have been spotted in Fujairah waters, but I've never seen one there myself. I was lucky enough to swim right beside one in the Maldives, but I haven't in Fujairah yet. I'm crossing my fingers for the next time I go to Dibba Rock or Martini Rock though as these are the spots where many of the sightings from divers and fishermen were.

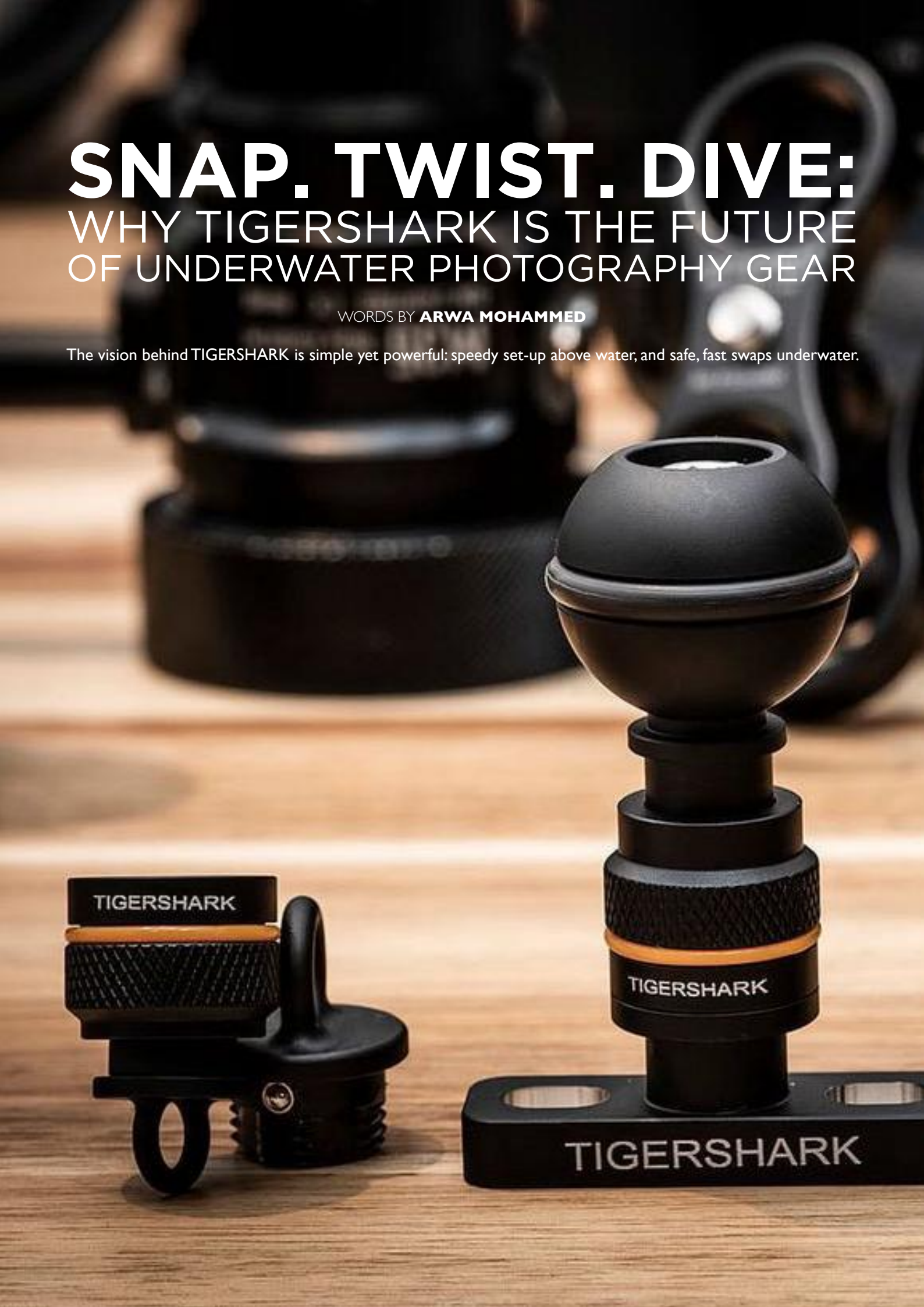
In Fujairah and other parts of the UAE, some local fish are also important for food. Hamour (which is a type of grouper) is one of the most popular fish dishes in the UAE. My dad and I love to eat this fish, especially when it is cooked with spices and rice. On a dive once, my dad saw a grouper eating an octopus, which is gross! And sad, because I loved watching My Octopus Teacher. That's my Grandad's favourite documentary so I didn't tell him about the grouper. Sheri (spangled emperor fish) is another favourite and delicious for lunch after a long dive.

Diving in Fujairah is like swimming inside a David Attenborough nature documentary, it's like feeling you're in another world. Everything is quieter underwater, and you can see sunlight shining through the surface like sparkles. If you ever get the chance to dive in Fujairah, take it. You might discover that some of the UAE's greatest treasures aren't on land at all – they're beneath the waves.

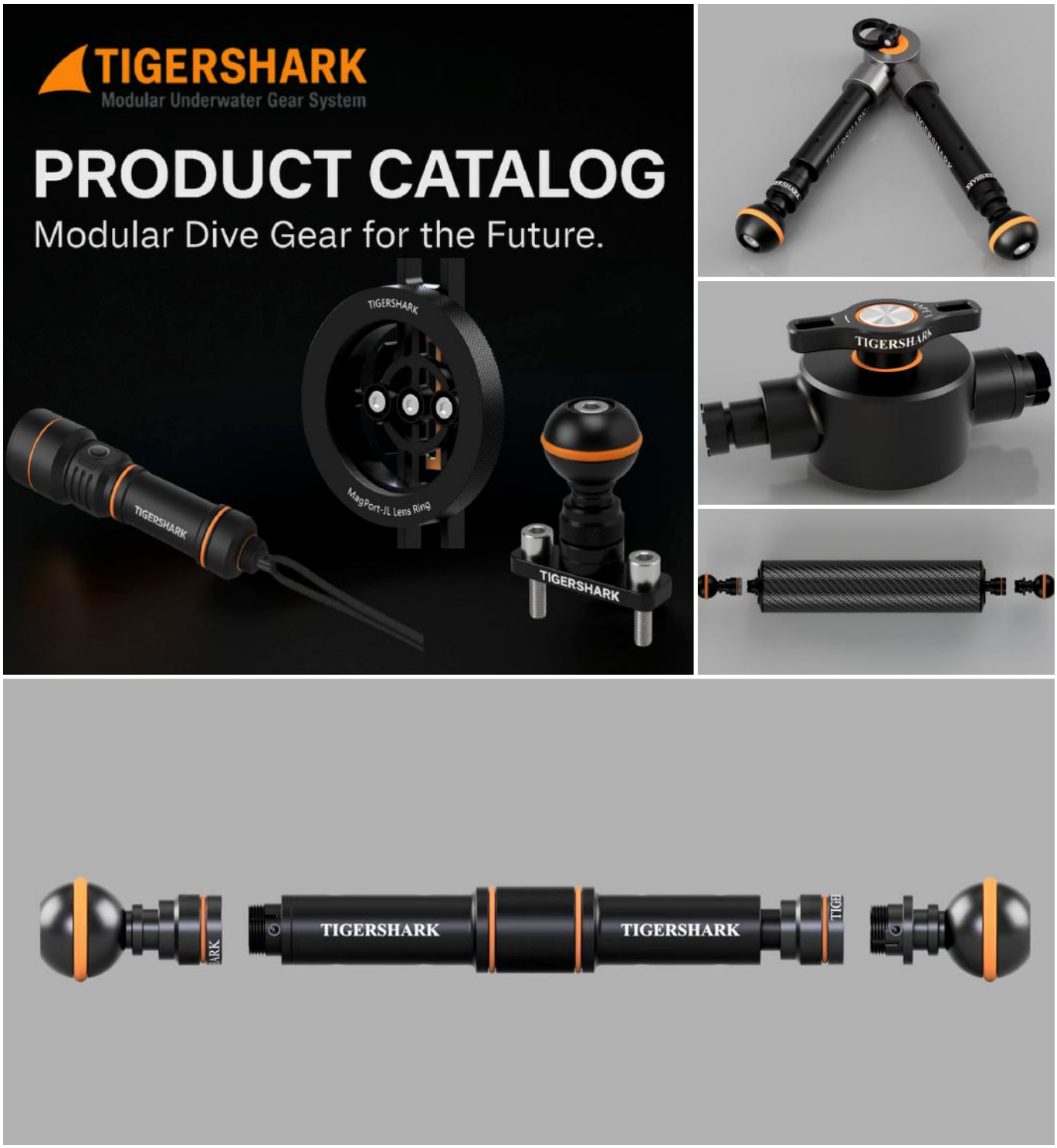
# SNAP. TWIST. DIVE:
## WHY TIGERSHARK IS THE FUTURE OF UNDERWATER PHOTOGRAPHY GEAR

WORDS BY **ARWA MOHAMMED**

The vision behind TIGERSHARK is simple yet powerful: speedy set-up above water, and safe, fast swaps underwater.




TIGERSHARK
TIGERSHARK




I've lost count of how many times I've sat on a dive boat fumbling with tools, trying to fix a piece of gear that never wanted to stay put. I've missed shots underwater because my rig wasn't ready, or because I couldn't adjust quickly enough with thick gloves on. Every diver knows that frustration. We've all been there, and many of us have quietly asked the same question: why is underwater gear still so slow, fragmented, and hard to connect, while the rest of the world has gone modular, faster, and smarter?

That was the very question that sparked the birth of TIGERSHARK. Instead of waiting for someone else to solve it, a team of divers, creators, and engineers decided to build the system they wished already existed. They were tired of carrying screwdrivers for every small change, tired of improvising with zip ties and clamps, and tired of missing opportunities because their gear didn't adapt in time. What they created wasn't just another piece of equipment. It was a system that set new standards.

The vision behind TIGERSHARK is simple yet powerful: speedy set-up above water, and safe, fast swaps underwater. When you're diving, every second matters, and gear should be swappable and quick – click, lock, and go instantly. Modularity is the future, because no single product can serve every diver in every condition. Interchangeable modules that adapt to each mission are the answer. And perhaps most importantly, TIGERSHARK is built on the idea that users are creators. Every diver's feedback, every field hack, and every real-world test becomes part of shaping the next release.

When I spoke to Kevin Ming, a TIGERSHARK System Architect & Founder, he told me, "I am both a designer and a structural engineer, and I'm deeply passionate about innovation in structures and refining details. Especially when I encounter new problems, I feel a strong drive to solve them, and we always find different


ways to make it happen."

What I appreciate most about this brand is that they genuinely care about each diver. To them, a user is not just a customer, but a co-creator. Kevin explained, "We are happy to announce our upcoming co-creations with four international legendary underwater photographers – and EDA readers will be the first to get a sneak peek at these innovative solutions."

The TIGERSHARK team has developed a system that allows divers to log in, give feedback, share improvements, and even suggest new product ideas. To show respect to the community, when a related product is eventually developed, it carries the name of the diver who inspired it. This approach ensures that TIGERSHARK isn't only built for divers, but with them. As Kevin put it, "Make a legend and be remembered by the industry together."

That statement truly left me speechless.

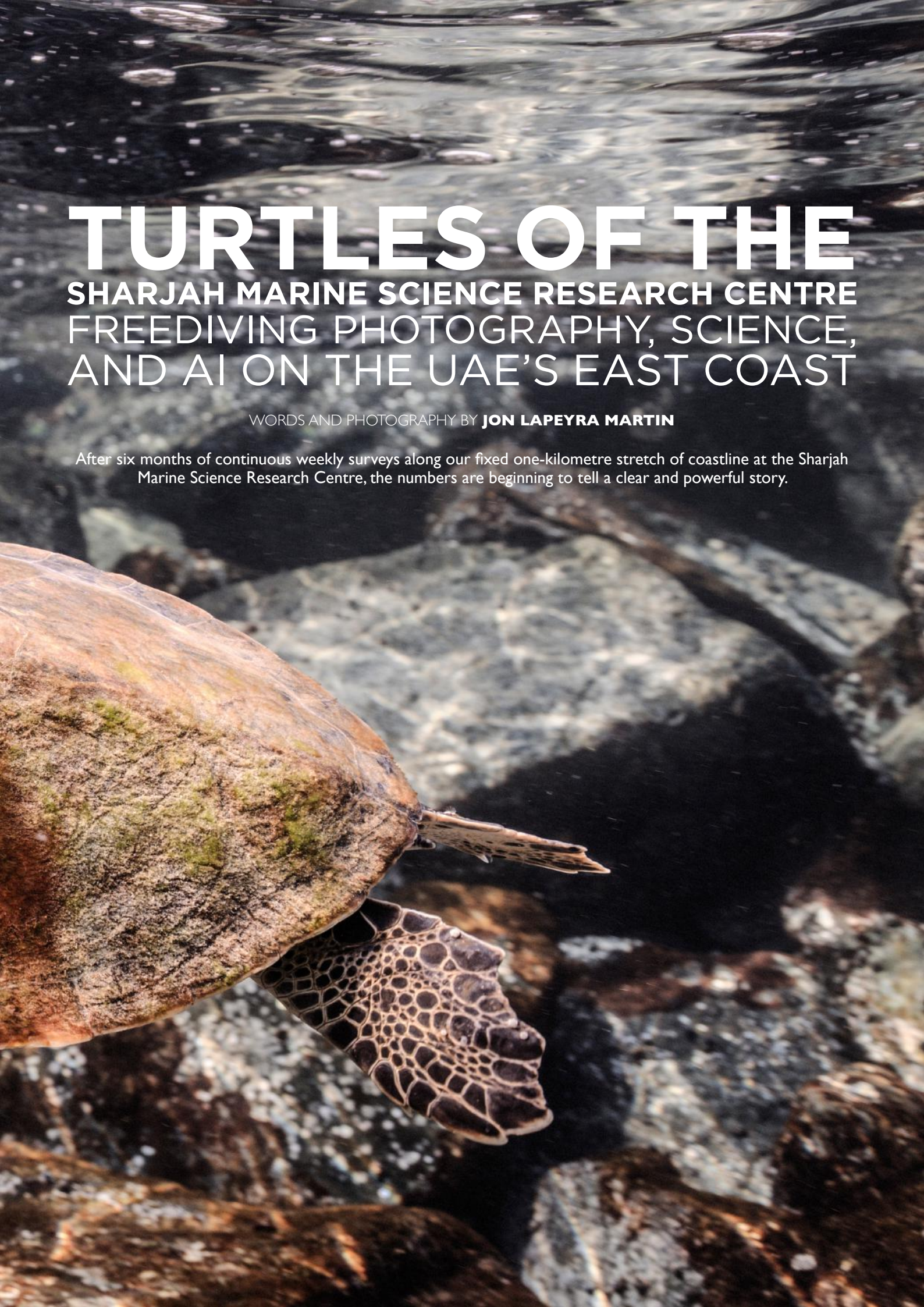
Their mission is ambitious: to build the first truly modular underwater gear system, powered by real creators, designed for speed, built to adapt, and made to last. They're setting a standard for how we will all efficiently connect our equipment in the future.

For me, it comes down to this: diving time is precious. Every minute underwater matters, and the less time I waste struggling with my set-up, the more time I can spend focusing on the subject in front of me. I can't wait to get my hands on their products and finally enjoy a stress-free dive with a minimal, compact system that's easy to travel with, lighter, stronger and practical.

**MORE INFO**

**If you're curious about seeing their innovations, check out their website at:**

https://tigersharkgear.com



# TURTLES OF THE SHARJAH MARINE SCIENCE RESEARCH CENTRE

## FREEDIVING PHOTOGRAPHY, SCIENCE, AND AI ON THE UAE'S EAST COAST

WORDS AND PHOTOGRAPHY BY **JON LAPEYRA MARTIN**

After six months of continuous weekly surveys along our fixed one-kilometre stretch of coastline at the Sharjah Marine Science Research Centre, the numbers are beginning to tell a clear and powerful story.

The East Coast of the United Arab Emirates is an underwater marvel. Here, in the Gulf of Oman, a rugged shoreline carved by time combines rocky reefs with coral gardens, sandy bottoms, and scattered seagrass patches.

Unlike the shallow waters of the Arabian Gulf, this coast is shaped by a higher wave energy, depth, and seasonal upwelling. The nutrient pulses, cooler waters, and complex habitats create a mosaic that feels closer to the Indian Ocean than to the desert just a few kilometres inland.

For divers, it is a place of surprises: from a huge diversity of colourful nudibranchs to schooling jacks sweeping past rocky outcrops, soft coral beds full of triggerfish, fusiliers flashing silver over the reefs, and – if you slow down – countless sea turtles gliding, surrounded by patrolling blacktip sharks.

At the heart of this coastline stands the Sharjah Marine Science Research Centre (SMSRC) – University of Khor Fakkan, a newly established hub dedicated to understanding, documenting, and safeguarding marine life in the Emirate of Sharjah and beyond. Located directly on the shoreline in Khor Fakkan, SMSRC is embedded in the very ecosystems it studies. Its mission is marine science with purpose: uniting research, education, and community engagement to build understanding – and from that understanding, lasting respect and care for the sea.

One of our flagship initiatives, is Turtles of SMSRC – a long-term, non-invasive monitoring programme designed to answer a deceptively simple question: Who are the turtles that live here?

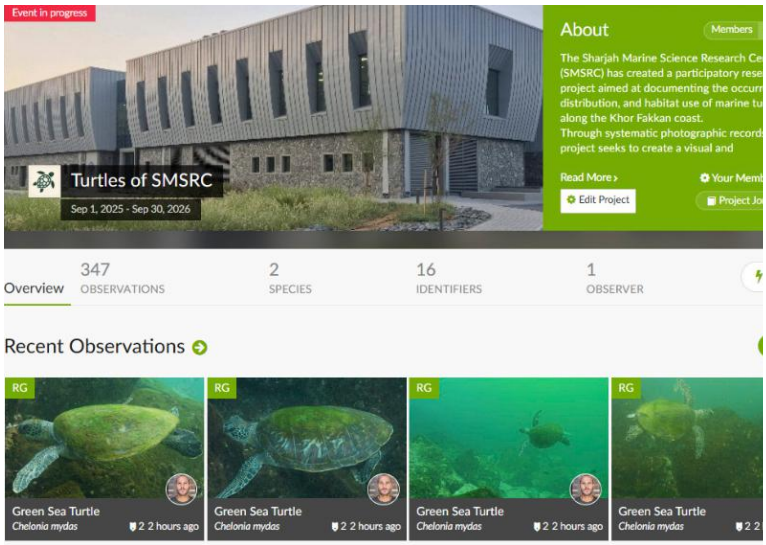



Figure 1 | iNaturalist project Turtles of SMSRC.

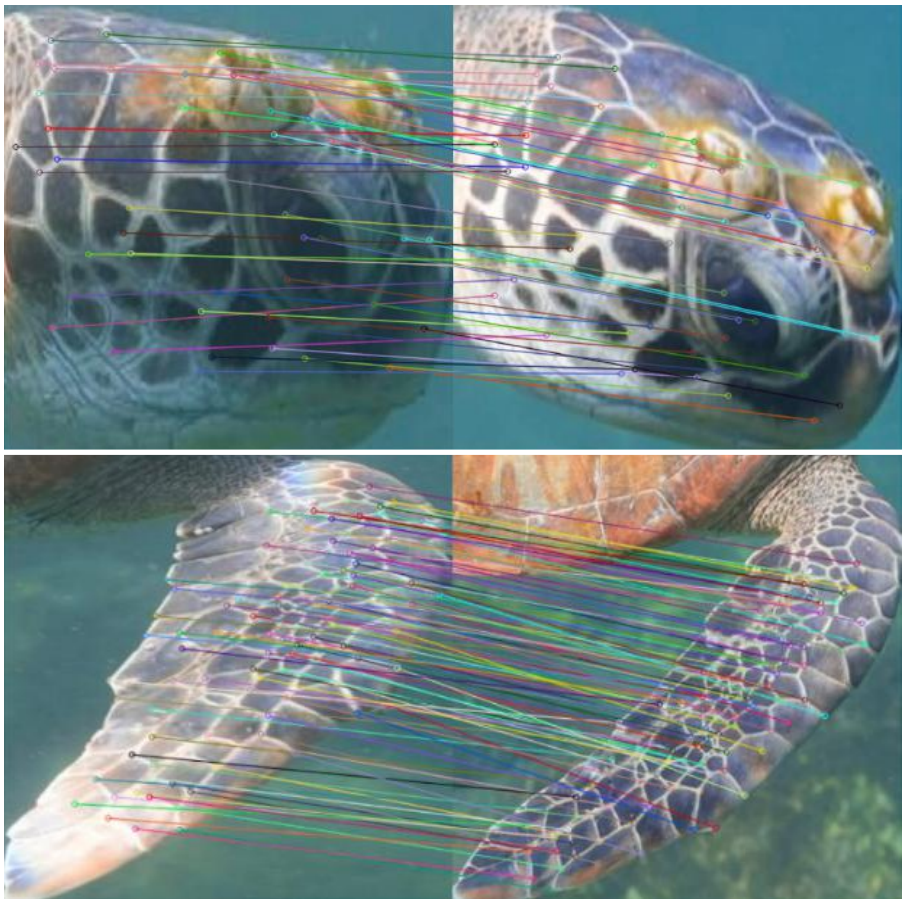


Figure 2 | Automated matching of facial and front flipper scale patterns for individual turtle re identification. Two images of the same sea turtle head captured during different encounters are shown. Coloured points and connecting lines indicate corresponding facial scale features automatically identified and matched by deep-learning–based algorithms.

## A GLOBAL COMEBACK AND A LOCAL OPPORTUNITY

Sea turtles are among the most iconic animals on the planet. Ancient mariners of the oceans, they have survived for over 100 million years, navigating shifting continents, changing climates, and mass extinctions.

Globally, the green turtle (*Chelonia mydas*) has recently made headline news: in October 2025 the International Union for Conservation of Nature (IUCN) officially downlisted the species from "Endangered" to "Least Concern" on its Red List of Threatened Species, marking a major milestone after decades of sustained global conservation action.

However, this shift does not mean that green turtles are out of danger – many regional populations remain at risk, and the species still faces habitat loss, bycatch, climate impacts, and other pressures. Conservation efforts must continue not because the species is "safe" everywhere, but because ongoing protection is essential to sustain and extend recovery, ensure healthy ecosystems, and safeguard the futures of turtles, their habitats, and the people who love and depend on our oceans.

Recovery creates a new challenge: learning how to live alongside returning wildlife and making sure protection efforts truly work. Where do turtles feed? How many individuals visit these waters? Do they stay for months, years… or just pass through? And most importantly, are protected areas really giving them the safe refuge we hope they are?

These questions become even more exciting in Qalqali Marine Protected Area (MPA), a newly established sanctuary surrounding our research centre. For scientists, this is a unique (and rare) moment in time – the chance to watch a protected coastal ecosystem from its very beginning, building knowledge since the application of a protective mantle.

The gathering of as much detailed information as possible is essential to truly understand how turtles use this environment over time. To achieve this, we must first recognise individual turtles and follow their presence, behaviour, and habitat use through carefully designed approaches. But how do we unfold the hidden lives of these turtles beneath the surface?

## NON-INVASIVE METHODS: STUDYING TURTLES WITHOUT TOUCHING THEM

Traditional turtle research often relies on large-scale, geographically broad methods such as capture–mark–recapture programmes, flipper tagging, or satellite telemetry. While powerful, these approaches are expensive, logistically complex, and often invasive.

The Turtles of the SMSRC project adopts a localised, fine-scale monitoring strategy built on rigorous field observations, standardised survey protocols, and long-term site-based monitoring. By leveraging high-resolution time-series data, the project focuses on understanding turtle residency, habitat use, movement patterns, and site fidelity within a defined coastal system.

Each week, trained freedivers survey a fixed ~1km stretch of coastline directly in front of the research centre. Moving calmly through the water, divers photograph turtles encountered along the route, focusing on key anatomical features.

All observations are uploaded to iNaturalist, a global biodiversity platform that allows us to build a high-quality, open, and verifiable digital photographic collection of sea turtles. This approach transforms individual sightings into long-term scientific records, ensures standardised metadata (date, location, observer), and connects local research to a global community of scientists and conservation practitioners.

We systematically photograph both the left and right sides of the head (when possible), along with the front and rear flippers of each turtle encountered. Each sea turtle has a unique arrangement of facial scales (scutes) around the eyes and beak – like fingerprints – no two patterns are the same.

This scale composition functions much like a face ID, allowing researchers to reliably identify individuals over time, track residency, and assess site fidelity without tagging or handling the animals.

For decades, researchers have used these features to identify turtles manually, often relying on trained experts comparing images by eye. This works – but it is slow. To scale monitoring efforts, we developed a free, open pipeline that combines automated computer vision with targeted expert validation, dramatically increasing efficiency while preserving scientific accuracy.

## HERE'S HOW IT WORKS

### STEP 1: IT ALL BEGINS WITH ARTIFICIAL INTELLIGENCE (AI)

Raw underwater images are downloaded from iNaturalist and first processed through an AI model trained specifically to recognise sea turtles, both above and below the surface. Once an image is uploaded, the system automatically identifies the turtle and isolates the biologically meaningful regions needed for individual recognition: the head, the carapace, and each of the four flippers. Crucially, every flipper is classified by position (front or rear) and side (left or right), ensuring anatomical consistency across thousands of images collected over time. This precision allows reliable comparisons between encounters, even when turtles are photographed from

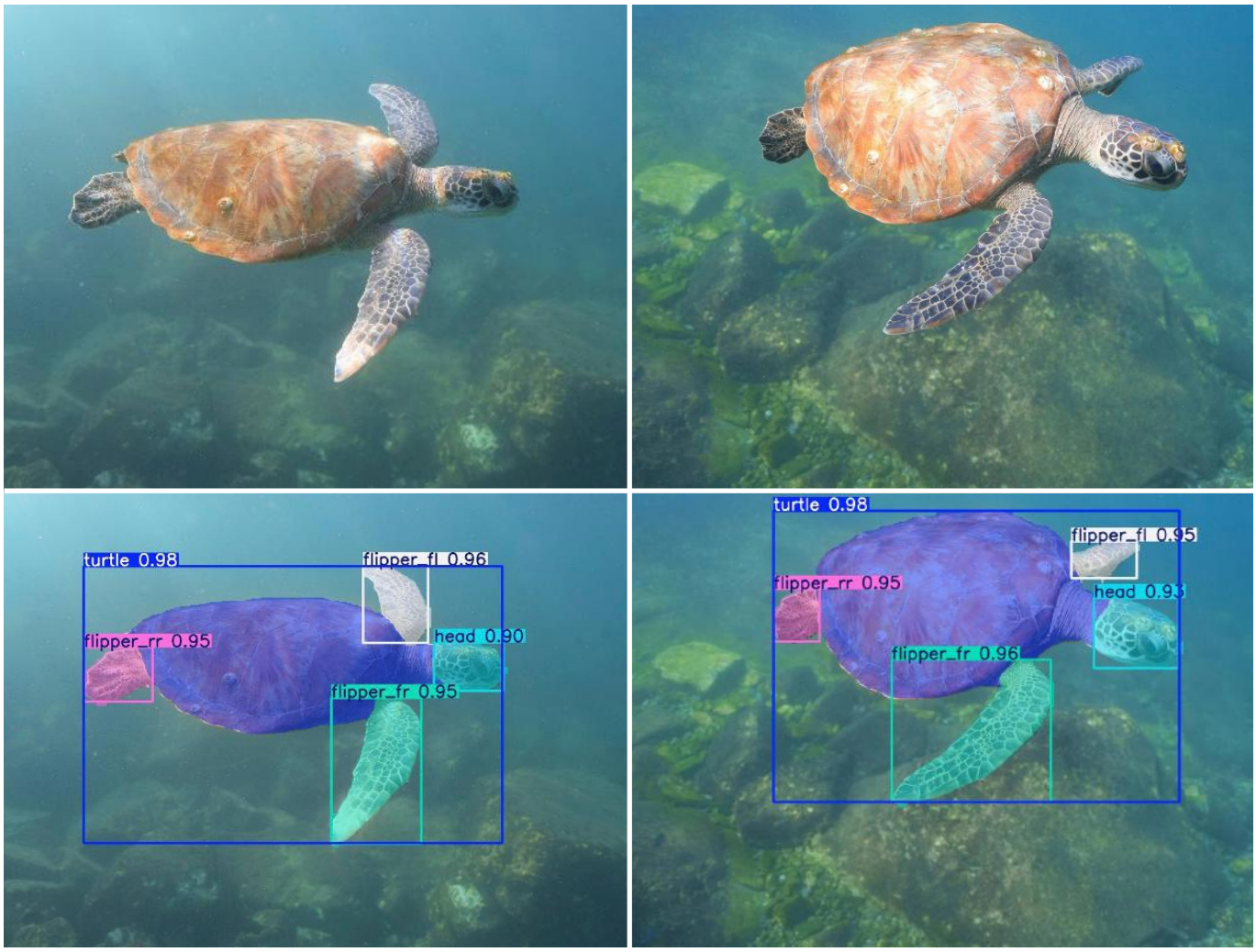



Figure 3 | AI detection of a sea turtle and its body parts. Raw freediving photographs of the same individual captured from complementary angles during separate encounters. Numbers indicate the model's confidence score for each detected region (range 0-1), with higher values reflecting greater certainty in correct anatomical assignment.

different angles or in varying conditions. The model was trained using a carefully curated set of manually annotated images. In the spirit of open science, both the training dataset and the resulting AI model are freely available online, allowing other research groups to adopt, adapt, and expand this non-invasive approach to sea turtle monitoring worldwide.

### **STEP 2:** MATCHING THE BODY PARTS ACROSS IMAGES

Now comes the detective work. Instead of relying on one feature – like the head – our system matches multiple body parts. Facial scale patterns, front flippers, rear flippers – each is compared across a vast image database. No matter if the turtle is photographed from the side or front, in bright sun or shadow, deep-learning algorithms find the matching points that make each turtle unique – like nature's fingerprint.

### **STEP 3:** SIMILARITY SCORING AND CANDIDATE MATCHES

Once a likely match is found, the system scores it. It's like a confidence metre, telling us how probable it is that two images show the same turtle. The higher the score, the more likely we've found a repeat visitor. High-scoring matches are then passed to the next stage.

### **STEP 4:** HUMAN VALIDATION – FAST AND FOCUSED

Finally, we bring in the human eye. Experts review these high-scoring pairs in a simple software interface, confirming or rejecting matches. With their decisions, we build a reliable catalogue of individual turtles – one identification at a time, making the invisible lives of these turtles visible.

### WHAT THE NUMBERS ARE TELLING US

After six months of continuous weekly surveys along our fixed one-kilometre stretch of coastline at the Sharjah Marine Science Research Centre, the numbers are beginning to tell a clear and powerful story.

With 1,781 minutes spent underwater – representing roughly 30 hours of in-water effort – we applied a negative exponential encounter model to estimate how many individual green turtles use this coastal corridor.

Across all of our surveys, the validated results by two different scientists revealed close to 200 individual turtles recorded (see Fig. 4).

Of these, 44 to 49 turtles were re-sighted at least once, confirming strong site fidelity within the aggregation.

As we can see in the Figure 4, the orange and red curves rise rapidly at first (validated data by Kostas and Jon, respectively), as expected in any discovery process. Then it begins to level off. That flattening is important. It suggests we are no longer just discovering new turtles at random but approaching a realistic estimate of the core population regularly using this habitat. Current model projections suggest that approximately 350 individual green turtles may utilise this stretch of coastline. However, this estimate should be interpreted as a model-derived approximation rather than a definitive population size.

What makes this even more compelling is the structure of the population itself. More than 90% of the identified individuals are juvenile green turtles (*Chelonia mydas*), and our re-sighting rate is around 50%. In other words, half of the turtles we encounter are individuals we already know. This is not a transient passing aggregation. It is a structured developmental habitat – a place where young turtles are growing, feeding, and repeatedly returning.

Among these individuals, a particularly fascinating pattern has emerged. We have identified what we now call "habitat loyal" turtles – individuals recorded up to 15 times

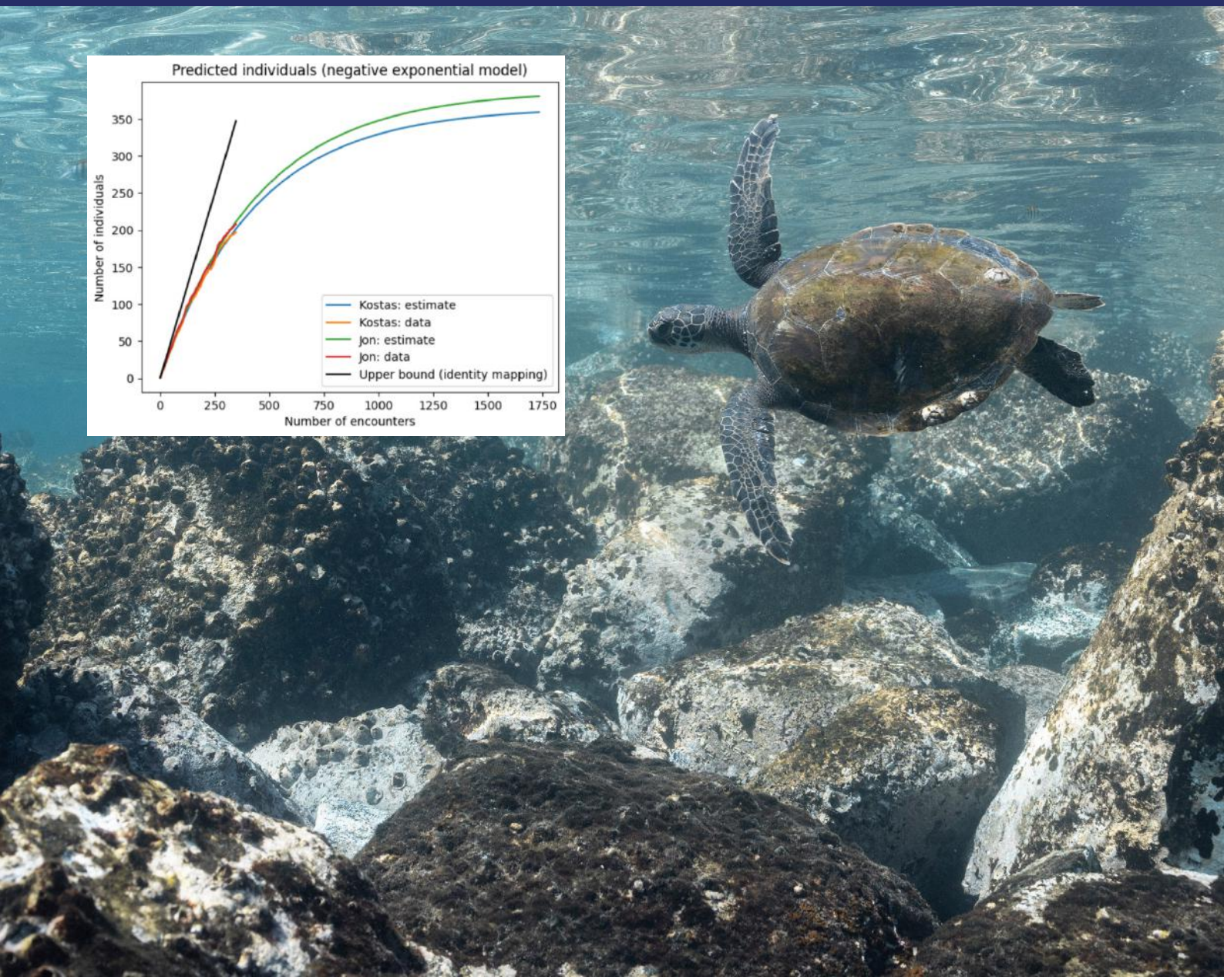



Figure 4 Above | Number of identified sea turtles increases with survey effort but gradually levels off, showing that many turtles are being re-encountered over time.

during just the last months of continuous surveys. These turtles are not occasional visitors. They show strong site fidelity, appearing again and again within the same coastal corridor. For a diver, that means something remarkable: when you enter the water here, there is a real chance you are swimming alongside a turtle whose life history we are actively documenting, an individual we can recognise through AI-assisted matching of facial and flipper patterns.

The integration of freediving photo-surveys, structured effort, and AI has transformed what could have been simple wildlife encounters into quantitative population monitoring. Each image contributes to a growing, automated identification system. Each re-sighting strengthens the demographic signal. Each dive adds resolution to our understanding of how these turtles use space and time.

As the dataset continues to expand beyond 500 documented individuals and grows across seasons, the predictive models will sharpen. Longer time series will allow us to better understand population dynamics within the study area. These patterns are likely influenced by migration behaviour and habitat use, as turtles moving in and out of the area or shifting between habitats shape re-sighting trends over time. Extended monitoring will also help detect recruitment pulses, explore fine-scale habitat preferences, and better understand turnover within this juvenile aggregation.

What began as a series of swims along a familiar coastline is becoming a high-resolution portrait of a living population. This stretch of water, in the Qalqali Marine Protected Area, is not simply scenic. It is functioning as a nursery ground. It is hosting identifiable, resident juvenile green turtles. It is supporting individuals that choose to stay.

And perhaps the most profound realisation is this: the ocean here is not anonymous. The turtles are not anonymous. Through consistent effort and intelligent tools, we are beginning to know them – one individual at a time.


**THE RESEARCH TEAM**

Jon Lapeyra Martin[1], Lukáš Adam[3], Kostas Papafitsoros[4], Brendan Godley[2], Henrik Stahl[1], Steve Widdicombe[1]

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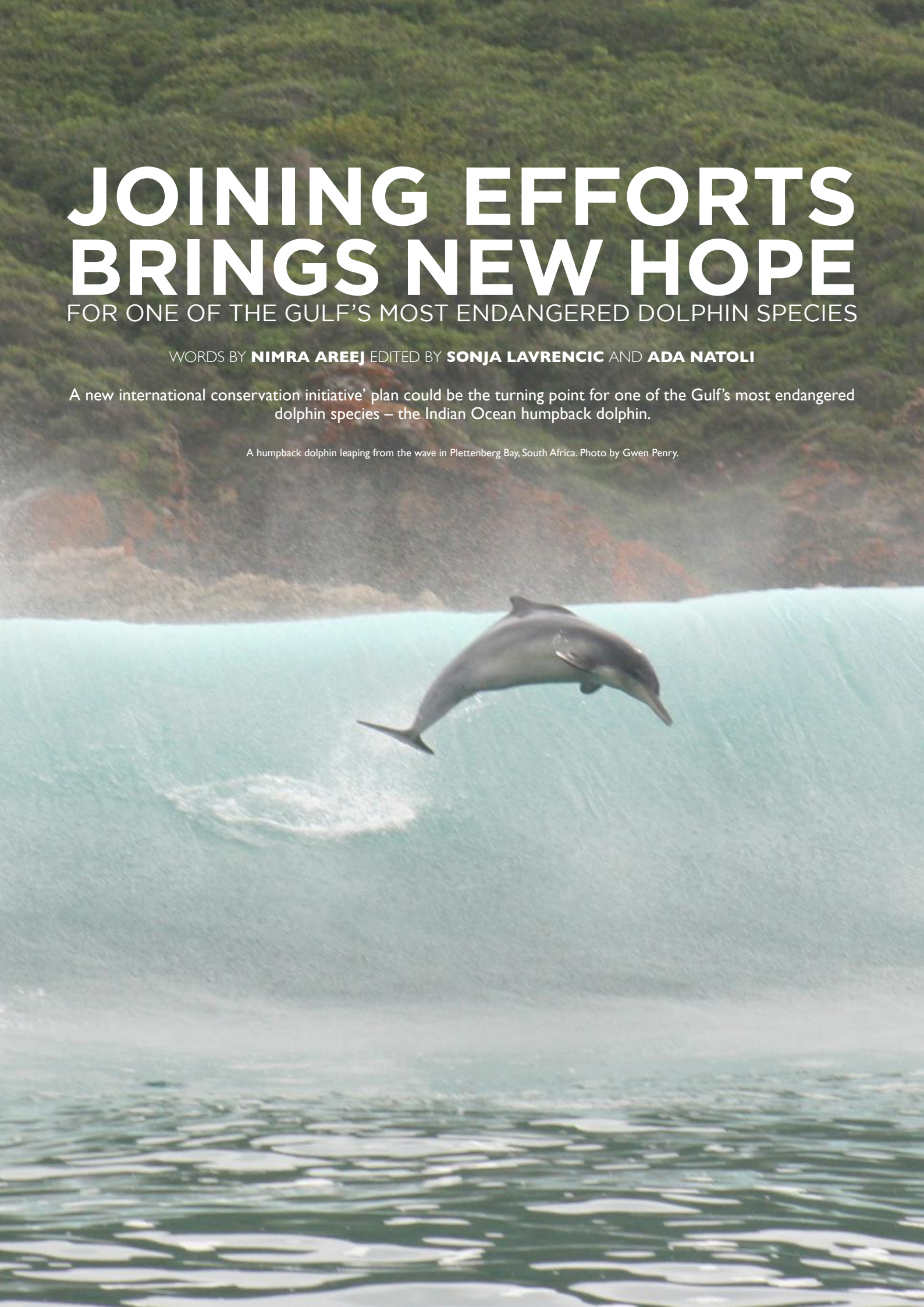
2. University of Exeter, UK
3. University of West Bohemia, Pilsen, Czech Republic
4. Queen Mary University of London, UK

# JOINING EFFORTS BRINGS NEW HOPE

## FOR ONE OF THE GULF'S MOST ENDANGERED DOLPHIN SPECIES

WORDS BY **NIMRA AREEJ** EDITED BY **SONJA LAVRENCIC** AND **ADA NATOLI**

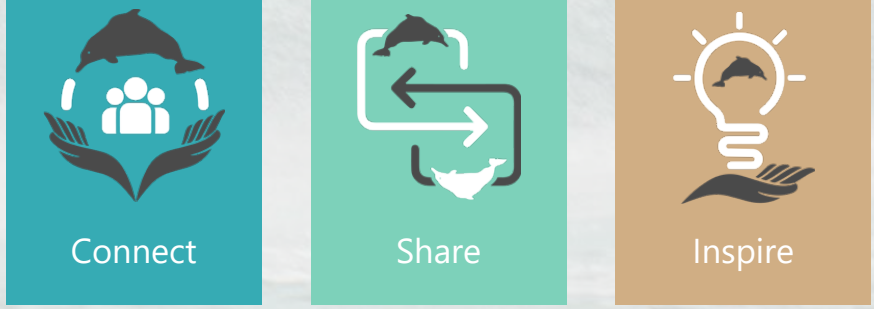
A new international conservation initiative' plan could be the turning point for one of the Gulf's most endangered dolphin species – the Indian Ocean humpback dolphin.



A humpback dolphin leaping from the wave in Plettenberg Bay, South Africa. Photo by Gwen Penry.

# HuDoNET

Indian Ocean Humpback Dolphin Conservation Network



Indian Ocean humpback dolphins are resident in the very nearshore waters of Abu Dhabi and Dubai, inevitably exposed to high levels of disturbance and anthropogenic impacts.

## THE UAE SHORES ARE THE INDIAN OCEAN HUMPBACK DOLPHINS' HOME

In the UAE, the Indian Ocean humpback dolphin (*Sousa plumbea*) is one of three small cetacean species regularly inhabiting Gulf coastal waters, including the urban waters of Dubai and Abu Dhabi where the UAE Dolphin Project has focused its research efforts on monitoring resident populations.

This small cetacean is easily recognised by the distinctive hump beneath its dorsal fin. Unlike many other dolphin species, it typically forms small pods and is often found in nearshore areas, making populations particularly vulnerable to disturbance and decline.

The habitat requirements of Indian Ocean humpback dolphins are highly specific. They prefer very shallow coastal waters, usually within two kilometres of the shoreline. These nearshore environments frequently overlap with areas of intense human activity, particularly fisheries, where the risk of entanglement and fatal injuries is high.

As coastal development accelerates, habitat degradation continues to increase. Urban expansion, land reclamation, and pollution place additional pressure on these dolphins, further degrading and polluting their habitat.

As all dolphin species, humpback dolphins play a crucial role in ensuring a healthy coastal marine ecosystem, not only serving as apex predators, but also as nutrient recyclers supporting the marine primary production.

Despite their ecological significance, Indian Ocean humpback dolphins remain relatively unknown. Very few people are aware of humpback dolphins in general, and even fewer recognise the Indian Ocean species specifically. In fact, this species has been officially recognised only in 2014, with a restricted range that spans from the west coast of India, the Arabian Gulf, the Red Sea, and the east coast of Africa. While conservation and research initiatives exist across parts of the species' range, many regions still lack sufficient data and dedicated conservation efforts.

## INDIAN OCEAN HUMPBACK DOLPHIN CONSERVATION NETWORK (HUDONET) HAS A VITAL ROLE IN THE SPECIES CONSERVATION

Effective conservation of humpback dolphins requires a stronger understanding of their biology, ecology, and distribution, as well as the human activities and man-made threats affecting both the dolphins and their ecosystems.

Also important is a solution-focused approach that moves beyond describing problems to identifying practical remedies. Because researchers are often not the ones implementing conservation actions, meaningful collaboration with communities, governments, and industries is essential from the outset in order to design and apply evidence-based conservation strategies for this species.

In response to these needs, the Indian Ocean Humpback Dolphin Conservation Network (HuDoNet) was created to facilitate and strengthen conservation efforts through regional collaboration and coordination.

Photos by the UAE Dolphin Project Initiative.

HuDoNet is a global initiative founded in 2023 by leading humpback dolphin researchers from Zayed University (UAE), the University of Pretoria (South Africa), and the University of St Andrews (UK). The network aims to galvanise conservation action to protect this species across its range. Since its formation, the network has grown to nearly 100 members from 18 countries across the species' range.

## HUDONET HAS RECENTLY RELEASED ITS FIRST NETWORK ACTION PLAN

This Action Plan is a collaboratively developed framework designed to guide coordinated research, policy engagement, and conservation action for the Indian Ocean humpback dolphin across its distribution.

The Action Plan is structured around five thematic working groups that reflect the social-ecological nature of humpback dolphin conservation.

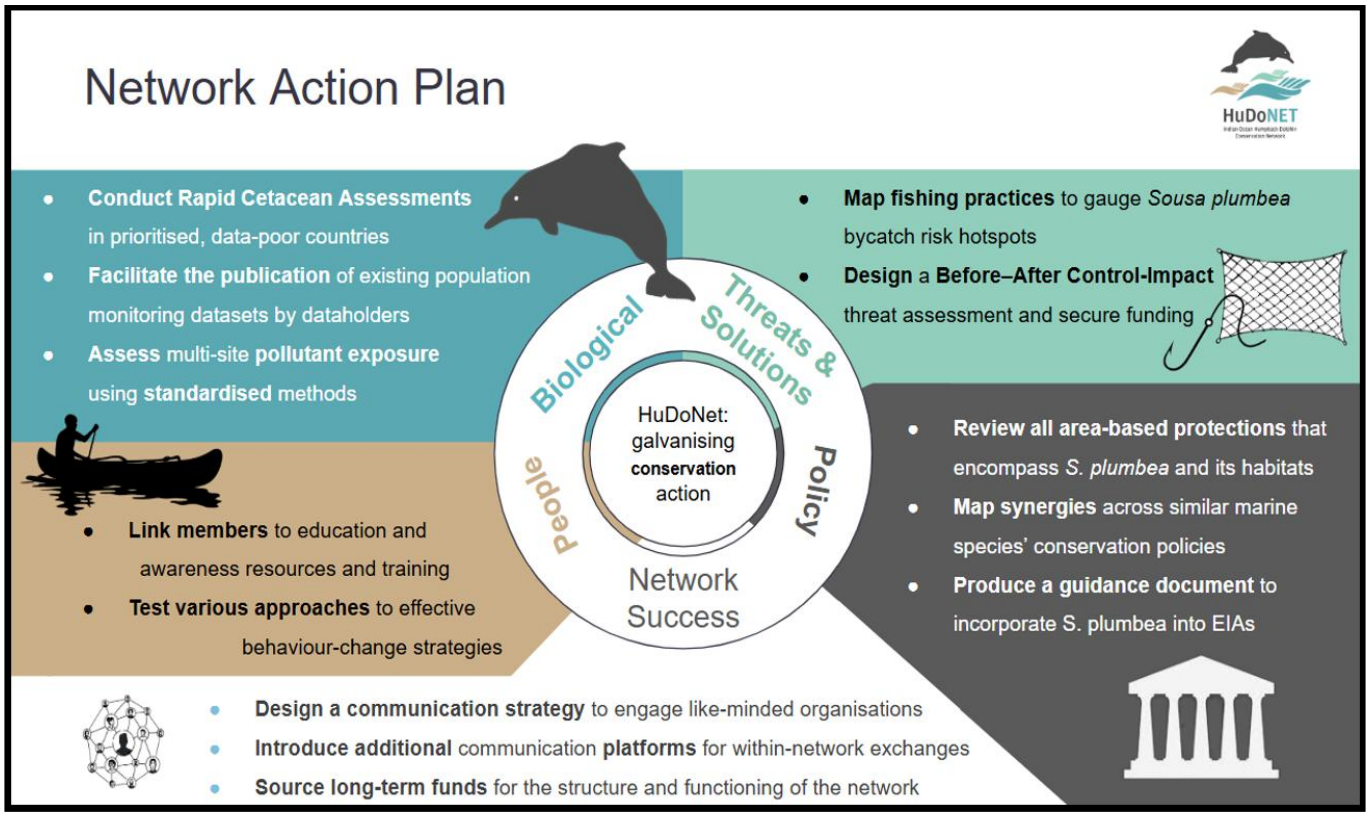
The Biological Research Working Group focuses on ecology, genetics, behaviour, and health. The Threats and Solutions Working Group examines drivers of population decline and potential management responses. While the People Working Group centres on community-based conservation and local engagement, the Policy Working Group addresses legislation, policies, and international agreements to strengthen governance for species protection. Finally, the Network Success Working Group supports the effective functioning and long-term sustainability of HuDoNet.

The action plan focuses on short to medium term priorities that will help the network build a strong foundation in its early stages. These priorities were identified through a collaborative effort from network members. Key actions include improving baseline knowledge of humpback dolphin distribution and abundance in regions where data are limited, supporting the analysis and publication of existing datasets, and coordinating multi-site research on major threats such as chemical pollution and fisheries bycatch.

The plan also calls for mapping existing spatial protection measures across the species' range, identifying opportunities to align with conservation efforts for ecologically similar species, and developing practical guidance to better incorporate humpback dolphins into Environmental Impact Assessments. The plan recognises that conservation is dependent on people and governance, hence it also prioritises improving access to behaviour-change resources, testing education and awareness initiatives, and strengthening communication and collaboration both within the network and with external partners.

## UAE DOLPHIN PROJECT INITIATIVE RESEARCH CONTRIBUTES TO THE GLOBAL CONSERVATION EFFORTS

As a founding member of HuDoNet, the UAE Dolphin Project Initiative at Zayed University plays an active role in advancing research and conservation of Indian Ocean humpback dolphins within the region. Work conducted under the project includes a range of long-term research efforts.




Synchronised swimming at Tanga Province, Tanzania. Photo by Gill Baulik.

**ABOVE & LEFT CENTRE:** Indian Ocean humpback dolphins only occur in nearshore shallow waters and estuarine areas along the west coast of India, the Arabian Gulf, the Red Sea, and the east coast of Africa. Photos by the UAE Dolphin Project Initiative

Early efforts to understand humpback dolphins in UAE waters began with a questionnaire survey conducted in Dubai between February and April 2012. This work helped estimate how often dolphins were sighted and provided valuable baseline information for planning future surveys.

Follow-up boat surveys along the Dubai coastline in 2013-2014 recorded eight dolphin encounters and led to the identification of 23 individual humpback dolphins, making them the most frequently observed cetacean in the area at the time. More than a decade later, surveys carried out between 2021 and 2024 documented just two sightings, with 20 individuals identified. While differences in survey effort must be considered, such a low number of recent sightings in one of the country's most heavily developed coastal areas is concerning and highlights the need for closer attention and continued monitoring.

In contrast, surveys in Abu Dhabi city waters between 2022 and 2024 recorded 24 sightings and identified 117 individual humpback dolphins, suggesting that the species remains more regularly encountered in some parts of the UAE.

Since 2019, the project has also maintained a citizen science database documenting dolphin sighting reported by members of the public. This database has provided valuable insights into the spatial and temporal distribution of the species. Computer models predicting where dolphins are most likely to occur based on UAE citizen science data collected between 2012 and 2019 identified the Indian Ocean humpback dolphin as one of the three small cetacean species regularly occurring in UAE waters, with evidence of their different ecological niche strictly linked to very nearshore waters.

Together, these efforts contribute to a growing body of knowledge on the status and distribution of Indian Ocean humpback dolphins in UAE waters. Continued research and collaboration are essential to ensure that conservation actions are informed, coordinated, and responsive to the challenges faced by this endangered species.

The release of HuDoNet's Action Plan marks an important step forward for the conservation of the Indian Ocean humpback dolphin, providing a coordinated roadmap that connects science, policy, and community action across the species' range. By strengthening collaboration, improving knowledge, and promoting public awareness, the initiative highlights that protecting this species is still possible but only if we jointly act now.

U.A.E. DOLPHIN PROJECT

## REPORT YOUR SIGHTINGS!

**If you encounter a whale or dolphin, collecting information is extremely useful to us.**

1. Take videos or photos (if you can). You are there in that moment so you become the scientist. Every image of any quality is better than nothing and will help experts to confirm the species. If you can take photographs and videos when you are on the side of whales or dolphins when fins are clearly visible, it can help scientists track the individuals, but please keep a safe distance!

2. CALL as soon as possible if you are witnessing a special sighting, or you encounter a dead animal so experts can hopefully reach the site and gather more information.

3. Take note of the date, time, and approximate location – if GPS is not available, a dot on google maps works great! Also report how many individuals you see.

4. You can send your data to us via:

**sightings@uaedolphinproject.org**
**www.uaedolphinproject.org**
**www.facebook.com/UAEDolphinProject**
**www.instagram.com/uaedolphinproject**
**+971 56 671 7164**
**+971 50 955 1742 or +971 56 671 7164**

# DISCOVERING AL QALQALI:

## THE UAE'S NEWEST MARINE PROTECTED AREA

WORDS AND PHOTOGRAPHY BY **OSAMA MELIKA WAHBA**

In November 2025, His Highness Sheikh Dr Sultan bin Muhammad Al Qasimi, Ruler of Sharjah, officially declared Al Qalqali, a Marine Protected Area (MPA) through an Emiri Decree. This 4.6 square kilometre haven off the coast of Khorfakkan isn't just another protected zone – it's a beacon of hope for divers, conservationists, and nature lovers alike.

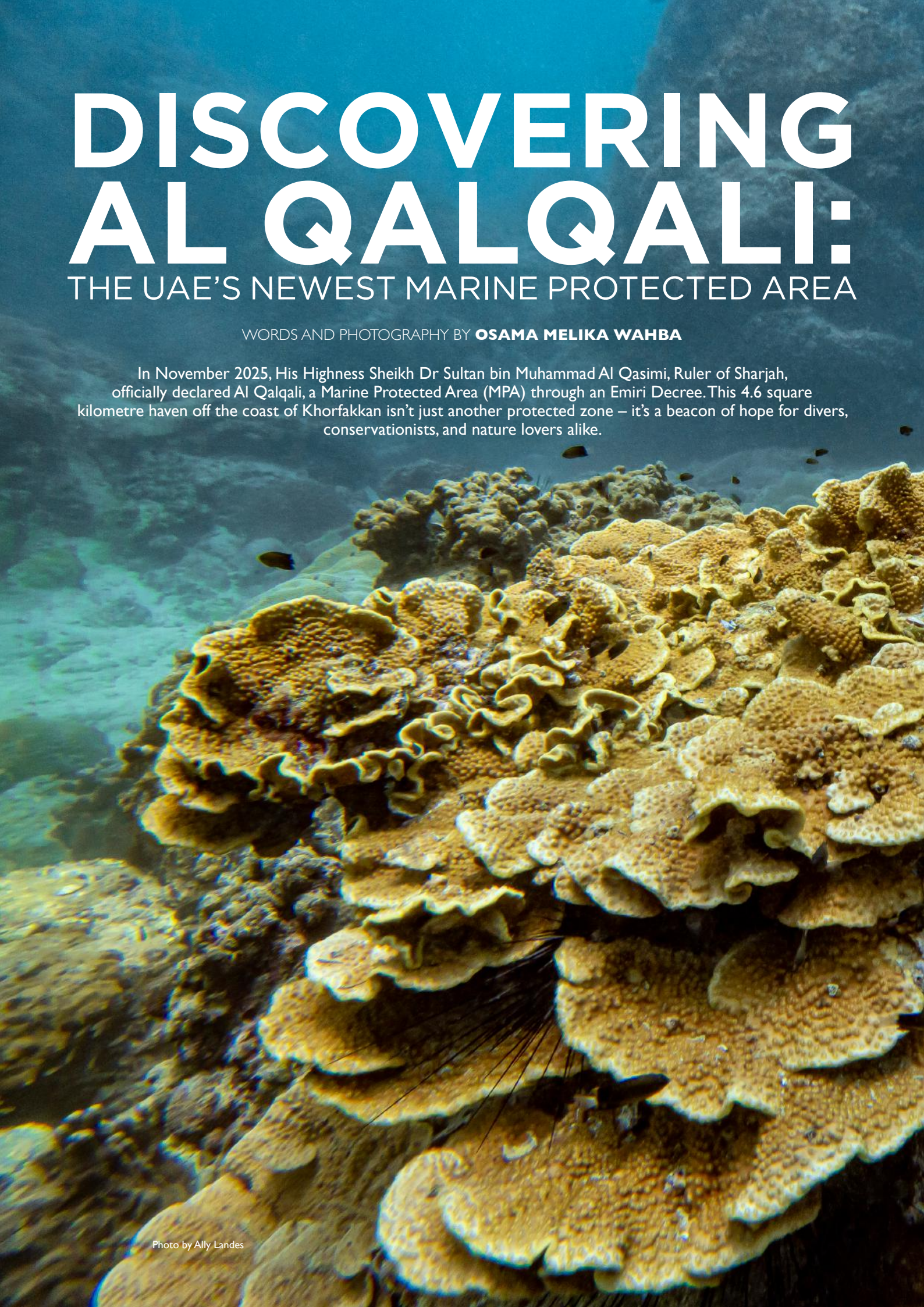
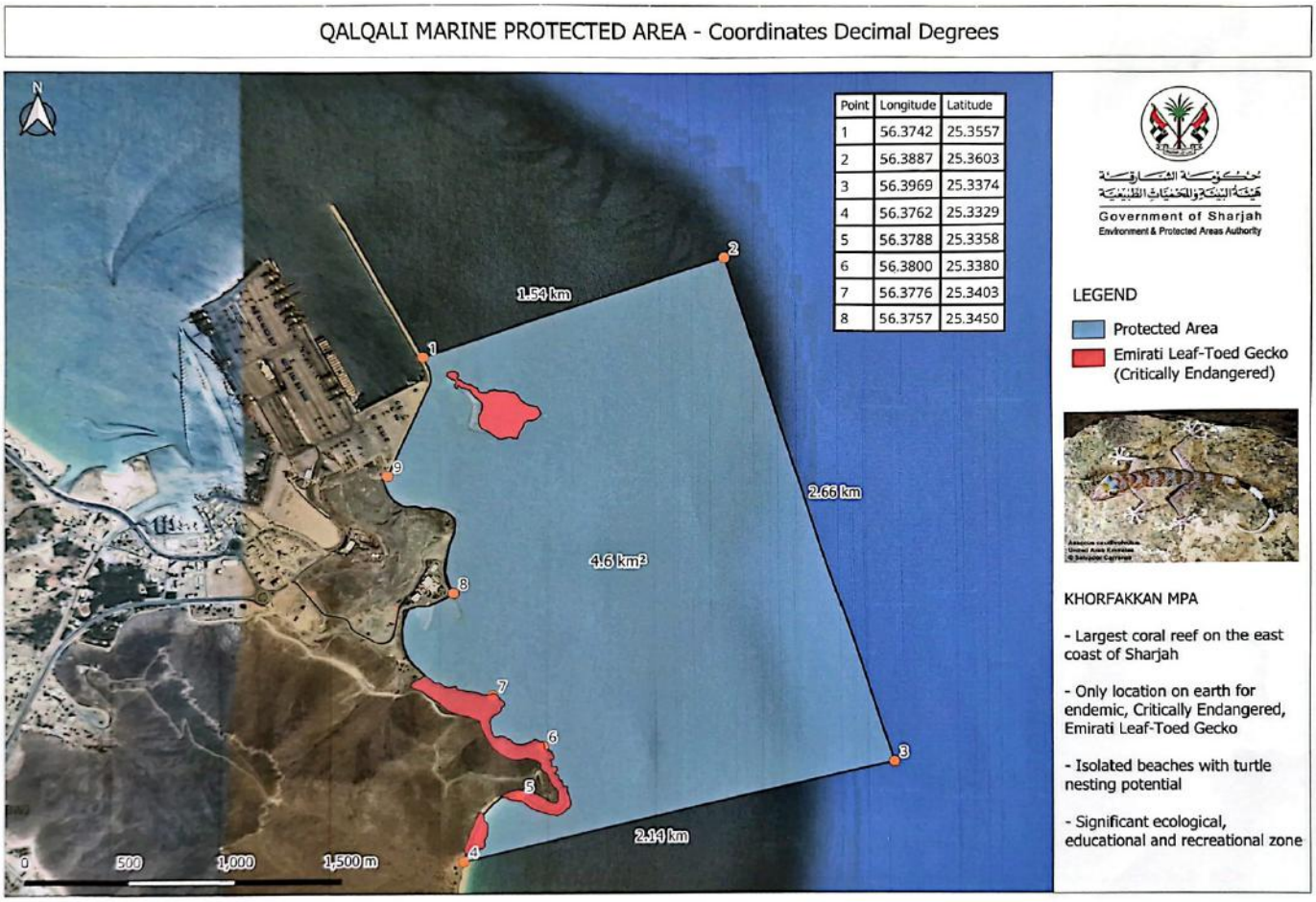


Photo by Ally Landes




As the sun rises over the rugged mountains of Sharjah's east coast, casting a golden glow on the turquoise waters of the Sea of Oman, a new chapter in marine conservation is unfolding. In November 2025, His Highness Sheikh Dr Sultan bin Muhammad Al Qasimi, Ruler of Sharjah, officially declared Al Qalqali, a Marine Protected Area (MPA) through an Emiri Decree. This 4.6 square kilometre haven off the coast of Khorfakkan isn't just another protected zone – it's a beacon of hope for divers, conservationists, and nature lovers alike. Encompassing vibrant coral reefs, rocky outcrops, and even a unique endemic species on land, Al Qalqali promises to be one of the UAE's premier diving destinations while safeguarding its ecological treasures for generations to come.

For those of us in the diving community, this declaration couldn't come at a better time. With climate change, overfishing, and coastal development threatening our underwater playgrounds, Al Qalqali represents a strategic move toward sustainable tourism and biodiversity protection. It's aligned with the UAE's National Biodiversity Strategy and global goals like the "30x30" initiative, aiming to protect 30% of marine areas by 2030. For divers based in the UAE, we've been eagerly awaiting this – imagine crystal-clear waters teeming with blacktip reef sharks, colourful anemone gardens, and massive coral colonies, all now under enhanced protection. Let's dive into what makes Al Qalqali special, from its history to its top dive sites, and why it's a must-visit for any UAE diver.

## A HISTORICAL GEM IN THE SEA OF OMAN

Al Qalqali's story goes beyond its recent designation – it's steeped in history and archaeology that adds a layer of intrigue for divers who love a good wreck or cultural dive. Located in the transitional waters of the Sea of Oman, where semi-enclosed seas meet the open Indian Ocean, this area has long been a hub of maritime activity. Archaeological surveys by Sharjah authorities have uncovered remnants of ancient settlements, watchtowers, and underwater features linked to historical trade routes. These include submerged structures that may date back centuries, potentially tied to navigation and commerce in the region.

The MPA's centrepiece, Serat Khourfakan (also known as Shark Island), has played a strategic role in monitoring sea traffic for ages. This "ridge-to-reef" approach – protecting everything from mountain tops to seabeds – makes Al Qalqali unique. It's not just about the ocean; it's about preserving an interconnected ecosystem that includes coastal mountains and beaches.

The designation itself is a response to growing environmental pressures. As part of Sharjah's push for ecological security, the MPA addresses climate change, resource sustainability, and the blue economy. For divers, this means regulated access that ensures the sites remain pristine, with potential for eco-tourism jobs and community involvement.

## ECOLOGICAL WONDERS BENEATH THE WAVES

What truly sets Al Qalqali apart is its exceptional biodiversity packed into a relatively small area. The Sea of Oman's strong currents and nutrient-rich waters create a hotspot for marine life, far more productive than enclosed seas like the Arabian Gulf. The MPA boasts a mix of hard and soft coral reefs, sandy bottoms, and rocky formations that support a thriving underwater community.

## CORAL COMMUNITIES: BUILDING BLOCKS OF LIFE

At the heart of Al Qalqali are its coral reefs, dominated by massive and sub-massive species like *Porites*, *Platygyra*, *Goniopora*, *Pavona*, and *Favia*. These long-lived corals form solid structures that protect coastlines from erosion and provide habitats for countless species. You'll find large colonies creating reef stability, with brain corals and mosaic patterns of faviids adding texture and colour.

Then there are the soft coral gardens – dense stands of *Dendronephthya* and other non-symbiotic corals that sway like underwater forests in the currents. These "gardens" are rare nationally and regionally, relying on plankton-rich waters to thrive. They boost habitat complexity and support food webs, making dives here feel like exploring a living tapestry.

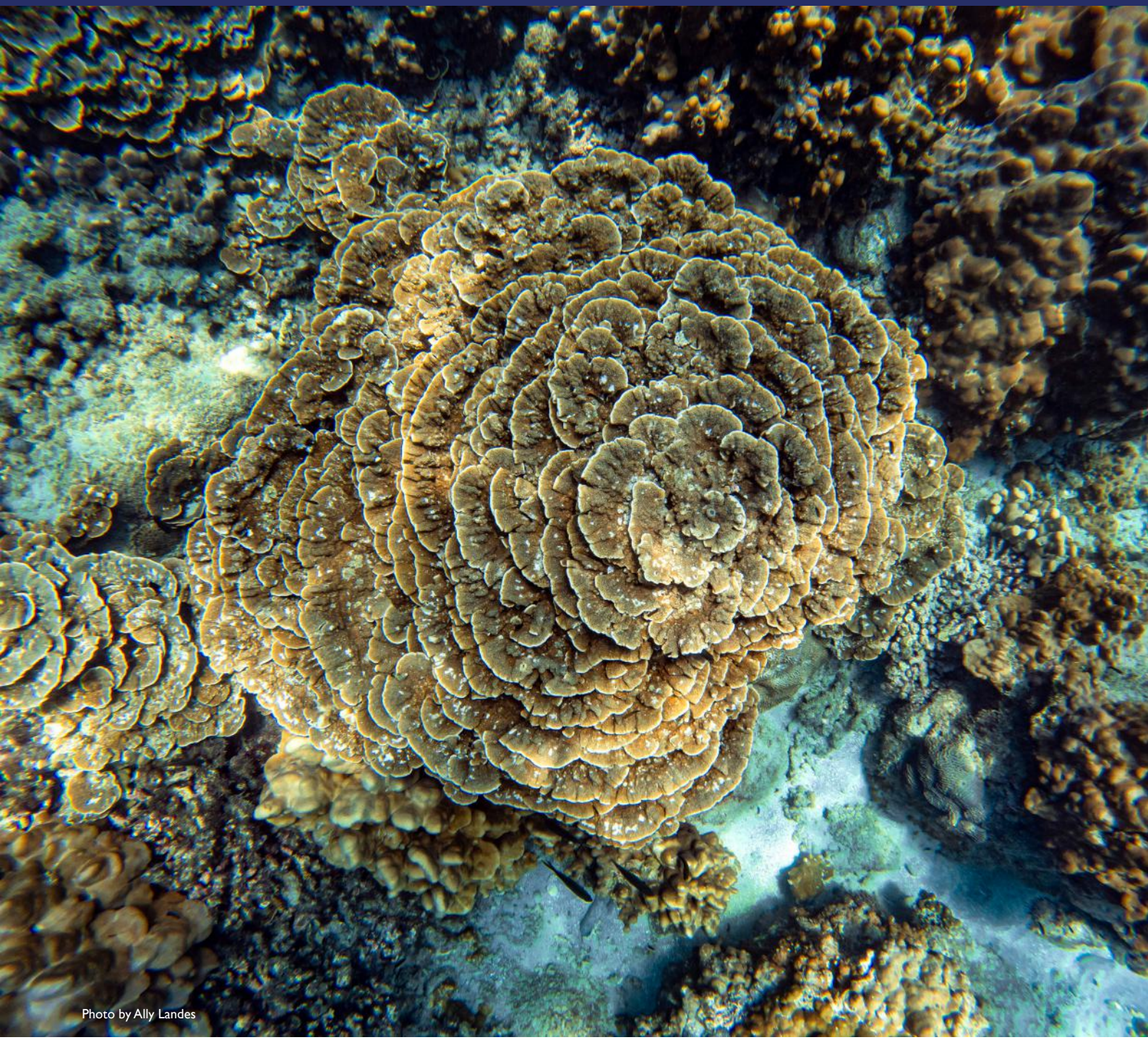


Photo by Ally Landes

Branching and table corals, especially Acropora species, add three-dimensional flair, though they're more sensitive to warming waters. Regional studies show these corals have some tolerance to extreme temperatures, but recent bleaching events highlight their vulnerability. As divers, we've all seen the stark white skeletons after a heatwave – Al Qalqali's protection aims to give them a fighting chance.

## FISH & MEGAFAUNA: A DIVER'S DREAM

The reefs teem with life that will keep any diver's logbook full. Expect schools of barracuda, mackerel, trevally, and fusiliers darting through the water, alongside parrotfish munching on algae to keep the ecosystem balanced. Groupers (*Epinephelus spp.*), damselfish, butterflyfish, and wrasses add pops of colour, while moray eels and cornetfish hide in crevices.

But the stars are the megafauna: Blacktip reef sharks (*Carcharhinus melanopterus*) patrol around Serat Khourfakan, a thrilling sight for shark enthusiasts. Rays like the panther electric ray (*Torpedo panthera*) glide over sandy bottoms, and sea turtles – green and possibly hawksbill – forage in the shallows. Nearby beaches could even be nesting sites, linking land and sea.

Invertebrates round out the scene: Sponges, molluscs, echinoderms, and cryptic critters like the bearded scorpionfish (*Scorpaenopis barbata*) and broad-barred firefish (*Pterois antennata*). This diversity indicates a relatively healthy ecosystem, offering divers encounters from macro to mega.

## TOP DIVE SITES IN AL QALQALI

For the diving community, Al Qalqali is a treasure trove of sites suitable for all levels. Depths range from shallow snorkel-friendly areas to 20-27 metres, with clear visibility thanks to the open ocean influence. Here's a rundown of the must-dive spots, based on ecological assessments:

### SERAT KHOURFAKAN (SHARK ISLAND)

This is the MPA's crown jewel – a small rocky islet surrounded by extensive reefs. Shallow terraces, slopes, and boulder fields host diverse corals, anemone gardens, and abundant fish. Often called a "mini Maldives," it's perfect for snorkelling or scuba, with easy access from Khorfakkan. Look for blacktip sharks circling the edges and turtles grazing on seagrass.

### RAS AL QALQALI (MARTINI ROCK)

A dramatic rocky outcrop with rich encrusting life, mixed hard and soft corals, and schooling

reef fish. It's a site for intermediate divers, offering swim-throughs and overhangs teeming with life. The name evokes a sense of adventure – imagine sipping on the beauty of underwater vistas.

## ANEMONE AND CORAL GARDENS

Scattered throughout, these include carpets of Rhodactis anemones interspersed with hard corals. Depths around 22-26 metres make them ideal for spotting clownfish, damselfish, and soft coral sway. The gardens' density creates a psychedelic underwater landscape.
Other highlights: Submerged boulder fields south of Shark Island, inshore reef patches near port approaches, and areas with underwater archaeological features acting as artificial reefs. Zoning will include no-take core zones around high-value sites, ensuring sustainable diving through permits and moorings.

## TERRESTRIAL TIES: THE CRITICALLY ENDANGERED GECKO

Al Qalqali isn't just marine – its nearshore mountains host the Emirati leaf-toed gecko (*Asaccus caudivolvulus*), the world's only known population of this Critically Endangered species. Nocturnal and rock-dwelling, it links terrestrial and marine conservation. Sparse vegetation and coastal birds add to the "ridge-to-reef" ethos. For divers, this reminds us that protecting the ocean means safeguarding the land too.

## FACING THE THREATS: CHALLENGES AHEAD

Despite its beauty, Al Qalqali faces real dangers. Overfishing has depleted large predators, with ghost traps and abandoned gear causing ongoing damage. Tourism, if unregulated, leads to anchor scars and fin kicks on corals. Climate change brings bleaching – recent events killed shallow Acropora tables. Diseases, crown-of-thorns starfish outbreaks, harmful algal blooms (like red tides), and pollution from shipping compound the issues.

Coastal development increases sedimentation, stressing reefs. As divers, we've seen these impacts firsthand – faded corals, fewer big fish. The MPA's designation is timely, aiming to mitigate through enforcement and restoration.

## MANAGEMENT AND THE FUTURE FOR DIVERS

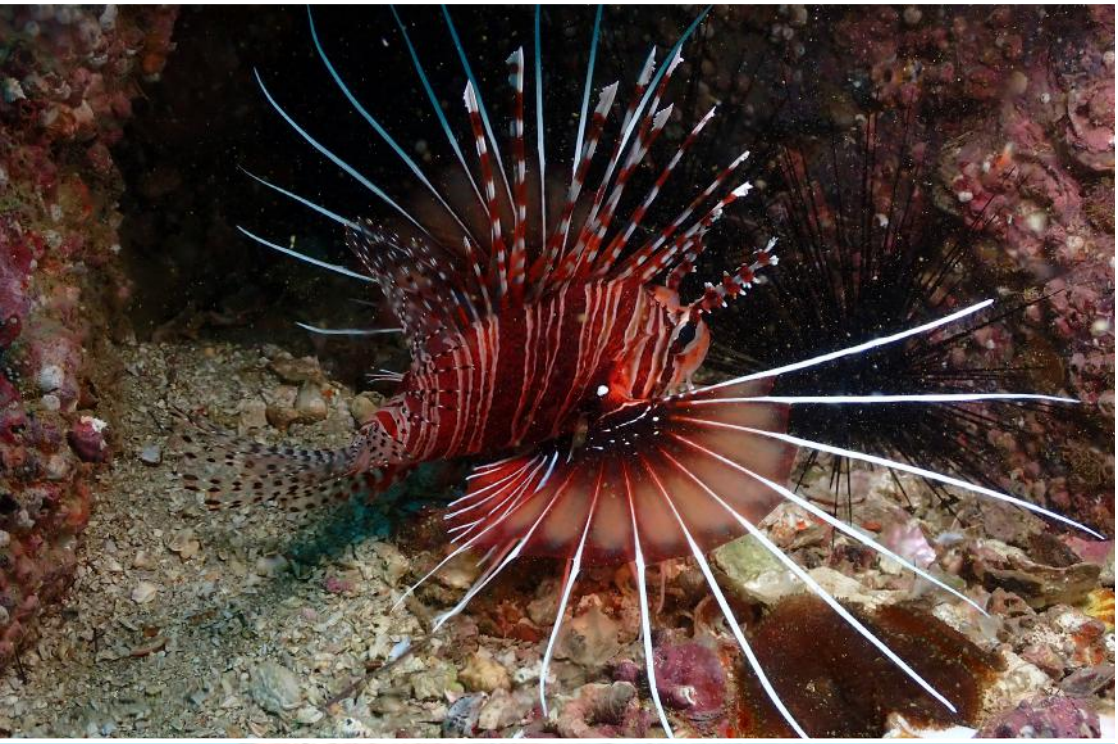
The Al Qalqali marine protected area falls into the IUCN Category II (National Park) status with core no-take zones, regulated diving areas, and buffer transitions. Governance aligns with IUCN Green List standards, involving stakeholders such as dive operators, fishermen, and NGOs. Priorities: Mooring buoys to prevent anchoring damage, ranger patrols, coral restoration, and monitoring.

For us divers, this means better-managed sites with low-impact activities. Expect permits, codes of conduct, and citizen science opportunities. Phased implementation starts with zoning and infrastructure, evolving to full protection.

## WHY AL QALQALI MATTERS TO THE UAE DIVERS

As we gear up for dives in this new MPA, remember: Al Qalqali is more than a spot – it's a model for conservation. It secures biodiversity, builds climate resilience, and preserves cultural heritage. For divers, it's a short boat ride to world-class reefs. Whether you're chasing sharks, photographing corals, or simply floating in anemone gardens, this area offers endless adventures.

Join the effort – support sustainable practices, report violations, and spread the word. With photos to come, imagine the visuals: Vibrant reefs, elusive geckos, and thriving marine life. Al Qalqali isn't just protected – it's poised to become the UAE's diving flagship. Who's ready to explore?

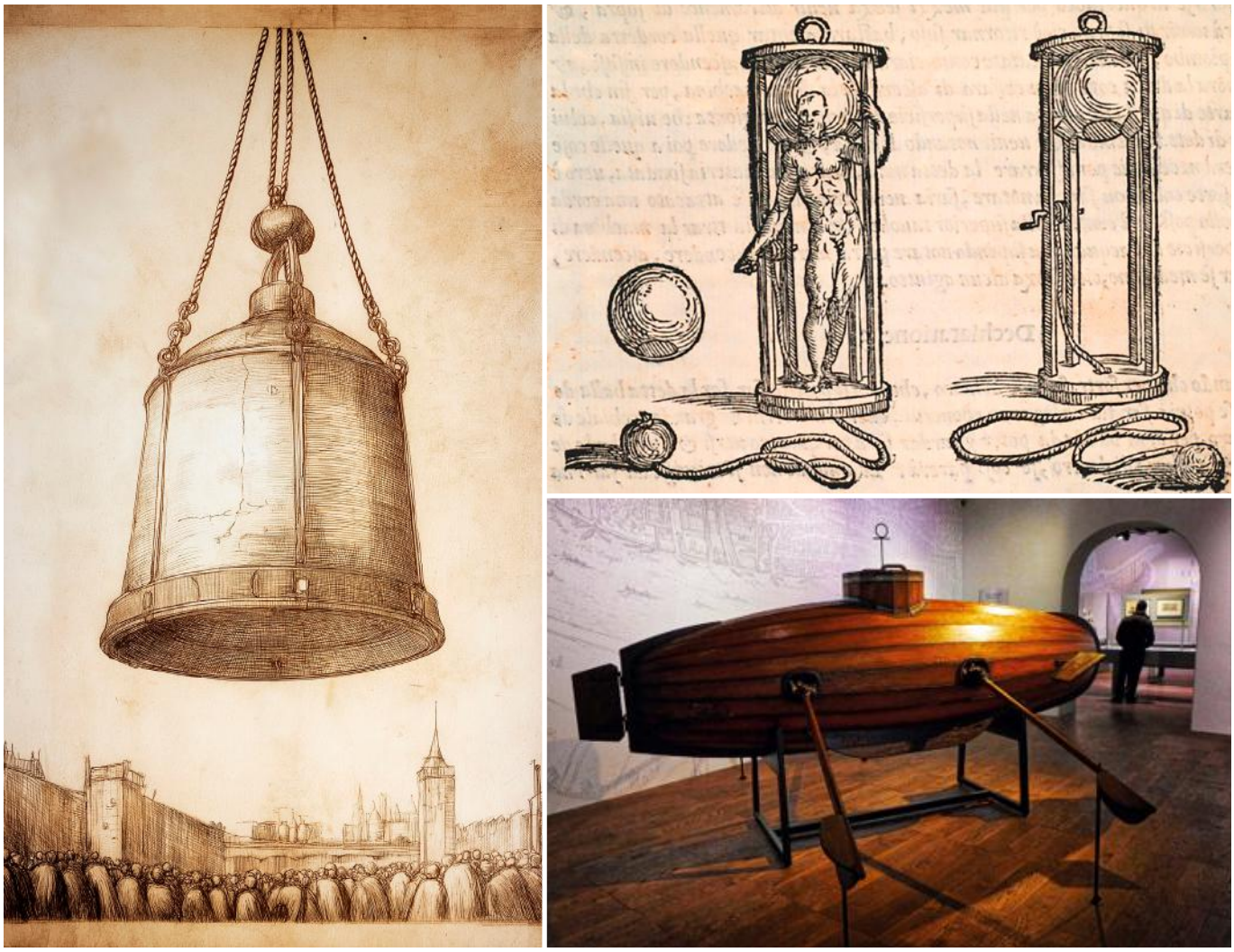


# PART 3
# THE HISTORY OF DIVING

WORDS BY **PATRICK VAN HOESERLANDE**

We ended the previous article in 1531 with the earliest use of a diving bell during the first underwater archaeological research conducted by the Italians, Guglielmo de Lorena and Francesco de Marchi on their discovery of the luxurious pleasure galleys of the Roman Emperor, Caligula. Did this mark the beginning of the diving bell's heyday?

An Experiment on a bird in an air pump by Joseph Wright of Derby, 1768.



**ABOVE:** 1538 diving bell for 2 persons by Midjourney – Ivo Madder; Nicholas Tartaglia's diving machine; William Bourne's 'diving chamber', or sumarine.

We ended the previous article in 1531 with the earliest use of a diving bell during the first underwater archaeological research conducted by the Italians, Guglielmo de Lorena and Francesco de Marchi on their discovery of the luxurious pleasure galleys of the Roman Emperor, Caligula. In just a few weeks, they found these sunken ships and their treasures, while others had searched Lake Nemi for years without success.

However, finding the sunken ships and successfully salvaging the treasures did not mark the beginning of the diving bell's heyday.

## FIRST MULTI-PERSON DIVING BELL

The next practical conquest of the deep came sometime around 1538. In that year, two unknown Greeks (although some believe that one of them may have been the Italian Lorena) gave a demonstration in Toledo, Spain, in the presence of Emperor Charles V and more than 10,000 spectators. Sitting on planks mounted in the diving bell, these 'Greeks' slowly lowered themselves to the bottom of the Tagus River. To enhance the dramatic effect, but probably also to avoid being in complete darkness, and as an indication of the presence of sufficient oxygen, they lit a candle. The fact that the candle was still burning after an hour underwater seemed to amaze the audience the most.

Despite the successful outcome of this demonstration, the diving bell itself was not yet a success. However, that did not mean that others did not attempt to build a diving bell.

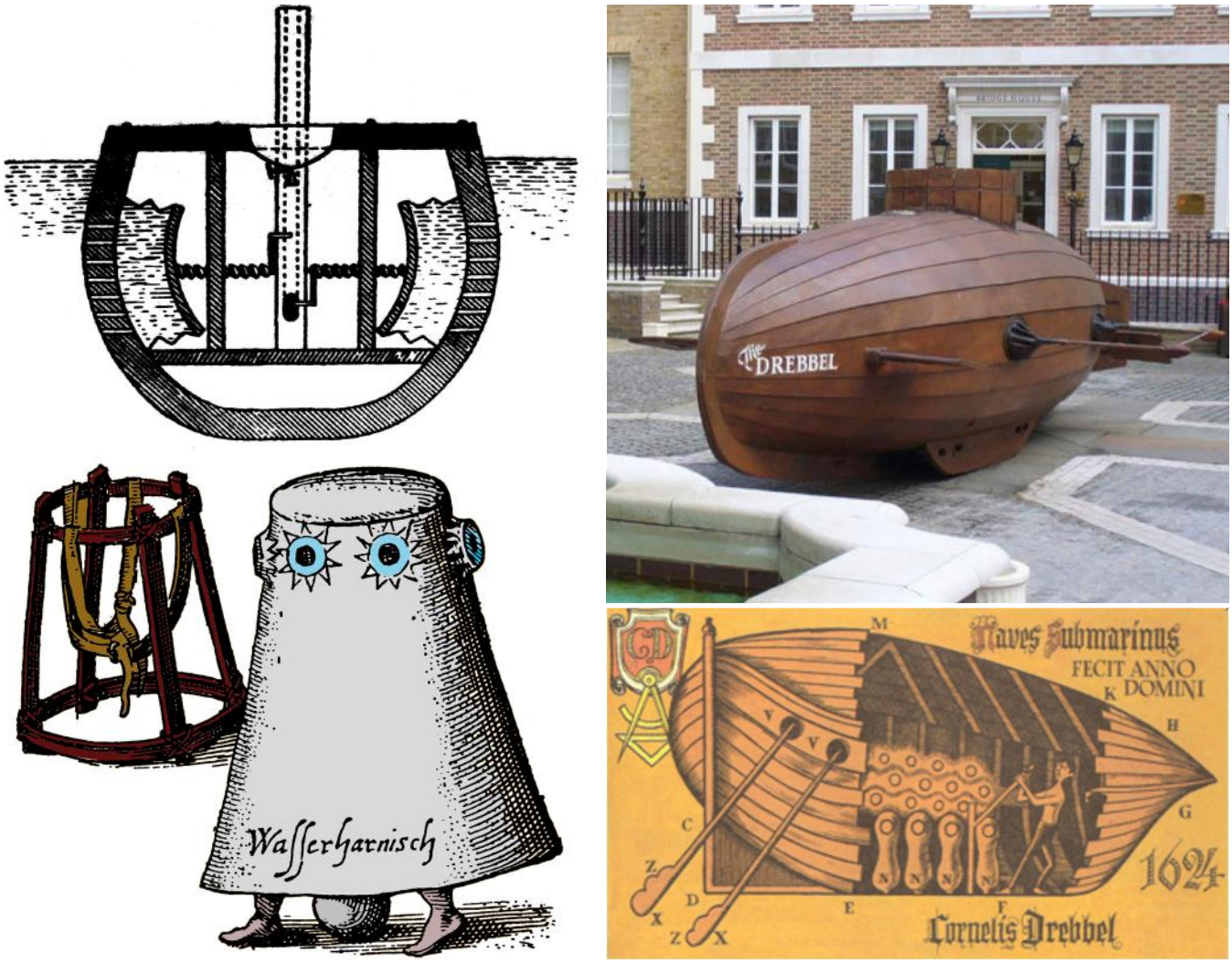
## UNUSUAL DESIGN

In 1551, the Italian Nicholas Tartaglia (1499/1500-1557) designed the 'Diving Machine'. The diving apparatus of this mathematician, accountant, and engineer resembled a huge hourglass. A wooden frame held a glass sphere in place, into which the diver had to put his head. Inside, the diver could breathe and had a good view of the underwater world. The whole thing, together with a very heavy weight, was lowered down on a thick rope. At least, that was the intention. An impractical and peculiar design, about which little is known.

## FIRST RECORDED DESIGN OF A 'DIVING CHAMBER' OR SUBMARINE

In 1578, William Bourne (1535-1582), an English mathematician and former gunner in the Royal Navy, drew the first recorded plans for underwater navigation. His design was a completely enclosed boat made of wood bound in waterproof leather. This enclosed boat could dive and move forward under the water's surface using oars. Borne's submarine design was based on ballast tanks that could be filled to submerge, and blown to return to the surface. The same principle is still used in modern submarines.

Diving chambers offered a solution for working in turbulent waters as diving bells were unable to do so due to the risk of capsizing, which would result in certain death for the inhabitants. William Bourne published a book in 1578 entitled 'Inventions or Devises'. This visionary work contained more than a hundred ideas relating to maritime and military matters and provided practical solutions to many problems, either by proposing techniques (devices) or inventions. Among other things, he explained how to make a telescope (Hans Lippershey is usually credited with making the first telescope in 1608, as he was the first to apply for a patent for it). With his 'Device 18', he proposed two methods by which a ship could submerge itself underwater and then rise to the surface, while providing air to its occupants. What he proposed was (in




**ABOVE:** William Bourne's 'diving chamber illustration; Franz Kessler's walking diving bell; Cornelis Drebbel's submarine on display, and the illustration below.

modern terms) nothing less than a submarine with water ballast tanks and a snorkel. Bourne described how these ballast tanks should be built and operated. In principle, this amounted to internal watertight chambers on either side of the boat, with holes drilled into the side of the boat. This allowed water to enter for diving and was expelled using screw-operated 'pistons' to rise again.

"… you must have one mast, and must be of sufficient bigness, that it must have a hole bored through the one end unto the other… for the hole that goeth through the mast must give you air, as man cannot live without it." Bourne even came up with a watertight hatch: "… then for the hatch or skotel, that you must go in or out, you must have leather round about it, that you may bring that together as a purse mouth, and so with a small screw, you may wind it so close together, that being in the bottom of the water, there shall no water come in…" It would take another 200 years before water ballast tanks or a snorkel were first used in a functional submarine.

This diving chamber was never built, and although we know that the principle was followed in the construction of the first submarine some four decades later, for almost a century and a half, no one seemed to show much interest.

## WALKING DIVING BELL

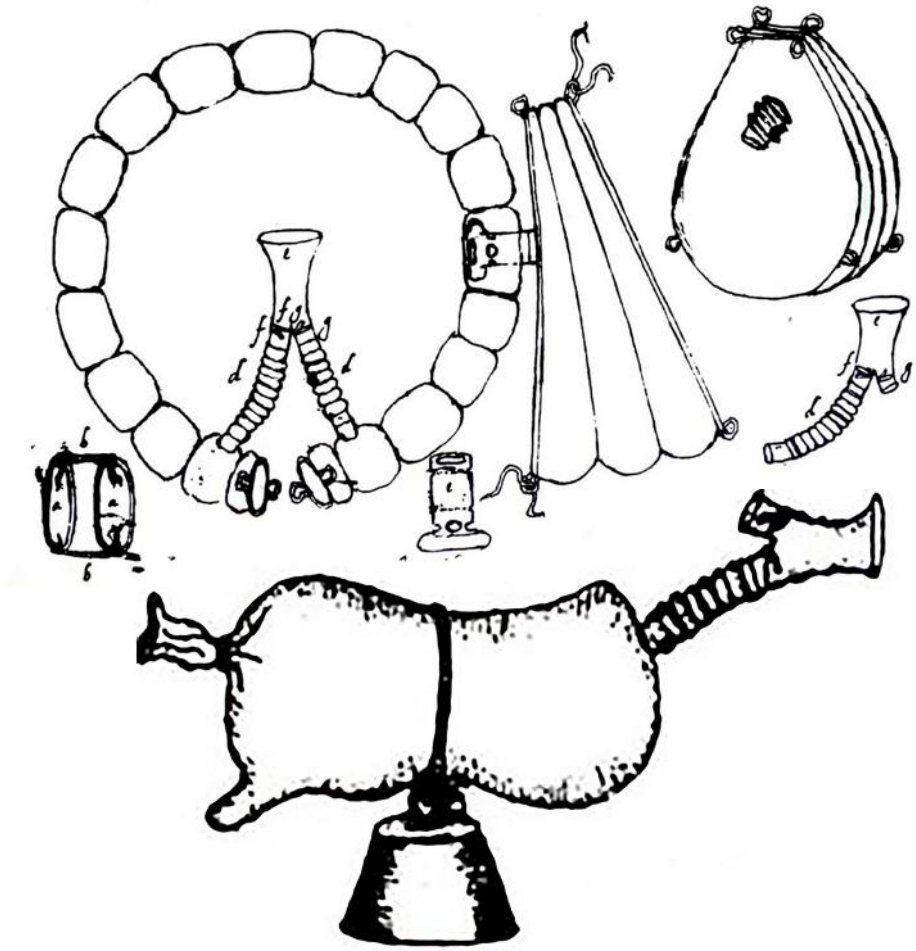
The diving chamber may not have been popular, but the diving bell slowly began to gain ground. In 1616, the portrait painter, inventor, and alchemist Franz Kessler (1580-1650) designed a one-person diving bell. In his model, the diver sat in a frame on which a heavy, bell-shaped metal casing rested. The diver could view his surroundings through a series of small holes. The whole thing was slightly heavier than neutral buoyancy, so that the diver could walk along the bottom without much effort. However, walking was not without risks, because the slightest misstep could cause the whole thing to tip over, trapping the diver under the heavy structure and probably resulting in drowning.

## THE 'FIRST' SUCCESSFUL SUBMARINE

Various sources mention the submersible rowing boat that Cornelis Drebbel designed and built in 1620 as the first successful submarine. Meanwhile, you have read that, if we are to believe the writings of the Swedish historian Olaf Magnus, the Greenlanders had already achieved this in 1505 with a similar concept. Nevertheless, Drebbel deserves to be mentioned.

Drebbel, a Dutch inventor and naturalist who lived in London for much of his life, built two successful experimental submarines between 1620 and 1624. When building his submarines, Drebbel adopted some of William Bourne's ideas. Drebbel's third boat was made of wood covered with tight-fitting sheets of greased leather and could accommodate twelve rowers and eight passengers. Oars protruding from the sides of the boat through flexible leather seals propelled the boat through the water. Amazingly, the vessel could dive to a depth of 20 metres (3 bar!) and travel 10km. It made several hour-long trips from Greenwich to Westminster at an average depth of 4 metres under the surface of the River Thames.

Drebbel was also the first to effectively address the oxygen problem during the dives with this submarine. How he did this is still a matter of debate. Some believe that the submarine had two tubes with snorkels, which were kept above the water with floats, thus supplying the submerged vessel with air. Others believe that Drebbel created oxygen by heating sulphur



**ABOVE:** Two of Fleming Valangren's breathing devices from 1631.

and potassium nitrate. Either way, atmospheric pressure prevailed inside the submarine.

According to tradition, Drebbel even took King James I on a test dive in his submarine, making the latter the first monarch to travel underwater. Despite consistent, successful dives and the royal passenger, the submarine never aroused enough interest in the navy to investigate how this new type of boat could be used in battle. We would have to wait a long time for that.

## FIRST KNOWN INSTANCE OF AIR BEING PUMPED TO A DIVER AND THE FIRST DESIGN OF A SNORKEL

In Spain, a country that was virtually constantly at war during the sixteenth, seventeenth, and eighteenth century, inventors were particularly busy. Spanish archives are full of early SCUBA designs, some promising, others downright ridiculous. In 1631, during the Dutch domination of the high seas, Spain was drifting toward bankruptcy because Dutch ships were capturing many Spanish ships carrying treasures from the New World. To remedy this situation, a desperate King Philip IV offered 10,000 ducats to anyone who could make usable SCUBA equipment. According to spies, there were sometimes as many as 500 ships in the ports of Amsterdam and Rotterdam. Relying on this information, King Philip planned to send divers to one or both ports during a storm to cut anchor cables so that these ships would collide with each other. Because the Dutch had sentries on all their ships, the plan could only work if the divers were not discovered. A special commission was appointed to study the designs that poured in from all corners of the Spanish Empire. None of the designs were deemed feasible, and the plan to deal the Dutch a stormy death blow had to be abandoned.

Although no design was found suitable for the operation, there were a number of very interesting proposals, including three submissions by the Flemish inventor, Florencio Valangren. The first was a long breathing tube, similar to designs already devised by other inventors, but unusable for more than shallow snorkelling. However, his design had an original touch: an exhaust valve at the bottom of the tube to easily evacuate exhaled air. The second design was also a tube, but the end was connected to a bellow above the surface. This is the first known case of air being pumped to a diver, more than 60 years older than Papin's proposal. The device allowed a diver to work in deeper water. According to Valangren's accompanying letter, similar devices were in use in Flanders and the Netherlands, mainly for repair work on ships.

The third design, the only very primitive design of a SCUBA, consisted of a large bag made of animal skin that was pumped full of air by bellows and dropped to the seabed with weights. Attached to the skin bag was a tube with a mouthpiece that could be opened by the diver when he needed to breathe while swimming freely in the water. The letter stated that this device, like the tube-bellow combination, was in use. There is no reason to doubt this: with an air bag made from cowhide and lowered to a depth of 6 metres, a trained free diver could stay there for fifteen minutes.

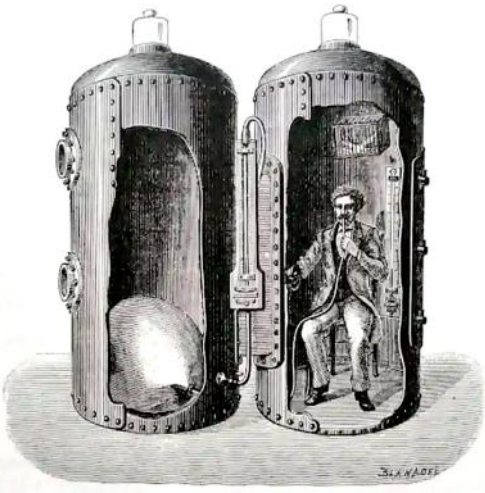
Another anonymous invention sent to Filip was even more interesting, as it took the development of SCUBA equipment a step further. It consisted of a tubular air reservoir worn like a belt and probably made from animal intestines. At one end was a mouthpiece and at the other a bellow that allowed the diver to draw air from the surface without assistance. The air reservoir was too small to hold much air, but an experienced free diver could dive for up to ten minutes before having to refill the air reservoir.

## THE FIRST AIR PUMP

Until then, a bellow was the only way to get air to a diver. A bellow can move a large amount of air (a popular feature amongst blacksmiths), but its flexible walls means it can't build up much pressure. This limits the depth at which a diver can operate. To open the gates to greater depths, we needed the inventiveness of Otto von Guericke (1602-1686), a German scientist, inventor, and politician. In 1650, he succeeded in building the first effective air pump. This air pump was used in the Magdeburg experiment, in which horses failed to separate two hemispheres held together by a pressure lower than the ambient pressure.

## WIND-UP SUBMARINE

In Rotterdam, a Frenchman named De Son decided to build a submarine, and in order to attract investors, he claimed to have an invention. The power of advertising must have been limited at that time, because De Son had to build his submarine largely at his own expense. The submarine was about 24 metres long and 2.5 metres wide. It was made of wood, reinforced with iron beams. At the front and rear, there were large iron rams for attacking enemy ships. Propulsion was provided by a large, spring-driven paddle wheel in the middle of the vessel, half submerged in the water. During tests while the submarine, which was in fact a ship, was moored at the quay, the wheel worked well and provided 'propulsion' for eight hours before it had to be rewound. Once the ship was launched, it turned out that the clockwork mechanism was not strong enough to set the paddle wheel in motion. The fact that water has a greater density and weight than air, had escaped the builder's attention. The invention was a failure. To recoup some of the costs incurred, De Son turned the boat into an exhibition for which curious visitors had to pay an entrance fee. De Son's fiasco probably discouraged future inventors, because there followed a long period of silence surrounding submarines.


**ABOVE L-R:** French physicist and priest, Edme Mariotte; Nathaniel Henshaw's hyperbaric chamber; Blaise Pascal's experiments on pressure.

## KNOWLEDGE ON THE RELATIONSHIP BETWEEN TEMPERATURE & VOLUME

Robert Boyle (1627-1691) was an Anglo-Irish natural philosopher, chemist, physicist, and inventor. He is now regarded as the first modern chemist and one of the pioneers of the modern, experimental, scientific method. We know him from Boyle's Law. The peculiar thing is that this law was never explicitly formulated in the works of this scholar.

In 1660, Boyle published the first edition of 'New Experiments Physico-Mechanical: Touching the Spring of the Air and their Effects', which described experiments that Boyle and his assistant Robert Hooke carried out to reduce air pressure. Boyle gave much more detail than modern scientists about the 43 different experiments with air and an air pump, among other things, and listed all the tedious measurements he had carried out. For example, he described the problems with glass shattering and the struggles with glass tubes that were so long that they had to be placed in a stairwell. Boyle and Hooke discovered that in a space with reduced pressure, sound travelled less well, liquids evaporated more quickly and animals died. Boyle, it turned out, could create a vacuum, or something close to it. The book proved controversial because it challenged the contemporary scientific knowledge. At that time, scientists believed that air was one of the four elements (air, earth, fire, and water), and a vacuum was therefore considered impossible.

What we know as Boyle's Law was originally published in 1662 in the appendix to the second edition of the book. This edition contained arguments intended to silence his scientific opponents, as well as a modest table of numbers showing the inverse relationship between the pressure and volume of air. Although it was never explicitly stated, Boyle's Law could be found by following Boyle's invitation to compare two columns in his table. The numbers were the result of an experiment in which Boyle and Hooke poured mercury into a glass J-shaped tube. This J-tube was closed at the short end and open at the long end. As they poured mercury, the air in the short end became more compressed. By measuring the height of the mercury, Boyle was in fact measuring the pressure of the enclosed air.

Hooke's role in the experiments is sometimes forgotten. Hooke built the version of the air pump used by his employer Boyle for the experiments. Fortunately, he is better known for his own law, Hooke's Law, based on his work with springs. There is a direct link between Hooke's work with the 'elasticity' of air and the relationship he found between force and the compression of a spring.

The dissemination of scientific knowledge was much slower then than in our digital world. In 1676, the French physicist and priest, Edme Mariotte (1620-1684), independently of Boyle's research, published his results demonstrating the inverse relationship between pressure and volume. Mariotte went a step further by stating that this relationship was only valid at a constant temperature. Thanks to his independent discovery, we know the law governing the relationship between pressure and volume as Boyle-Mariotte's Law. Mariotte is also known for designing the first 'Newton's cradle.' You may have seen this arrangement of colliding metal balls suspended on wires somewhere.

## FIRST HYPERBARIC CHAMBER

The English priest and doctor Nathaniel Henshaw (1628-1673) claimed, without any scientific evidence, that higher pressure would alleviate emergency situations, while lower pressure would help with chronic conditions. A system of bellows with unidirectional valves was designed to increase or decrease the ambient pressure in an airtight chamber called the 'Domicilium.' Due to the use of bellows, the pressure difference probably did not exceed one metre of water (+/- 0.1 bar). Nevertheless, he believed that a therapy session in his 'Domicilium' would improve digestion and prevent lung diseases. Nothing was written about the increased oxygen concentration, as this gas had not yet been discovered. As far as is known, this hyperbaric chamber was never used in the treatment of a diving accident.

## KNOWLEDGE ABOUT PRESSURE

Blaise Pascal (1623-1662) was a French mathematician, physicist, inventor, philosopher, and Catholic writer. He was a child prodigy raised by his father. Pascal's first mathematical work was on conic sections, and at the age of 16, he wrote an important treatise on projective geometry. Later, he corresponded with Pierre de Fermat on probability theory, which greatly influenced the development of modern economics and social science. In 1642, motivated to help his father in his profession as a tax collector in Rouen, he began pioneering work on calculating machines, which led to the development of the 'Pascaline' in 1645, the first real calculating machine. He used dials to enter whole numbers and could only add and subtract.

He then returned to his scientific interests and tested the theories of Galileo and Evangelista Torricelli (the Italian physicist who discovered the principle of the barometer). In doing so, he reproduced and expanded experiments with atmospheric pressure by building mercury barometers and measuring air pressure. These tests paved the way for further studies in hydrostatics and dynamics. His work in this field led later scientists to name the unit of pressure, 'the Pascal.' While experimenting, Pascal invented the syringe and created the hydraulic press, an instrument based on the principle that became known as Pascal's principle (sometimes also called Pascal's law): pressure exerted on an enclosed fluid is transmitted undiminished by the fluid in all directions, regardless of the surface on which the pressure is exerted. His publications on the problem of the vacuum (1647-1648) contributed to his reputation.

Some also know Pascal for his religious 'wager': if God does not exist, the sceptic loses nothing by believing in him; but if he does exist, the sceptic gains eternal life by believing in him.

# A BREATH OF HOPE: GREEN SEA TURTLES RETURN

WORDS AND PHOTOGRAPHY BY **SAMER HALWANY**

Decades of sustained effort have delivered remarkable results. By 2025, the green turtle reached a historic conservation milestone: its global status was reclassified from Endangered to Least Concern on the IUCN red List.

A green turtle in Lebanon.

Musandam, Oman

Maldives

Philippines

The green sea turtle is a beautiful species that enjoys a global distribution, inhabiting tropical, subtropical, and temperate waters across the Atlantic, Pacific, and Indian Oceans, as well as the Mediterranean Sea. I have been fortunate to encounter this magnificent marine reptile at dive sites around the world, from the coastline of my home country, Lebanon, to the crystal-blue tropical waters of the Maldives and the Philippines, and even the dramatic fjords of the Musandam Peninsula.

These gentle marine nomads have always added a sense of hope to my dives. Through my lens, I had the privilege of getting close to them, documenting their behaviour and daily activity. This experience deepened my understanding that, despite their wide global distribution, green sea turtles have long been highly threatened and were classified as endangered on the IUCN Red List

## AN ARCHITECT OF SEAGRASS MEADOWS

Unlike most sea turtles, adult greens are primarily herbivorous. Feeding mainly on seagrass and algae, they play a critical ecological role. By grazing seagrass beds, they promote healthy growth, improve the nutrient cycle, and help maintain habitats that support countless marine species – including fish, crustaceans, and even carbon-storing ecosystems that benefit the planet.

Green turtles are amongst the largest hard-shelled marine reptiles on Earth. Adults can reach up to four feet (1.2 metres) in length and weigh as much as 200 kilogrammes. They are long-lived animals, often surviving 70 to 80 years, and yet their path to adulthood is slow and perilous. It takes between 26 and 40 years for a green turtle to reach sexual maturity – a vulnerability that makes population recovery a

Lebanon

long and delicate process.

Females lay up to 115 eggs per nest and may nest several times in a single season. Guided by an extraordinary instinct known as natal homing, they return decades later to the exact beach where they were born to lay their own eggs. Their anatomy reflects their lifestyle: a short, non-hooked beak and a serrated lower jaw perfectly adapted for mowing seagrass like underwater lawnmowers.

## THE SILENT DECLINE

### (Conservation Status and Threats)

In 1982, the green sea turtle was classified as Endangered by the IUCN (International Union for Conservation of Nature). This classification resulted from a massive population decline caused by multiple human-induced threats, including:

- **Ocean Pollution:** Ingestion of marine debris, plastic waste, and ghost nets leads to fatal internal injuries, drowning, and starvation.
- **Habitat Loss:** Coastal development and artificial lighting deter nesting females and disorient hatchlings.
- **Hunting and Illegal Harvesting:** For nearly two centuries, green turtles were heavily hunted for their meat (notably for green turtle soup), shells, and eggs.
- **Vulnerability of their Life Cycle:** Green turtles take 26 to 40 years to reach sexual maturity, meaning population recovery takes decades.
- **Climate Change:** Rising sand temperatures cause imbalanced sex ratios (warmer nests produce more females), while sea-level rise threatens nesting beaches.
- **Disease:** Fibropapillomatosis (FP), a disease linked to poor environmental health, causes debilitating tumour growths.
- **Fisheries By-catch:** Accidental entanglement in fishing gear such as gill nets and long lines often leads to injury or death.
- **Vessel Strikes:** Boat collisions cause severe injuries, including fractures and propeller wounds, frequently resulting in mortality.

## TURNING THE TIDE

Yet, the green turtle's story is not one of loss alone – it is also a testament to what coordinated conservation can achieve. In 1989, during the Barcelona Convention, Mediterranean nations committed to protecting marine turtle populations by safeguarding nesting beaches, feeding grounds, and wintering habitats. This momentum expanded globally. By 1995, countries across the Western Indian Ocean began developing a regional conservation strategy, culminating in the signing of the IOSEA Marine Turtle Memorandum of Understanding (MOU) in 2001.

These action plans targeted both direct threats – such as hunting, egg collection, by-catch, and habitat destruction – and indirect threats, including plastic pollution and marine debris. Turtle-excluder devices in fishing nets, protected nesting beaches, community-led conservation programmes, and international legal protections all played critical roles.

## A CONSERVATION MILESTONE

Decades of sustained effort have delivered remarkable results. By 2025, the green turtle reached a historic conservation milestone: its global status was reclassified from Endangered to Least Concern on the IUCN red List. This change reflects an estimated 28 percent increase in its population since the 1970s – a rare and powerful success story in marine conservation.

## HOPE BENEATH THE SURFACE

Every time I encounter a green turtle underwater, I am reminded that recovery is possible. Their return is proof that when science, policy, and local communities align, even the most threatened species can reclaim their place in the ocean.

The green turtle is more than a survivor – it is a symbol. A reminder that hope still swims beneath the surface, and that every species, given protection and respect, deserves a second chance.

# THE REEF HUNTER:
## THE CARNIVOROUS NUDIBRANCH

WORDS AND PHOTOGRAPHY BY **MOHAMED MOHSEN**

At eighteen metres below the surface of Khorfakkan's Inchcape 02 wreck, I witnessed a moment that changed how I see the ocean's smallest creatures. A bright orange-and-white nudibranch, elegant and deliberate, was devouring another nudibranch.

## A RARE PREDATOR REVEALED

At eighteen metres below the surface of Khorfakkan's Inchcape 02 wreck, I witnessed a moment that changed how I see the ocean's smallest creatures. A bright orange-and-white nudibranch, elegant and deliberate, was devouring another nudibranch.

This was no ordinary sea slug – it was *Gymnodoris ceylonica*, one of the ocean's few true predators among nudibranchs. Beneath its graceful exterior lies a ruthless hunter, perfectly evolved for stealth, precision, and survival.

## MEET GYMNODORIS CEYLONICA

*Gymnodoris ceylonica* belongs to the family Gymnodorididae, a group of highly specialised predatory nudibranchs found throughout the Indo-Pacific region. It is easily recognised by its translucent white or orange body, dotted with bright orange spots, and long, tapering rhinophores that guide it toward prey.

Unlike many other nudibranchs that feed on sessile organisms such as sponges or hydroids, the *Gymnodoris ceylonica* is a carnivore, feeding almost exclusively on other nudibranchs and their eggs. Its body shape and movement reflects this lifestyle – streamlined, fast, and efficient.

## WHAT DOES IT EAT?

*Gymnodoris ceylonica* preys on other nudibranchs, often species smaller or equal in size to itself. It hunts by detecting chemical cues in the water, using its rhinophores to track down prey. Once found, it extends its eversible pharynx (a tubular mouth) to engulf and consume its target whole – a dramatic contrast to the gentle grazing habits of other species.

It also consumes egg ribbons laid by other nudibranchs, gaining both protein and energy from this specialised diet.This behaviour plays a subtle but important role in the reef ecosystem by regulating nudibranch populations and maintaining ecological balance.

## THE SCIENCE BEHIND ITS COLOUR

The bright orange spots and translucent body of *Gymnodoris ceylonica* serve as both camouflage and warning. In sandy or coral rubble environments, the colours help it blend in while still signalling toxicity. Unlike the more ornamental *Thecacera* species, *Gymnodoris* doesn't rely on mimicry – it depends on speed and stealth.

The species' colouration also varies depending on diet and region. Individuals feeding on brightly pigmented prey often exhibit more intense colouration – a living reflection of the food they consume.

## WITNESSING THE FEEDING BEHAVIOUR

Photographing *Gymnodoris ceylonica* in the act of predation was a rare and thrilling experience. The scene unfolded over several minutes as it slowly consumed another nudibranch, unhurried and deliberate. Its body flexed and contracted rhythmically, drawing the prey inward until only a faint outline remained.

To document this moment, I used my Sony A7 III with a 90mm macro lens, INON UCL-165 wet lens, and Backscatter MF-2 strobes for soft lighting. Maintaining distance and patience was key – this behaviour is easily disrupted by diver movements or sudden flashes.

## ECOLOGICAL SIGNIFICANCE

Though small, predators like the *Gymnodoris ceylonica* are essential to reef ecosystems. By preying on other nudibranchs, they control population growth and help maintain biodiversity. They also serve as indicators of a thriving macro environment – one capable of supporting complex food webs.

Encounters like this remind us that beauty and brutality coexist beneath the waves, often in the same tiny, delicate form.

## PHOTOGRAPHIC INSIGHT

Capturing behaviour is far more rewarding than capturing form. With *Gymnodoris ceylonica*, I focused on the story – how it approached, engaged, and consumed its prey. Using precise strobe placement and gentle movement allowed me to highlight both subjects without intrusion. Each frame documented a natural act few divers ever witness.

## IN SUMMARY: A TINY HUNTER IN A COLOURFUL WORLD

*Gymnodoris ceylonica* defies every stereotype about nudibranchs. It's swift, strategic, and unashamedly predatory – a hunter cloaked in beauty. This species reminds us that even amongst the ocean's most elegant creatures, survival is an art form painted in motion, colour, and instinct.

### ABOUT THE PHOTOGRAPHER

Mohamed Mohsen is an architect, diver, and underwater photographer based in the UAE and Oman.

His macro work reveals the quiet beauty and behaviour of marine life that often escapes the casual eye – from the vigilant guardianship of clownfish to the ethereal drift of nudibranchs.

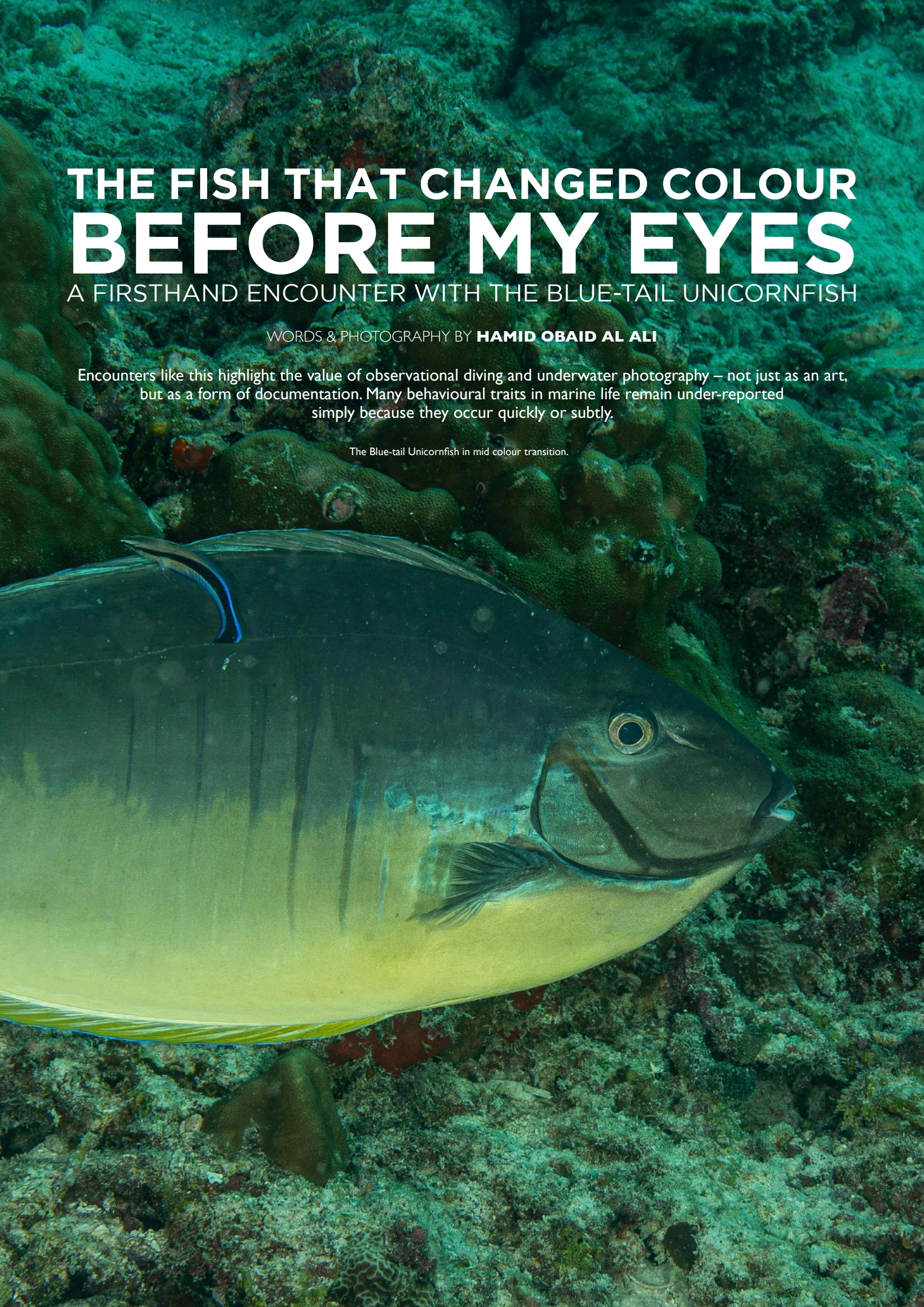
www.instagram.com/m.mohsen.uwp

# THE FISH THAT CHANGED COLOUR BEFORE MY EYES

## A FIRSTHAND ENCOUNTER WITH THE BLUE-TAIL UNICORNFISH

WORDS & PHOTOGRAPHY BY **HAMID OBAID AL ALI**

Encounters like this highlight the value of observational diving and underwater photography – not just as an art, but as a form of documentation. Many behavioural traits in marine life remain under-reported simply because they occur quickly or subtly.



The Blue-tail Unicornfish in mid colour transition.

Before the colour transition.

While diving in the Maldives last January, I experienced one of those very rare underwater moments that makes you question your own perception.

Mid-dive, as I moved slowly along the reef, looking for something interesting to shoot with my underwater camera, I glimpsed over at a large reef fish hovering close to the rocky sea bottom. Its appearance was striking but familiar – until, when I started getting closer to it, it wasn't. The same fish now looked entirely different. Its colouration had shifted so noticeably that my first reaction was disbelief. I genuinely thought my eyes were playing tricks on me.

I watched carefully, replaying the moment in my head, trying to rationalise what I had just seen. Changes in light, angle, or water clarity can easily deceive a diver. But this felt different. The transformation was too distinct, too deliberate.

Upon resurfacing, my curiosity prompted further inquiry. I asked our dive guide whether there were any fish known to change colour so dramatically. To my surprise, he wasn't aware of any species in the area that could do so. That response only deepened the mystery.

Fortunately, I had been filming the dive with an action camera at the same time I was using my underwater photography setup to capture still images of the fish. When I later reviewed both the video footage and the sequence of photographs, I saw exactly what I had witnessed underwater – the same individual fish transitioning between two markedly different colour phases. What initially seemed like a fleeting impression was now unmistakable. Frame by frame, the fish appeared in distinctly different forms: one was pale and silvery, and the other was darker and richly saturated. The video confirmed the continuity of the transformation, while the still photographs froze precise moments in time, providing clear visual evidence of a change that could easily have been dismissed as a trick of light or perception. Confident that this was more than an illusion, I posted a short clip on Instagram and asked a simple question – has anyone seen this fish before, and does anyone know what it is? One of my followers took the time to research the footage carefully, and the answer came back with a name: the Blue-tail Unicornfish (*Naso caeruleacauda*).

## MEET THE BLUE-TAIL UNICORNFISH

The Blue-tail Unicornfish is a member of the surgeonfish family and is found throughout the Indo-Pacific, including the Maldives. Like other unicornfish, it is named for the subtle horn-like protrusion that develops on the forehead of mature individuals, though this feature can be less pronounced or absent in some specimens.

At first glance, this species appears relatively understated compared to more flamboyant reef fish. Its body is large, laterally compressed, and built for cruising open reef slopes and outer reef walls. But what makes it truly remarkable is not its shape – it's the ability to rapidly change colour.

## A FISH WITH MULTIPLE FACES

The colour change I observed is not random.

After the colour tansition.

The Blue-tail Unicornfish is known to exhibit distinct colour phases, shifting between darker and lighter forms depending on its physiological and behavioural state.

In its darker phase, the fish displays a deeper brown to olive colouration, often with a rich yellow underside and a vivid blue tail. In contrast, during a resting, calm, or low-stress state, the same individual may appear pale, silvery, or greyish – almost like a completely different species.

These changes can occur within seconds, driven by specialised pigment cells in the skin called chromatophores. By expanding or contracting these cells, the fish can alter how light is reflected from its body. Unlike permanent colouration, this is a dynamic, reversible process.

## WHY CHANGE COLOUR AT ALL?

Colour change in reef fish serves multiple purposes:

- **Communication:** Signalling calm, stress, or alertness to nearby fish.
- **Camouflage:** Blending with the reef or open water depending on activity.
- **Social Behaviour:** Interacting with other unicornfish or avoiding conflict.
- **Physiological Regulation:** Responding to environmental or internal stimuli.

In the case of the Blue-tail Unicornfish, these transitions are subtle enough that many divers never notice them – or only ever see one phase. Witnessing the transition itself is rare, which explains why even experienced guides may not immediately recognise it.

## SEEING VERSUS OBSERVING

What struck me most about this encounter was how easily such a phenomenon can go unnoticed. We often think of dramatic colour change as the domain of octopus, cuttlefish, or chameleons. Fish, by contrast, are assumed to be static in appearance.

This experience was a reminder that the reef still holds behaviours we overlook, not because they are rare, but because we are not always watching closely enough.

Having video evidence allowed me to slow the moment down, study it frame by frame, and confirm what I had seen. It also opened the door to collective knowledge – without social media and the curiosity of one engaged follower, this fish might have remained an unanswered question.

## WHY THIS MATTERS

Encounters like this highlight the value of observational diving and underwater photography – not just as an art, but as a form of documentation. Many behavioural traits in marine life remain under-reported simply because they occur quickly or subtly.

For divers, photographers, and marine enthusiasts, the lesson is simple: trust your observations, ask questions, and keep recording. Sometimes the most fascinating discoveries are not rare species, but familiar animals revealing unfamiliar behaviours.

The Blue-tail Unicornfish didn't just change colour that day – it changed the way I look at the reef.

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SHEESA BEACH DHOW CRUISES
DIVE AND DISCOVER

ANANTARA
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AL MAHARA
DIVING CENTER L.L.C.

MONSTER
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XR HUB
DIVE CENTER

Canon

DIVE
GARAGE

المحلات الكبرى
GrandStores

Dive
Campus

DIVERS
DOWN

Al Boom Diving

GOBLIN
Diving Center

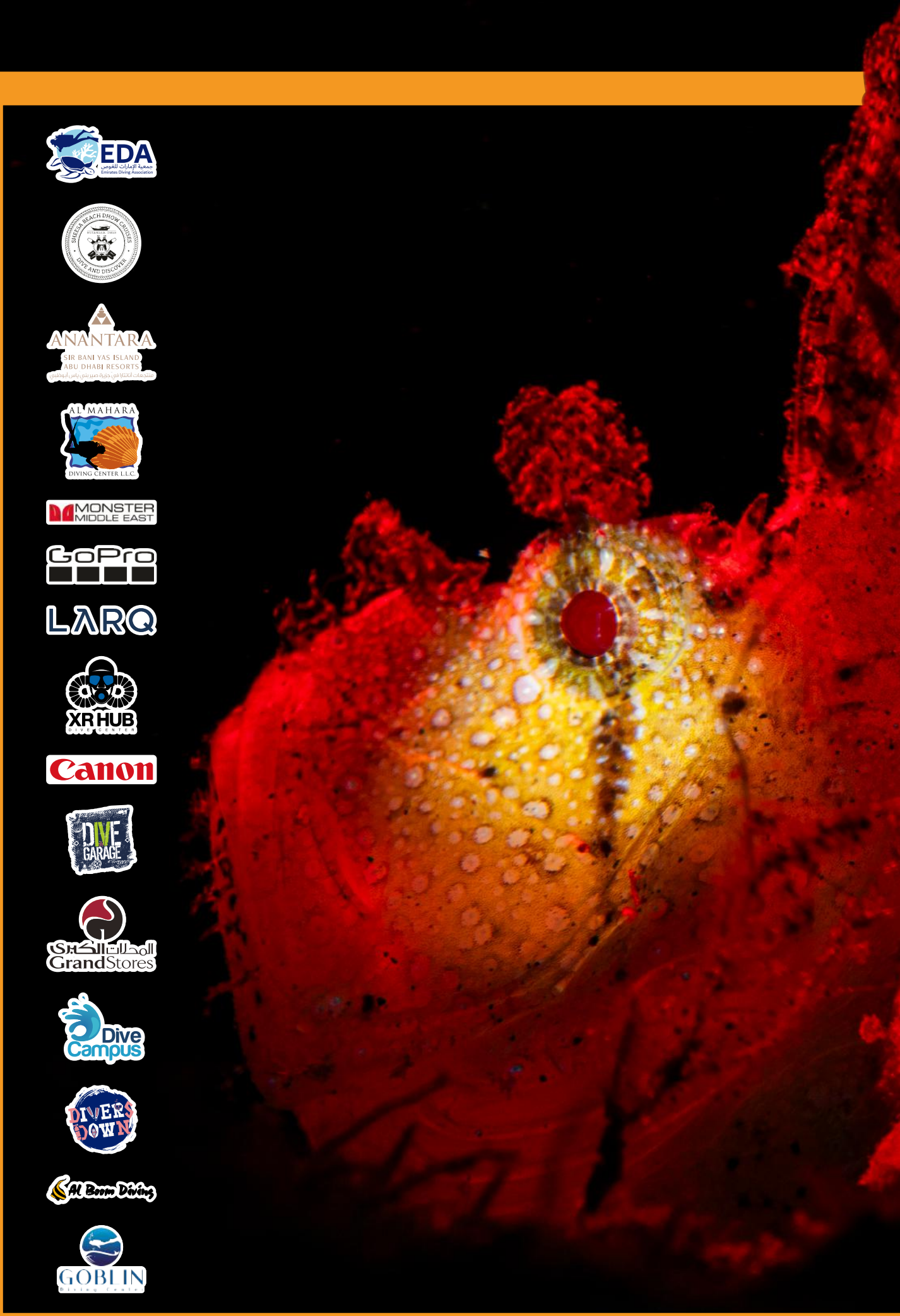


Photo by Fakhruddin Husein – Creative Underwater Photography Digital Online 2025

WWW.EMIRATESDIVING.COM

# ENTER DIGITAL ONLINE

EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION 2026

## HOW TO TAKE PART

Register for EDA Membership to take part in Digital Online and get the chance to win some amazing prizes. Membership gives you access to all of EDA's annual events and activities.

## SUBMISSION DEADLINE

Friday 3rd April 2026 at 11:59pm (GST)

DIGITAL ONLINE

جمعية الإمارات للغوص

EMIRATES DIVING ASSOCIATION

PHOTOGRAPHY AND FILM COMPETITION

# DIGITAL ONLINE 2026

## EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION

**SUBMISSIONS OPEN:** Monday 2nd March 2026 | **SUBMISSIONS CLOSE:** Friday 3rd April 2026 at 11:59 PM (GST)
**DIGITAL ONLINE AWARDS & EXHIBITION NIGHT:** Thursday 14th May 2026 at Deep Dive Dubai at 7pm

**THE EVENT**

DIGITAL ONLINE
جمعية الإمارات للغوص
EMIRATES DIVING ASSOCIATION
PHOTOGRAPHY AND FILM COMPETITION

**AN EVENT BY**

EDA
جمعية الإمارات للغوص
Emirates Diving Association

**EVENT PARTNER**

DEEP DIVE DUBAI

**PRINTING PARTNER**

GIGA WORKS
PRINT WORKS

Digital Online 2025's Awards & Exhibition Night was held on the 15th of May at Deep Dive Dubai. Thank you to all our prize sponsors and partners for making the event such a success!

**DIGITAL ONLINE'S MAIN OBJECTIVES ARE:**

- To develop the human interaction with the underwater environment and highlight the beauty of its flora and fauna.
- To gather information on the number of underwater photographers in the UAE.
- To discover new promising underwater photographers locally and internationally.

**Digital Online is open to all photographers and videographers of all skill levels with a valid EDA Membership status. EDA membership must be renewed if expired or acquired in order to take part: www.emiratesdiving.com/membership-form**

**DIGITAL ONLINE 2009-2026**

Digital Online – EDA's Underwater Photography and Film Competition, is about to celebrate its 17th year! The competition was introduced by EDA in 2009 to resident photographers to develop a relationship and human interaction amongst those unfamiliar with the underwater world environment. The competition holds both local and international marine life categories to offer variety between our local and international diving enthusiasts. The film category was introduced as an extension to the competition in 2012 to share our underwater world through motion pictures and deliver a better understanding of the habitats and surroundings.

The event sees continuous and steady growth with new underwater photographers taking part and joining our regular annual participants. The enthusiasm and passion strives on, and the drive to bring our underwater world's conservation to the forefront increases even more so. The purpose of Digital Online is to keep our underwater world visible by displaying its hidden beauties and to exemplify its importance to all life on Earth through the powers of its ecosystems.

The event has attained equal success with non-divers who come to support the participating photographers and videographers at the annual Awards and Exhibition Night. Whether it's through discussions, or articles published for our readers through our free quarterly magazine, Divers for the Environment, the inspiration the event brings, is a success in its own right.

DIGITAL ONLINE
جمعية الإمارات للغوص
EMIRATES DIVING ASSOCIATION
PHOTOGRAPHY AND FILM COMPETITION

**COMPETITION CLAUSE**

EDA does not disclose photographers' names during the judging process. The competition is run fairly and without prejudice, professionally adhering to all of Digital Online's rules and guidelines throughout.

## RULES AND GUIDELINES 2026

- Digital Online is open to all photographers and videographers of all skill levels with valid EDA membership. EDA membership must be acquired or renewed if expired in order to take part which can be done through the EDA website.
- Each competitor can only win one prize. Other winning images will be displayed at the event as Highly Commended.
- The other prize or prizes are awarded to the next photographer in line with the highest score, and so on.
- Winners will choose their own prize in order of winning status.
- Participants are obligated to follow environmental conservation regulations and to respect the underwater world during the process of taking their stills and videos. Any damage to the underwater world, including the disruption of the natural habitat of marine life, provocation through touching, displacing, feeding or annoying, is prohibited and will disqualify the images or the photographer/videographer.
- By entering the competition, entrants declare that they own copyright of the submitted photographs and films which generates an automatic acceptance of all the rules. EDA reserves the right to publish images in the 'Divers for the Environment' magazine, on EDA's social media pages and EDA website. Images will also be used in any future promotional material for EDA events and competitions royalty free, but copyright remains with the photographer. Use of images or video will require no additional written or verbal permission from the photographer or videographer.
- Images (photos or videos) must not have already been submitted to previous Digital Online competitions.
- Photos and videos must be taken underwater unless specified in a category description.
- Manipulation is restricted to colour correction, brightness, contrast, sharpening and cropping, except for the Creative Photography category. The Digital Online judges reserve the right to examine RAW/untouched images in the other categories if requested.
- Removing backscatter is allowed to an extent, this does not include the removal of subjects such as fish or divers, or cutting and pasting sections of images from one to another, except for the Creative Photography category.
- The winners will be announced and their work displayed at the exhibition and award ceremony on the 14th of May 2026. Participants who do not make it to the evening of the event will be asked to collect their prize from the EDA offices.
- Judges, Sponsors and prizes are announced here in the March 2026 magazine issue.
- We pledge to run this photography and video competition ethically, and with integrity. Our judges have volunteered their time to help. The photographers' details remain hidden to the judges during the judging process.
- All judges' decisions are final.

## HOW TO ENTER

- Submissions may be entered from Monday 2nd of March 2026.
- The entry deadline is Friday 3rd of April 2026 at 11:59pm (GST – Gulf Standard Time).
- Submit entries to: **photo@emiratesdiving.com** with the requested *category details included for each photo and film submission.
- File names should include participant's name and the category as follows:
  1. Name – Macro.jpg
  2. Name – Wide Angle.jpg
  3. Name – Best of the UAE.jpg
  4. Name – Black & White.jpg
  5. Name – Behaviour.jpg
  6. Name – Creative Photography.jpg
  7. Name – An Ocean Story.mp4
- Photo entries must be saved in jpeg format and should be sized between 2000 and 6000 pixels in the longest dimension. Please limit your images to a maximum file size of 5MB. Images will be viewed on a monitor and should be in the Adobe RGB 1998 or sRGB colour space.
- Video submissions must be in mp4 format.
- Photography and video entries are to be sent electronically through WeTransfer.
- You will receive an email to confirm your registration with photos and/or video upload. If you do not receive one within 24 hours, your email may not have come through and you may need to try again.

## HOW PRIZES ARE AWARDED

Once the judging is complete, the winners will be able to choose a prize available to them on the list they will receive via email. Digital Online Judges award a 3-way point system to each photograph/video consisting of Technique, Composition, and Impact which is added to give the image or video's total grand score.

Best of show with the highest points will get first choice. 1st place winners by highest score will choose a prize before all other winners, 2nd place winners before 3rd place winners, etc.

Please note, each individual can only win one prize. If photographers get a multiple win, their highest scoring image will win a prize and the other will get a highly commended mention which will also be displayed at the event.

## PHOTOGRAPHY CATEGORIES

Photographers may enter one image per photography category. The categories are open to photos taken with any type of camera: DSLR, mirrorless or compact.

### * DETAILS TO INCLUDE FOR EACH PHOTO SUBMISSION:

- Photographer Name
- Category
- Location
- Story Behind the Shot
- Camera and Gear
- Settings

1. **MACRO**
   **Definition:** Photographs taken with close-up equipment, portraying underwater flora and/or fauna. The photographer may not crop the original more than 20%. The original image may be requested.

2. **WIDE ANGLE**
   **Definition:** Photographs taken with a wide angle lens (or adapters that provide an equal field-of-view), with or without human presence, portraying the natural beauty of the underwater environment.

3. **BEST OF THE UAE**
   **Definition:** Any underwater subject taken in the UAE or Musandam.

4. **BLACK & WHITE**
   **Definition:** Black and white photography is timeless and elegant. Focus on tonal contrast, shapes and textures and the composition of the shot.

5. **BEHAVIOUR**
   **Definition:** A photograph showing marine life action, such as feeding, cleaning, schooling, mating, fighting, etc. May be captured under or above water.

6. **CREATIVE UNDERWATER PHOTOGRAPHY**
   **Definition:** This field is wide open. It can involve a simple workflow used to capture a unique look of a photo. Or it can be a complex post-processing technique that is used to bring out the mood and textures in an image. Photos entered into this category can be taken in any underwater environment – including controlled environments (e.g., pools, tanks). The main subject can be anything ranging from an abstract concept to a person (a diver, freediver, model, etc.) to a fish. There are no post-processing (photoshop) limits in this category. This category is designed to let your imagination swim free.

## VIDEO CATEGORY

Videographers may enter one film with the following title:

7. **AN OCEAN STORY**
   **Guidelines:** Looking for films of all genres – documentaries, narratives, shorts and animation films. Film subject must focus on all aspects of our underwater world including but not limited to, ocean exploration, wildlife, environmental, conservation and oceanography.

- All film genres will be accepted.
- Content must focus or relate to the ocean.
- Non-English films must have subtitles.
- If music is used, it must be from a public domain or royalty-free.
- Film length should be 5 minutes or less, including credits.
- Winning films will be chosen on creativity and the ability to tell a story that leaves the audience better informed and/or moved by the ocean.

### * DETAILS TO INCLUDE WITH VIDEO SUBMISSION:

- Videographer Name
- Genre
- Location
- Story Behind the Film
- Camera and Gear

# THE SPONSORS AND PRIZES

Digital Online's 2026 Prize Sponsors will be offering this year's 21 winners the following prizes to choose from:
NOTE: Participants are only able to win one prize each. Entrants with multiple winning entries will be given priority in the points awarded.

1. **EMIRATES DIVING ASSOCIATION** (3 Prizes)
**www.emiratesdiving.com**
The Emirates Diving Association (EDA) is a non-profit NGO registered with the Ministry of Community Development and CDA, and accredited by UNEP as an International Environmental Organisation. EDA organises special annual events and activities exclusively for its Members and Partners. Divers are passionate environmentalists, and we inspire each other through our love of the ocean to protect the future of our fragile marine life and ecosystems.

   1. **Cash Prize: AED2,000**
   (Two Thousand Dirhams)

   2. **Cash Prize: AED1,500**
   (One Thousand, Five Hundred Dirhams)

   3. **Cash Prize: AED1,000**
   (One Thousand Dirhams)

2. **SHEESA BEACH DHOW CRUISES**
**www.sheesabeach.com**
**A 2 Nights Sharing Musandam Liveaboard Dive Trip**

   Terms & Conditions:
   - Voucher valid from June to September 2026
   - Includes all meals, up to 6 dives, and full kit available
   - Extra person accompanying the winner on this trip will be offered a 25% discount.

3. **DESERT ISLANDS RESORT & SPA BY ANANTARA AND AL MAHARA DIVING CENTRE**
**https://bit.ly/4rTqR0Y | www.divemahara.com**
**Complimentary one night stay in a Deluxe Sea View Room inclusive of breakfast for two adults and a 2-tank dive trip and a mangrove kayak trip at Anantara on Sir Bani Yas Island.**

   Terms & Conditions:
   Valid from May to November 2026

   ONE ISLAND. THREE DISTINCT EXPERIENCES.
   Escape to Anantara Sir Bani Yas Island, an exclusive destination just off the coast of Abu Dhabi, where a world of adventure and luxury awaits. This private island is home to three unique Anantara resorts, each offering a distinct experience tailored to different types of travellers.

   Anantara Al Yamm Villa Resort presents a refined beachfront experience with its beautifully revitalised villas, each offering breathtaking views of the Arabian Gulf. Couples seeking the ultimate romantic getaway will enjoy this palm-fringed beach hideaway. Anantara Al Sahel Villa Resort invites guests to immerse themselves in nature with safari-inspired villas that offer a seamless blend of wildlife encounters and luxury living. For families seeking the perfect balance of exploration and relaxation, Desert Islands Resort & Spa offers an unforgettable family escape. With its combination of thrilling outdoor activities and serene spa experiences, guests can find the perfect blend for their island holiday.

4. **MONSTER MIDDLE EAST** (3 Prizes)
**GoPro HERO13 + LARQ Bottle Swig Top + Monster Blaster Micro Bluetooth Speaker Bundle**

   Included in each Prize Bundle:
   **GOPRO HERO13**
   - HERO13 Black is the camera for every creator. In addition to best-in-class 5.3K60 video and legendary GoPro durability.
   - HERO13 Black was built to take a beating. It's ready to capture the fun on any adventure whether you're tearing through mud, snow or water (down to 33ft/10m).
   - A water-repelling lens cover even helps eliminate lens flare and other artifacts to help keep your photos and videos crystal clear.

   **LARQ Bottle Swig Top**
   - The LARQ Bottle Swig Top was designed for easy hydrating on the go – simply snap open the cap!
   - Larq first wide-mouth water bottle, we made sure to provide extra room for loading up with ice. Plus, double-wall insulation means that water stays cold for up to 24 hours.

   **Monster Blaster Micro Bluetooth Speaker**
   - The Monster Blaster Micro Wearable Bluetooth Speaker is a compact, clip-on wireless speaker designed for active lifestyles.
   - With IPX7 waterproof protection, it's perfect for outdoor use, including cycling, running, or work.
   - Featuring TWS pairing, built-in mic, and hands-free calling, delivers clear, balanced sound in a lightweight, non-magnetic design.
   - Ideal for staying connected and entertained on the go, this small yet powerful speaker keeps your music and calls within easy reach.

5. **XR HUB** | **www.xrdiving.com**
**Akuana Single Tank Regulator Package:**
   - 1st Stage AKUANA Falcon1
     - Chrome-plated brass
     - Balanced flow through piston design
     - Lightweight performance
     - Swivel Turret
     - DIN 300 connection
   - 2nd Stage AKUANA Falconet2
     - Balanced 2nd stage regulator for smooth, reliable breathing
     - Adjustable airflow (knob + venturi lever)
     - Anti-freeze design for cold water diving
     - Tool-free disassembly for easy maintenance
     - Oxygen compatible for recreational to technical diving
     - Lightweight (320g) with strong depth performance
     - Multi-colour customisation

- AKUANA Scuba Diving SPG
  - Chrome plated marine grade brass
  - Luminescent gauge face
  - Wide 315° sweep from 0 to 400 bar
  - Easy reading high-contrast white face, air spool with viton o-ring included

**6. CANON** (2 Prizes) | https://en.canon-me.com/store/ae/

**1. Canon PIXMA PRO-200S A3 Plus Colour Photo Wireless Printer**

Take the perfect shot, then pair it with the perfect printer to complement your creativity. Canon PIXMA PRO-200S is designed for aspiring photographers to show their true colours in print. Vibrant professional printing and exceptional colour reproduction are just a few clicks away with our new 8-ink dye-based system, helping bring your photos to life. Compact, versatile and easy to use, Canon PIXMA PRO-200S will help you print like the pros. From fine art, glossy, borderless and panoramic media handling to auto skew correction and 3 paper feed options, you get excellent results every time. Backed by exceptional technology and software, like Canon's user-friendly Professional Print & Layout plugin for a one-stop edit-to-print experience, it's all at your fingertips thanks to a 3-inch LCD display.

**More info:** https://bit.ly/3NSB1Aq

**2. Canon SELPHY CP1500 Colour Portable Photo Printer**

Create stunning, richly coloured photo prints that will last up to 100 years[1] with the SELPHY CP1500 compact photo printer. Simple Wi-Fi and USB-C connectivity makes printing from a range of devices fast and effortless. Use the SELPHY Photo Layout mobile app to personalise your photos with custom layouts, text, pattern overcoats, QR codes and more, then print seamlessly from your smartphone to share them with family and friends.

**More info:** https://bit.ly/4qS1MmZ

**7. DIVE GARAGE** (2 Prizes) | www.divegarage.com

**1. DiveVolk Ocean Kit (Seatouch 4 Max)**

A must-have accessory bundle for underwater photography enthusiasts. Perfectly designed to enhance your diving adventures, this kit includes a red filter and a wide-angle lens, tailored to meet the unique demands of capturing the underwater world in vivid detail. The red filter plays a crucial role in colour correction, restoring the natural hues lost in underwater environments, and ensuring your images reflect the true beauty beneath the waves.

**More info:** https://bit.ly/4aSxTgR

**2. DiveVolk SL20 Video Light**

Dive Light 2000 lumen SL20 for Underwater Photography

Crafted for illuminating your deep-sea adventures with 2000 lumens of brilliance. This dual-mode light adapts to your needs with high-power (2000 lumens for 150 mins) and low-power (1000 lumens for 300 mins) settings, ensuring optimal visibility and battery conservation.

**More info:** https://bit.ly/4rGTi23

**8. GRAND STORES** (2 Prizes) | www.grandstores.com

**1. AED 500 Gift Voucher**

Redeemable at all UAE Grand Stores Showrooms.

**2. AED 300 Gift Voucher**

Redeemable at all UAE Grand Stores Showrooms.

**9. DIVE CAMPUS** | www.divecampus.com

**2 East Coast Dive Trips with Dive Campus (4 dives)**

Includes full equipment.

**10. DIVERS DOWN** | www.diversdownuae.com

**3 Pleasure Dives with Divers Down Fujairah**

Includes full equipment.

**11. AL BOOM DIVING** | www.alboomdiving.com

**2 Pleasure Dives with Al Boom Diving on East Coast**

Includes full equipment.

**12. GOBLIN DIVE CENTRE** (3 Prizes)

www.facebook.com/GoblinDC

**1. Two Tank Boat Dive**

- 2 dives with tanks and weights
- 50% off on equipment rental or Nitrox tanks
- Can be shared with one additional certified diver

**2. Two Tank Boat Dive**

- 2 dives with tanks and weights
- 50% off on equipment rental or Nitrox tanks
- Can be shared with one additional certified diver

**3. PADI Search & Recovery Course**

Includes:

- Dry and wet training
- Diving trips (subject to availability)

Excludes:

- PADI eLearning fees

Terms & Conditions:

- The second participant must be a certified diver (for the First & Second Prizes).
- The winner should have at least an Advanced Openwater license (for the Third Prize).
- Winners must contact Goblin Dive Center via WhatsApp (+971 50 505 2423) to book their spots.
- The voucher is valid for 2 months from the date of winner announcement.
- Bookings are subject to availability.
- The prize is non-transferable and cannot be exchanged for cash or other services.
- Cancellations or no-shows will result in forfeit of the prize.
- Standard dive centre policies and safety regulations apply.

## WHO WILL MAKE THIS YEAR'S JUNE MAGAZINE COVER?

# DIGITAL ONLINE PANEL OF JUDGES

## OLIVER CLARKE
Marine Biologist and Award Winning Underwater Photographer

Growing up on the South Coast of England I developed a love for the ocean, which lead me to pursue a career in Marine Biology. After completing my studies in the UK, I spent almost 8 years travelling the world and working in marine conservation, the dive industry and photography. I now reside in Exmouth, Western Australia, with amazing access to the Ningaloo Reef and its iconic megafauna, its hard to find a better place to be an underwater photographer. In 2023 I was named British Underwater Photographer of the Year and have since gained a few more international awards.

www.OllieClarkePhotography.com
www.instagram.com/OllieClarkePhoto
www.facebook.com/OllieUnderwater

## DAVID DILEY | SCARLET VIEW MEDIA
Filmmaker, Underwater Cinematographer and Digital Colourist

David is a multi-award winning Film-maker, Underwater Cinematographer and Digital Colourist from the UK best known for his work with sharks and large marine megafauna as well as his multi-award winning feature documentary, "Of Shark and Man".

His profile has increased rapidly thanks to his work on a wide variety of projects for film and television, alongside his commercial work for a number of household brands.

David is the owner of Scarlet View Media, a high end boutique Production House in the north of England, and is a Panasonic Professional Ambassador and Angelbird Media Creative.

www.ScarletViewMedia.com
www.instagram.com/ScarletViewMedia

## KATE JONKER
Award Winning Underwater Photographer and Writer

Kate Jonker is a renowned ocean explorer, underwater photographer, and storyteller from Cape Town, South Africa. With a deep passion for the sea, Kate has earned national and international recognition for her captivating underwater photography. As an advocate for ocean conservation, she uses her platform to raise awareness about protecting marine ecosystems. Kate's work goes beyond photography – she is a respected writer, speaker, and educator, sharing her expertise through workshops, dive expeditions, and numerous publications.

As co-owner of Indigo Scuba Diving Centre and Underwater Photo Company, Kate leads unforgettable dive experiences and offers personalised photography coaching. Her role as a Marelux ambassador allows her to contribute to the underwater photography community, where she continues to inspire others to explore, appreciate, and protect the ocean's remarkable beauty.

www.KateJonker.com
www.instagram.com/KateJonkerPhotography
www.facebook.com/KateAJonker

## MOHAMED ALMUSALLAMI
Marine Biologist and Award Winning Underwater Photographer

Mohamed is a son of the Arabian Gulf. Coming from a long line of legendary pearl divers and fishermen, a strong bond ties him to the deep blue. He started his passion as a freediver and a spear-fisherman at an early age and naturally fell in love with the beauty of the underwater world.

He took up underwater photography in 2008, and has won several awards and been published internationally since. His eye-catching and distinctive style pushes the limits to how photographers represent life below the waves. Mohamed has dedicated himself to conservation and to the Art of Underwater Photography, putting forth the message, "The Ocean has given our ancestors everything, now it is our turn to give back".

As a marine scientist with a masters degree in Environmental Science, he works closely with sea turtles, dugongs, dolphins, and sharks, where he is also responsible for many rare scientific discoveries in the Arabian Gulf region. Mohamed is also a PADI Instructor, an affiliate at Mohammed bin Rashid Academy of Scientists (MBRAS), the Head of Fisheries Management at the Environment Agency – Abu Dhabi, and a Board Member at the Emirates Zoos and Aquariums Association.

www.instagram.com/b47r

## SIMONE CAPRODOSSI | SUNDIVE BYRON BAY
Award Winning Underwater Photographer

Simone is an Italian underwater photographer, who has been awarded in several prestigious competitions and published internationally. After over 10 years of corporate life in Dubai, he moved to Australia where he co-owns and manages Sundive Byron Bay, a PADI 5 Star Dive Centre offering dives at the amazing Julian Rocks in Byron Bay. After travelling to and photographing many unique diving destinations worldwide, he also runs expeditions with Sundive to help others experience and photograph his favourite ones such as the Sardine Run and Djibouti. Simone was the Overall Winner of Digital Online for two consecutive years until he became a judge for the competition and has been a main feature contributor to the EDA magazine, 'Divers for the Environment'.

www.instagram.com/SCaprodossi
www.facebook.com/SimoneCaprodossiPhotography

## ALLY LANDES | EMIRATES DIVING ASSOCIATION
Project Director, Editor, Graphic Designer, and Photographer

Ally joined EDA in December 2004 when she created and introduced the organisation's quarterly magazine, "Divers for the Environment". She played a central role in the development of Digital Online – EDA's Underwater Photography and Film Competition from its launch in 2009, as well as introducing the film category as an extension in 2012 to share our underwater world through motion pictures, and has managed the event since inception. Today, Ally continues to oversee the EDA team and develop the brand, manages design and production of the magazine, handles photography and videography, and runs the organisation's events and social media, all in the name of ocean conservation.

www.EmiratesDiving.com
www.instagram.com/EmiratesDivingAssociation
www.instagram.com/EDA_UAE

# MY PHOTOGRAPHY JOURNEY

WORDS AND PHOTOGRAPHY BY **OLIVER CLARKE**

I've been working as a professional underwater photographer now for about 8 years and pursuing a career in the field can be daunting. My journey with underwater photography really began whilst I was working as a diving instructor in Muscat, Oman. After graduating with a degree in Biological Sciences, I spent some years working in marine conservation before transitioning into the dive industry where I started taking photos more seriously. I had always been interested in underwater photography and sharing images of the world I would experience beneath the waves, using a GoPro 3+, until picking up a second hand Canon G16 with a housing whilst working in Oman.

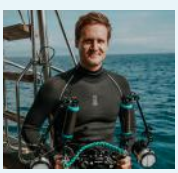
It was here I taught myself all about using manual settings on a camera and started taking a lot more photos. I would spend my days off from working as a dive instructor, going out diving and practising my own photography.

After a few years shooting with the G16 and gradually building up my setup with some lights etc, I decided it was time to invest in a full frame setup and try to pursue photography more professionally. I bought a Sony A7R3 with a Nauticam housing with a macro and wide setup – a huge step up from my leaky old G16. At the time, I was working as a dive instructor in Timor-Leste, with spectacular diving on my doorstep. It was a perfect place to learn how to use my new equipment.

In 2019, I secured a position with a dive centre in Nusa Lembongan, Indonesia, as a content creator. This was the perfect opportunity to work on my skills and really pursue photography full time, rather than having to focus on being an instructor.

After about 9 months in this position, the Covid-19 pandemic put the brakes on for a while, but luckily I was able to get a job in 2021 on the Ningaloo Reef in Western Australia as a photographer on whale shark tours. Since then, I was awarded British underwater photographer of the year in 2023 and still work on the Ningaloo, whilst running my own underwater photography business, selling prints, hosting trips and running workshops, etc.

Entering photography contests can be daunting and I still struggle to pick images, however you have to be in it to win it. New photographers are often surprised at how far their images go, so it is always worth it to enter. Judges always have different perspectives on images and something you may not see yourself, could wow one of the judges.



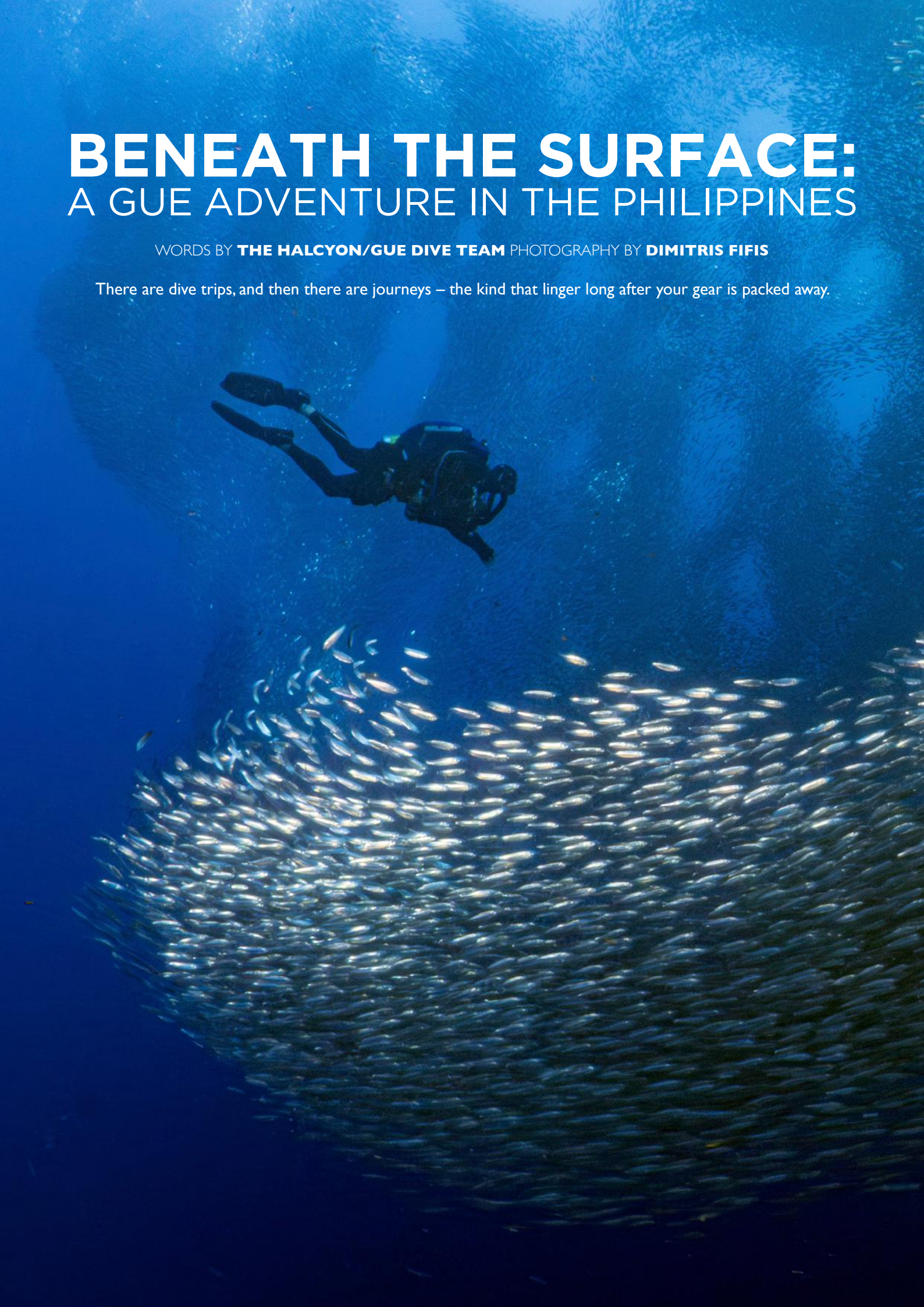
**FOR MORE INFO:**

www.ollieclarkephotography.com
www.instagram.com/ollieclarkephoto
www.facebook.com/ollieunderwater

# BENEATH THE SURFACE:
## A GUE ADVENTURE IN THE PHILIPPINES

WORDS BY **THE HALCYON/GUE DIVE TEAM** PHOTOGRAPHY BY **DIMITRIS FIFIS**

There are dive trips, and then there are journeys – the kind that linger long after your gear is packed away.



The silent, bubble-free Halcyon Symbios CCR allows divers to get closer to marine life than ever before.

There are dive trips, and then there are journeys – the kind that linger long after your gear is packed away. August last year, a spirited group of GUE divers gathered in the Philippines for a week of exploration, laughter, and underwater magic. The trip blended the best of both worlds: tranquil days at the lush seaside resort of Atlantis Dumaguete and a liveaboard voyage aboard the Atlantis Adventurer, the most welcoming dive vessel we've ever experienced.

From the first sunset over the Sulu Sea to the laughter shared after or during dives, it was clear that this would be no ordinary expedition. Each day unfolded into a celebration of diving, camaraderie, and discovery – an experience that united technical explorers and recreational divers alike beneath a shared love for the ocean. What followed was a demonstration of how innovation, hospitality, and shared passion can come together to elevate the diving experience into something unforgettable.

## ATLANTIS DUMAGUETE: SANCTUARY OF LIFE

Nestled in the province of Dauin, Atlantis Dumaguete offers a gateway to one of the most biodiverse marine regions on Earth. More than 440 species of reef-building corals flourish here, supported by thriving marine sanctuaries that protect delicate ecosystems and sustain the greater Visayas region. From the famous Apo Island to the slopes of the house reef, every dive promises wonder – turtles gliding through coral gardens, Anthias swarming like confetti, and macro life so rich, it feels infinite.

The dive guides at Atlantis Dumaguete are experts not only in navigation but in storytelling. They know the names of the resident frogfish, where the mandarinfish emerge at dusk, and how to find the tiniest creatures hidden among coral branches. On any given day, you might hover over a flamboyant cuttlefish changing colour in hypnotic patterns, or watch a blue-ring octopus unfurl its warning display beneath your light. For underwater photographers, this is paradise – a place where patience is rewarded with living art.

## CAMERA COMFORT

Photographers delight in the endless variety: ornate ghost pipefish, frogfish, seahorses, and the surreal play of light on coral. The Atlantis team ensures every detail – from camera handling to dive logistics – feels effortless. Dedicated camera facilities provide well-lit, climate-controlled workspaces with 110v and 220v outlets, letting image-makers prepare and maintain their systems between dives. As Atlantis Photography Ambassador Marty Snyderman notes, "Divemasters and boat captains are happy to take instructions regarding how you'd like your camera system handled, or let you do it all yourself without offence taken."

Meals are another highlight. Served fresh and prepared with local ingredients, each dish reflects the resort's philosophy of thoughtful indulgence. The kitchen staff, attentive and creative, happily accommodates vegan, gluten-free, and other special requests, ensuring everyone feels at home between dives. Dinners often stretch late into the evening, with stories traded across tables and the sound of waves mingling with laughter. It's this blend of comfort and connection that makes Atlantis Dumaguete feel more like a community than a resort.

## THE ATLANTIS ADVENTURER

When it was time to board the Atlantis Adventurer, excitement rippled through the group. The liveaboard – formerly the Truk

Pescador Island's underwater caves provide a perfect sanctuary for whitetip reef sharks, which can often be found resting on the sandy floor during the day.

Aggressor – has been beautifully reimagined for comfort, safety, and exploration. At 32m/107ft long and staffed by an exceptional crew, she carries divers to some of the Philippines' most iconic sites: Pescador, Gato, Kimud Shoal, Balicasag, Pamilacan, and Sumilon. Each site brings a new facet of the Philippines' underwater heritage.

At Pescador, walls draped in coral give way to swirling sardine balls that shimmer like liquid silver. Gato Island reveals its famous tunnels and the mesmerising dance of cuttlefish and frogfish, while Kimud Shoal delivers one of diving's most breathtaking encounters: thresher sharks emerging from the deep. Balicasag Island enchants with turtle cleaning stations and schools of jacks, while Pamilacan's coral walls host sea snakes, reef sharks, and vibrant gardens of hard coral. Finally, at Oslob and Sumilon, the group experienced unforgettable whale shark encounters, a fitting crescendo to a journey through the heart of the Coral Triangle. Floating eye-to-eye with the largest fish in the sea is a humbling, intimate reminder of our place in the vast blue world. The sight of these gentle giants gliding past, unhurried and serene, stays with you long after the bubbles fade.

## CAREFREE LUXURY

Life aboard the Adventurer blended professionalism with warmth. The 15-member crew greeted each returning diver with towels, snacks, and smiles. Between dives, divers relaxed on the sun deck, edited photos in the lounge, or swapped stories over tropical fruit smoothies. Some gathered on the upper deck for socialising under the stars, while others enjoyed the quiet rhythm of the ocean. Every detail – from neatly labelled gear stations to nightly briefings – reflected the precision and pride of a team that genuinely loves what they do.

Meals were chef-prepared and plated with flair – hearty breakfasts, elegant lunches, and dinners featuring grilled marlin, vegetable curry, and roasted pumpkin soup. The galley's creative team became legends of the trip for their mastery of flavour and timing. Beer, wine, and local rum were available, but the true indulgence came from the camaraderie. Between dives, the lounge transformed into a hub of photo editing and storytelling, the air thick with laughter and the occasional burst of applause for a particularly good macro shot.

The Adventurer's itineraries are carefully chosen to balance relaxation and adventure. The crew's ability to anticipate needs – from adjusting schedules to setting up and preparing all relevant equipment – gave everyone a sense of calm confidence. Even on challenging dives, the professionalism shone through, and the joy of discovery never dimmed.

## INNOVATION BELOW THE SURFACE

Beyond the natural beauty, this journey carried a pioneering spirit. Several members of the GUE team were conducting field testing for new features of the Halcyon Symbios™ Rebreather and its integrated ecosystem. Over multiple dives, the Symbios demonstrated flawless performance – from shallow macro sessions to deeper profiles at Kimud Shoal and Balicasag. The unit's intuitive controls, comfort, and minimal buoyancy shift impressed everyone.

Divers also tried the new Symbios-enabled features, including a refined Buddy Screen, allowing easy viewing of a buddy's dive data on either rebreather or open-circuit platforms. The ability to swim by a dive buddy and quickly check critical parameters is both useful and fun. Meanwhile, some recreational divers in the team loved experimenting with the real-time trim position via the Symbios Tank Pod.

Renowned for its dramatic limestone geology, Pescador Island features a honeycomb of caverns and swim-throughs.

The latter allowed divers to monitor trim and gas supply data directly through the Symbios HUD or Handset, fostering team awareness and safety. As one diver noted, "Having real-time data at eye level changes the way we communicate underwater – it's like diving in the future."

With the combination of GUE's team protocols and that of Halcyon's advanced equipment, a joyous and engaging experience was provided for everyone while exploring the future of diving and enjoying the simple pleasures of live experiences. The Symbios rebreather divers worked seamlessly alongside their open-circuit teammates, sharing insights and data that will help refine the next generation of diving technology. Watching advanced technology operate in such perfect harmony with the diver and the ocean was a reminder that the future of exploration is already here.

## SHARED MOMENTS AND ENDURING MEMORIES

The week unfolded as a celebration of both technology and togetherness. Evenings brought sing-alongs under the stars, birthday surprises, and shared reflections over the day's dives. One unforgettable sunset found dolphins racing the bow, while laughter and quiet satisfaction filled the air. The upper deck became a sanctuary of its own, where stories, jokes, and dreams flowed as freely as the sea breeze.

Each diver came away transformed, not only by what they saw beneath the surface but by what they shared above it. The Atlantis crew, with their warmth and meticulous care, set a standard that redefines dive hospitality. Whether helping with camera gear, remembering everyone's favourite snack, or ensuring a smooth liveaboard crossing, they embodied the spirit of the Atlantis motto: "Arrive as a guest, leave as a friend."

As the trip drew to a close and gear was stowed away, no one was quite ready to leave. The Philippines had given us something beyond adventure; it offered connection, discovery, and the reminder that all dives feel like an exploration when innovation meets heart. The gentle sound of waves against the hull and the last sunset over the Sulu Sea seemed to whisper a promise: we will return.

Across all these destinations, Moalboal – Pescador, Gato – Malapascua, Kimud Shoal, Balicasag Island, Pamilacan Island, and Oslob & Sumilon, divers are treated to a stunning variety of habitats, exceptional coral health, and a wealth of marine life. From the shimmering sardine runs of Cebu to the graceful thresher sharks of Malapascua and the turtle-strewn reefs of Balicasag, these sites represent the best of the Philippines' diving and a living showcase of how vibrant and resilient the country's underwater ecosystems remain.

## FACT FILE | DIVE SITES

### MOALBOAL – PESCADOR

Just off the coast of Cebu, the Moalboal – Pescador area is famed for its dramatic marine scenery and vibrant reef life where divers are surrounded by large, shimmering schools of sardines – a spectacle that blankets the reef wall and draws in predators and smaller reef fish alike. At Pescador, the reef drops away in a richly coral-covered wall adjacent to the famous Cathedral cave system, where giant frogfish and other cryptic creatures hide in the shadows. In the Coral Garden, our team found healthy hard and soft corals with scorpion fish and a host of reef dwellers making their home among the branches. The deeper coral walls remain spectacular, showcasing a dense, thriving ecosystem.

### GATO – MALAPASCUA

The offshore island of Gato, near Malapascua, is a marine reserve and sea-snake sanctuary known for its impressive biodiversity. At the Southeast Corner, our team encountered cuttlefish, frogfish, and other camouflaged creatures among the coral. The East Side and Yellow Tip Reef were excellent for our team of photographers due to the abundance of nudibranchs and the vibrant mandarin fish that perform their sunset courtship dances. Gato Island's rugged underwater terrain featured caverns and tunnels where whitetip reef sharks could be found resting, and its currents keep the reefs swept clean and full of life. The coral here was exceptionally healthy, supporting both pelagic and macro species in equal measure.

### KIMUD SHOAL

Kimud Shoal presented engaging encounters with thresher sharks with a reef life that is just as rewarding, with frogfish, anemone fish, schooling jacks, and barracuda adding variety to the spectacle. The shoal's broad coral plateau supports a diverse marine community, and the surrounding blue water teems with pelagic life. With great visibility and robust coral growth, Kimud Shoal offers a perfect combination of big-animal excitement and healthy reef ecosystems.

### BALICASAG ISLAND

Balicasag Island is renowned for its coral walls, crystal-clear waters, and rich marine biodiversity, and it did not disappoint. At Diver's Heaven, our team was treated to numerous sea turtles gliding effortlessly over reefs covered in sponges and hard corals. The Black Forest site treated us to schooling jacks and gentle drift dives, leaving us to float magically past coral-covered slopes. Cathedral showcased a variety of reef fish in brilliant colour, while Marine Bay offered the magic of a night dive filled with octopuses, crustaceans, and hunting fish emerging from the dark. Balicasag's reefs are remarkably well-preserved, thanks to local protection efforts, making it one of the healthiest and most picturesque islands in the Visayas.

### PAMILACAN ISLAND

Pamilacan Island rewarded our divers with a mix of vibrant reefs and pelagic encounters.

At the North Wall, reef sharks were regularly spotted patrolling along the drop-offs, while the Coral Garden delighted our photographers with sea snakes, shrimp, and tiny reef creatures. Pamilacan is also an excellent site for observing the interaction between small reef inhabitants and larger predators, with consistently strong coral health and visibility. Its tranquil setting and variety were a striking blend of beauty and serenity.

### OSLOB & SUMILON

Year-round In Oslob, divers have the extraordinary opportunity to see whale sharks – a breathtaking encounter with the ocean's largest fish. Despite the crowds, swimming alongside these huge fish is an unforgettable experience. Meanwhile, nearby Sumilon Point and Cottage Point provide exceptional reef diving, with fields of coral teeming with reef fish and sea fans. Sumilon's protected marine reserve status has helped preserve its excellent coral cover, making it a superb complement to Oslob's big-animal spectacle. Together, they offer a rare mix of close-up megafauna encounters and thriving coral ecosystems.

# DHUNI KOLHU: TURTLE ISLAND IN THE HEART OF THE BAA ATOLL, MALDIVES

WORDS AND PHOTOGRAPHY BY **ANTHONY LEYDET**

Join me as I explore the small island of Dhuni Kolhu in the heart of Baa Atoll, managed by the Coco Palm eco-resort, whose multi-award-winning eco-responsible commitment sets a gold standard in the region.


A paradise for honeymooners and travellers seeking the ultimate tropical escape, with its postcard landscapes, turquoise lagoons, and coconut palms casting refreshing shadows over coral-white sands. The Maldives archipelago is, above all, an incredible and infinite sanctuary for marine life. While many diving enthusiasts dream of a liveaboard to cover the best sites in a short window, a land-based stay offers a unique opportunity to truly soak in the wild atmosphere of this vibrant archipelago. Join me as I explore the small island of Dhuni Kolhu in the heart of Baa Atoll, managed by the Coco Palm eco-resort, whose multi-award-winning eco-responsible commitment sets a gold standard in the region.

## DHUNI KOLHU: A ROUGH DIAMOND IN THE HEART OF BAA ATOLL

Arriving in Malé, the capital of the Maldives, is somewhat disconcerting. After long hours of flying, one longs for immediate paradise, yet the reality is quite different: concrete, traffic, and high-rises first greet tourists. But our "bird of paradise" is waiting. Comfortably settled (or nearly so!) in the small cabin of a seaplane, the two Trans Maldivian Airways pilots, resplendent in their uniforms and "cockpit flip-flops", throttle up from the channel. We soar northwest toward Baa Atoll, a UNESCO Biosphere Reserve. After a 45-minute flight over islands and ocean in a thousand shades of blue, we splash down in front of Dhuni Kolhu. A true paradise measuring 630m long by 260m wide, the island is blanketed in dense tropical forest and fringed by coral sand beaches that melt into translucent waters. Within moments, you are immersed in a postcard that has finally become real.

The choice of this island was an easy one, given the environmental dedication of the Coco Collection brand, which has worked for years to protect nature both on land and at sea. This devotion has been recognised by numerous awards, establishing Coco Palm as one of the most eco-friendly retreats in the Maldivian archipelago. Plastic is banned, drinking water is bottled directly on-site, there is a dedicated organic garden, and a strict policy of using sustainable materials avoids all waste. Furthermore, a solid partnership with The Olive Ridley Project has established a sea turtle rescue centre on the island. A permanent marine biologist educates guests through weekly lectures and hands-on field sessions, such as coral gardening and the monitoring of numerous turtle nests. The "barefoot" lifestyle, the island's relaxed vibe, and the villas, luxurious yet essential and perfectly integrated into the forest, evoke a sense of authenticity, a rediscovery of the Maldives of yesteryear.

## A SANCTUARY FOR SEA TURTLES

It doesn't take long to understand that everything here is geared toward turtle protection. A simple snorkel off the main beach allows anyone to observe green turtles grazing peacefully in the nutrient-rich seagrass beds, occasionally crossing paths with a blacktip reef shark or elegant stingrays. The other side of the island, more heavily decorated with coral, is perfect for encountering hawksbill turtles and a vast collection of tropical fish.

A stroll around the island takes less than 30 minutes and reveals numerous turtle nests, all marked and protected with data such as the laying date, species, and expected hatching period. Three species come to lay their eggs on Dhuni Kolhu's beaches: hawksbill, olive ridley, and green turtles. With a bit of luck, guests can witness the emergence of hatchlings under the strict supervision of the marine biologist, a

deeply respectful and unforgettable experience. Further inland, the Marine Turtle Rescue Centre houses basins primarily for Olive Ridleys (*Lepidochelys olivacea*). Less familiar to divers, this is essentially a pelagic species that too often falls victim to abandoned "ghost" fishing nets.

## BAA ATOLL: A BIOSPHERE RESERVE AND UNDERWATER PARADISE!

Set within a lush landscape, the Coco Dive PADI diving centre is welcoming, spacious, and perfectly organised. Harsha and his team, always smiling, are passionate about sharing the area's premier sites. More than twenty nearby dive sites await those eager to explore Baa Atoll's depths. The verdict is always the same: the biomass is staggering. Life is incredibly abundant, particularly at sites like Thila named 12.5 (a "thila" is an underwater coral mount that attracts prolific marine life); Rangali Faru, a superb drop-off dotted with caves; or Muthafushi Thila, which we discovered under a dense blanket of fish, a theatre for underwater hunting where jacks and sharks took turns claiming their prey. Located in the southwest of the atoll, a one-hour boat ride reaches the famous Hanifaru Bay, the annual gathering site for manta rays from June to September (a phenomenon dependent on currents and plankton density).

## WHEN TOURISTS PARTICIPATE IN THE CORAL REEF PRESERVATION

As part of their eco-responsible mission, Coco Collection works actively to preserve coral reefs. In the lagoons of their two islands (Dhuni Kolhu in Baa, and Bodu Hithi in North Malé), marine biologists organise coral gardening sessions for guests. This allows everyone to contribute to reviving a portion of the lagoon, creating a coral nursery as a tribute to a loved one or a souvenir of a honeymoon. After an educational briefing, "budding gardeners" attach small pieces of coral, naturally broken fragments collected by the biologist, onto a metal structure. The structure is then submerged alongside existing nurseries, some of which have shown remarkable growth. Almost immediately, curious fish arrive to welcome their new home. We can only wish a long life to these coral fragments!

## EMBUDHOO: THE ROBINSON CRUSOE EXPERIENCE!

Just a 15-minute speedboat ride from Dhuni Kolhu, you can enjoy a once-in-a-lifetime experience: being dropped off on a desert island to spend a few hours or even a night. After a few safety instructions (you still keep a cell phone in case of problems), this tiny private island, completely deserted (except for a few chickens and rabbits), is wide open to you: BBQ, naps, swimming, snorkelling, exploring the trails; everything you need to feel like an adventurer!

Dhuni Kolhu offers the certainty of discovering a wild and preserved nature, far from mass tourism, where marine life remains flourishing. It is a form of tourism that seamlessly blends luxury with authenticity. Watching this pearl of the Indian Ocean fade away from the seaplane window brings an inevitable pang of regret, but you leave with a head full of unforgettable images.

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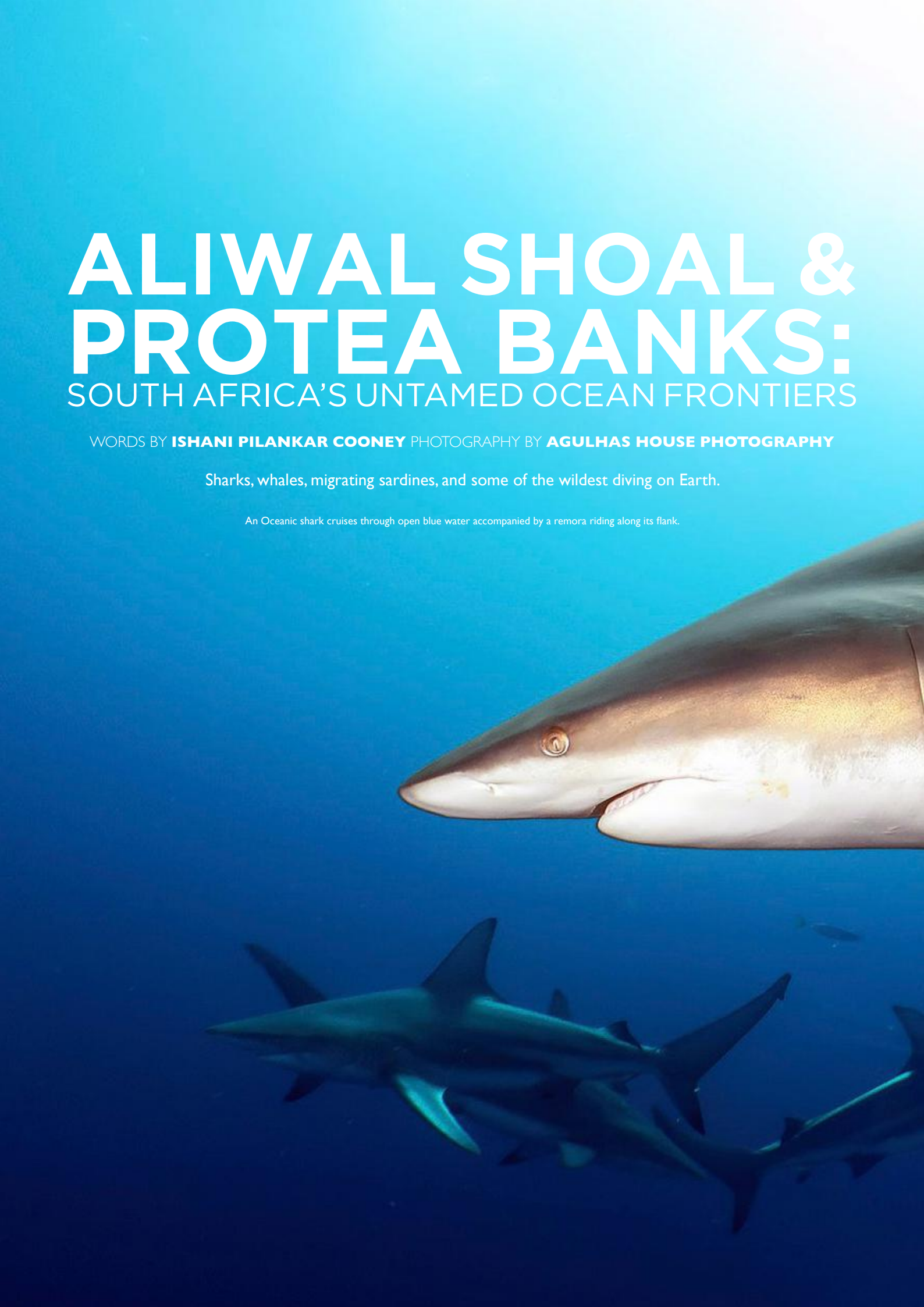
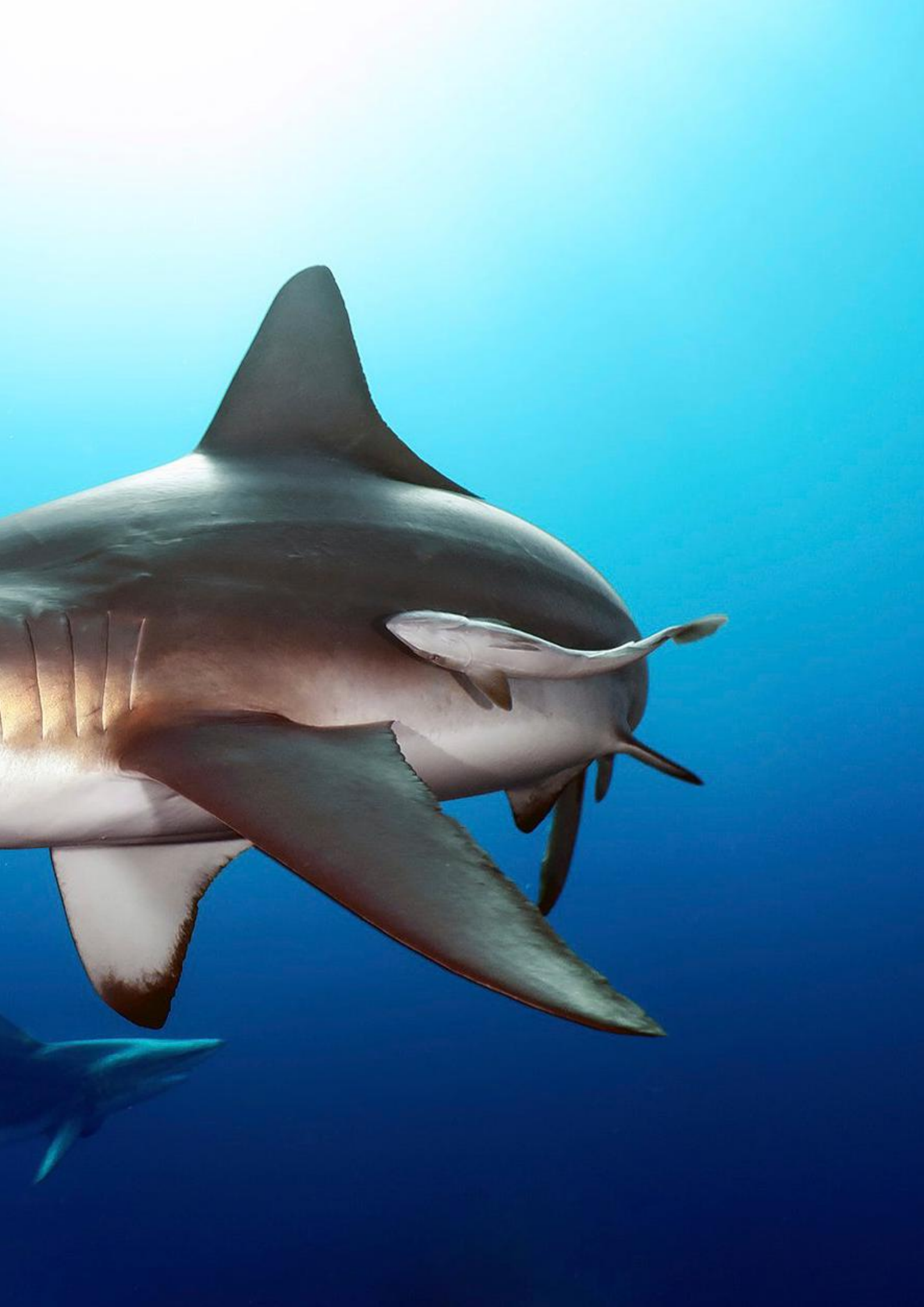
# ALIWAL SHOAL & PROTEA BANKS:
## SOUTH AFRICA'S UNTAMED OCEAN FRONTIERS

WORDS BY **ISHANI PILANKAR COONEY** PHOTOGRAPHY BY **AGULHAS HOUSE PHOTOGRAPHY**

Sharks, whales, migrating sardines, and some of the wildest diving on Earth.



An Oceanic shark cruises through open blue water accompanied by a remora riding along its flank.



A pod of dolphins glide just beneath the surface in the clear coastal waters off KwaZulu-Natal. Photo by Kirsty Andrews

South Africa is home to some truly remarkable dive sites, places where the ocean still feels wild, dynamic, and full of life. Here, sharks cruise along deep reef edges, schools of baitfish move in shifting silver clouds, and every descent brings the chance of an unforgettable encounter.

While divers often gravitate toward the famous reefs of Indonesia or the Galápagos, Aliwal Shoal and Protea Banks offer a different kind of magic: wilder, quieter, and deeply authentic. Once strained by overfishing and shark nets, these reefs are showing signs of recovery under the protection of marine reserves and the determination of local conservationists. Shark numbers are rising, ecosystems are stabilising, and coastal communities are increasingly turning toward ecotourism as a sustainable future. For those willing to venture off the conventional dive map, these sites reveal not only spectacular marine encounters but also a rare and hopeful glimpse of the ocean's resilience.

## THE SHOAL AND THE BANKS A SHARK DIVER'S DREAM

Aliwal Shoal and Protea Banks are not just about spotting a single species; they are among the few places in the world where divers can encounter multiple apex predators on a single dive, all in open water and without cages. Local operators place a strong emphasis on safety, with detailed briefings and strict protocols designed to protect both divers and wildlife. Because conditions can be challenging, an Advanced Open Water certification (or equivalent) and prior experience with strong currents and blue-water diving are strongly recommended to fully enjoy these sites.

Aliwal Shoal is a fossilised sandstone reef famous for its seasonal groups of ragged-tooth sharks. Between July and November, these slow-moving sharks gather in underwater caves like Raggies Cave, giving divers a chance to see them up close. Jacques Cousteau named it among the world's top dive sites.

Protea Banks, located offshore, is a deep reef where divers may encounter up to seven shark species in a single day, including tiger sharks, Zambezi sharks, oceanic blacktips, and both scalloped and great hammerheads. From May to July, hundreds of ragged-tooth sharks gather in the Northern Pinnacle caves to mate. Between October and early May, large groups of scalloped hammerheads sweep through the open water, a rare treat for divers.

## ANCIENT REEFS, WRECKS, AND WILD TOPOGRAPHY

The underwater landscape along South Africa's KwaZulu-Natal South Coast is unique. The Shoal began as a large sand dune during the Late Pleistocene, which later hardened into sandstone. When sea levels rose after the last ice age, the dune was submerged by the Indian Ocean, forming the reef that divers visit today. Its worn ridges now create gullies, overhangs, and swim-throughs.

Sites such as The Cathedral provide shelter for sharks, while nearby shipwrecks, including the SS Nebo 1884 and MV Produce 1974, rest at depths of 27 to 30 metres. These wrecks are now encrusted in coral that attracts moray eels, paperfish, and schools of reef fish. Sponges and soft corals add texture and colour to the Shoal's sandstone ridges.

Farther offshore, Protea Banks sits atop an undersea plateau that drops into deep canyons. The two main dive areas, the Northern and Southern Pinnacles, rise to about 30 metres,

Great white shark approaching in clear blue water. Photo by Brett Louw Photography.

while nearby drop-offs exceed 100 metres. This depth, combined with the powerful Agulhas Current, attracts pelagic species and vast schools of fish, including bonito, kingfish, and tuna. Divers may encounter potato bass, scorpionfish, dolphins, or even a lone turtle. The reef's honeycombed rocks and deep cracks give shelter for reef sharks and large groups of snappers. With its remote location, steep drop-offs, and rich marine life, this rugged terrain gives Protea Banks an "edge-of-the-world" frontier feel and offers an exciting dive for divers seeking something untamed.

## THE GREATEST SHOAL ON EARTH

Although sharks are a highlight, the Shoal and the Banks are full of marine life all year round. Divers often spot reef fish, turtles, stingrays, and potato bass. Occasionally, plankton blooms attract manta rays or whale sharks. The Agulhas Current mixes tropical and temperate species, so every dive is different.

From May to July, these waters come alive with the annual Sardine Run. Billions of sardines move north along the KwaZulu-Natal coast, creating one of the ocean's most intense feeding events. Sharks, dolphins, whales, seals, and seabirds all join the hunt. The Banks are right on the migration path, so divers get a front-row view of copper sharks chasing bait balls, dolphins herding fish, and Cape gannets diving from above. This event, often called the Greatest Shoal on Earth, is as impressive as the wildebeest migration, yet remains a hidden gem.

From June to November, the annual humpback whale migration continues the spectacle. Whales travel north to calve in warmer waters near Mozambique, passing along the coast. Divers may witness breaching, tail slapping, or hear whale songs underwater. Occasional sightings of southern right whales add to the region's appeal.

## WHY THEY REMAIN UNDERRATED

Despite offering world-class marine encounters, Aliwal Shoal and Protea Banks remain surprisingly under the radar, which makes them all the more rewarding to visit.

Ask divers about their dream destinations and names like Sipadan, the Maldives, the Galápagos, or the Red Sea usually come up first. South Africa rarely makes that list. Yet experienced shark divers and locals have long known how special Aliwal and Protea are. Unlike heavily promoted regions such as Indonesia's Coral Triangle or Egypt's Red Sea resorts, these sites have received comparatively little global marketing. The result is fewer boats, more space in the water, and the rare thrill of diving somewhere that still feels wild.

Many people also associate South African diving solely with great white cage diving near Cape Town. Aliwal Shoal and Protea Banks, however, lie far away along a warm subtropical coastline where open-water diving is possible year-round. In summer, water temperatures typically range between 21°C and 27°C.

The nearby coastal towns of eMkhomazi and Shelly Beach reflect this understated character. Instead of sprawling resort complexes, visitors find family-run dive lodges, beach launches straight through the surf, and evenings spent sharing stories with other divers after a day at sea.

The experience feels raw, immersive, and deeply authentic. Even during peak seasons, activity levels remain modest, and it is not

**L-R:** Diver exploring the reef at Protea Banks; Dolphins hunting within a dense bait ball; Whale surfacing beside a small boat. Photo by Pierre Lobel; School of hammerhead sharks moving through open water.

unusual to feel as though you have a vast stretch of ocean almost entirely to yourself.

## CONSERVATION AND ECOTOURISM: A MARINE SUCCESS STORY

In 2019, South Africa dramatically expanded its network of MPAs, reshaping the future of these two legendary dive sites. Aliwal Shoal's protected zone was enlarged fivefold to roughly 670km², encompassing deeper reefs and critical spawning grounds, while Protea Banks was designated a vast offshore MPA of around 1,200km². Virtually overnight, the proportion of South Africa's protected ocean increased from just 0.4% to about 5 percent, a landmark achievement in marine conservation.

Within these MPAs, sharks such as ragged-tooth sharks, Zambezi (bull) sharks, and tiger sharks are fully protected, and extractive activities are restricted or prohibited. Marine scientist Dr Jean Harris notes that the Protea Banks MPA provides a vital sanctuary that supports the recovery of overexploited species while safeguarding the region's exceptional biodiversity.

Aliwal Shoal has also received global recognition as a Mission Blue Hope Spot, championed by Dr Sylvia Earle, a designation reserved for places considered critical to ocean health. This status has helped galvanise collaboration among local conservationists, dive operators, and researchers, transforming the region into a hub for marine science. Shark-tagging programmes, long-term monitoring, and ecological studies are ongoing and offer valuable insights into how subtropical reef systems respond to fishing pressure and climate change.

Community involvement has been central to the success of these protections. Local organisations run beach clean-ups, school outreach programmes, and citizen-science initiatives, including projects that track individual ragged-tooth sharks through photographic identification. Dive operators frequently work alongside researchers, collecting observations during routine trips and turning each dive into a valuable tool for reef monitoring. Visitors can also contribute by participating in citizen science platforms such as iNaturalist or SharkBytes, or by supporting organisations including the South African Shark Conservancy and WildOceans.

Ecotourism plays a crucial role in sustaining these conservation efforts. Here, divers encounter sharks in their natural habitat without cages, fostering genuine understanding and appreciation for these apex predators. Many leave not only inspired but also motivated to support ocean protection. Shark diving provides essential income for coastal communities, creating jobs and strengthening local economies that depend on healthy marine ecosystems. As locals often say, "Once you've dived Protea Banks, you don't want this paradise destroyed."

Aliwal Shoal and Protea Banks demonstrate that with vision, protection, and community engagement, marine ecosystems can recover and thrive. Conservation, research, and sustainable tourism work together here, turning these reefs into living proof of what is possible when people choose to protect the ocean.

## TRAVEL LOGISTICS: PLANNING YOUR DIVE ADVENTURE

For those inspired to experience these reefs firsthand, planning ahead is essential.

### STEP 1: FLY INTO DURBAN AND HEAD SOUTH

Fly into King Shaka International Airport in Durban, the gateway to South Africa's premier shark-diving coast. From there, drive south along the shoreline about an hour to eMkhomazi for Aliwal Shoal, or 1.5-2 hours to Shelly Beach near Margate for Protea Banks. Renting a car gives you the most flexibility, but most dive operators can arrange transfers if you prefer not to drive.

### STEP 2: BOOK YOUR ACCOMMODATION AND DIVE OPERATOR EARLY

There are plenty of affordable dive lodges and guest houses near the launch sites. Choose an experienced operator, as these are offshore

Boat performing a surf launch through heavy breakers.

dives with large animals, not simple reef trips.

Most outings start early and include two dives. Operators provide guides, gear rental, and Nitrox. Boats launch directly from the beach through the surf, which is part of the adventure. If you haven't experienced a surf launch before, it involves timing entry through breaking waves, but crews manage this carefully to ensure safety.

Because the boats are small, trips fill up quickly, especially during peak shark season or the Sardine Run, so booking well in advance is essential.

Your operator choice is the single biggest safety factor. Look for teams with strong local knowledge, conservative dive planning, small groups, and thorough briefings. Be cautious of anyone who guarantees wildlife encounters or downplays conditions.

Reliable operators include Blue Ocean Dive Resort and Aliwal Dive Centre in eMkhomazi, as well as African Dive Adventures, and Aqua Planet near Protea Banks. Agulhas House offers an all-in-one experience that combines accommodation, diving, transfers, and full-board hospitality, which is ideal if you prefer everything arranged seamlessly. I will be working with them again for a June-July expedition for exactly that reason.

## STEP 3: PICK YOUR SEASON BASED ON WHAT YOU WANT TO SEE

Diving is possible year-round, but marine life varies seasonally.

- **July-November:** Ragged-tooth sharks at Aliwal Shoal
- **Summer (Dec-Feb):** Warmer water and tiger sharks
- **Spring & Early Summer:** Schools of hammerheads at Protea Banks
- **May-July:** Ragged-tooth shark mating season at Protea Banks and the Sardine Run

If calm seas are your priority, April-May and September-October typically offer the most stable conditions.

## STEP 4: MATCH THE DIVING TO YOUR EXPERIENCE

Aliwal Shoal suits divers of most levels and is an excellent introduction to encounters with large marine animals. Protea Banks is more demanding. You will need an Advanced Open Water certification because dives are deeper, more exposed, and often involve strong currents. A minimum of 50 logged dives, including experience with drift diving and currents, is strongly recommended. Comfort in open ocean conditions is essential. Nitrox can be particularly helpful for extending bottom time on deeper profiles.

## STEP 5: UNDERSTAND THE MARINE ENVIRONMENT AND SHARK BEHAVIOUR

Shark dives vary widely. Some occur on relatively sheltered reefs, while others take place in the open ocean. Expedition-style experiences like the Sardine Run can be highly dynamic and physically demanding.

Sharks are not naturally aggressive toward divers. Most encounters are calm when divers behave appropriately. Move slowly, avoid sudden movements, stay alert, and never chase animals. Give them space, follow your guide's instructions, and calm behaviour leads to safer, more rewarding interactions.

## STEP 6: PREPARE YOURSELF AND YOUR GEAR FOR CONDITIONS

These dives can be physically challenging. Expect currents, surface swell, surf entries, ladder climbs in moving seas, and long early-morning days. Arrive well-rested, hydrated, and realistic about your limits.

Water temperatures range from about 19°C in winter to 27°C in summer. A 7mm wetsuit with a hooded vest is ideal for winter; a 5mm suit usually suffices in summer. Thermoclines can make deeper water significantly cooler than the surface.

Use familiar, reliable gear. Bring an SMB and reel, a dive computer, an audible signalling device (such as a whistle), and a dive light

for caves and overhangs. Secure equipment to prevent entanglement in current or surge. Warm clothing between dives greatly improves comfort.

### STEP 7: FOLLOW PROCEDURES AND PRIORITISE SAFETY

Ocean conditions can change rapidly. Listen carefully to briefings and follow instructions precisely. Offshore dives often involve quick descents, drifting, and maintaining position in open water.

Stay close to your guide and group to improve both safety and wildlife sightings. Reputable operators carry oxygen, communication equipment, and trained staff. The nearest hyperbaric chamber is in Durban. Comprehensive dive insurance, such as DAN, is strongly recommended.

### STEP 8: PLAN TIME FOR LAND ADVENTURES TOO

Do not rush in and out just for the diving. The surrounding region offers exceptional experiences on land as well, including Big Five safaris, hiking in Oribi Gorge, surfing, whale watching, and beautiful coastal scenery.

Many operators, including Agulhas House, can arrange these activities, making it easy to build a full adventure itinerary. It is also an excellent destination for mixed groups, as non-divers will find plenty to enjoy.

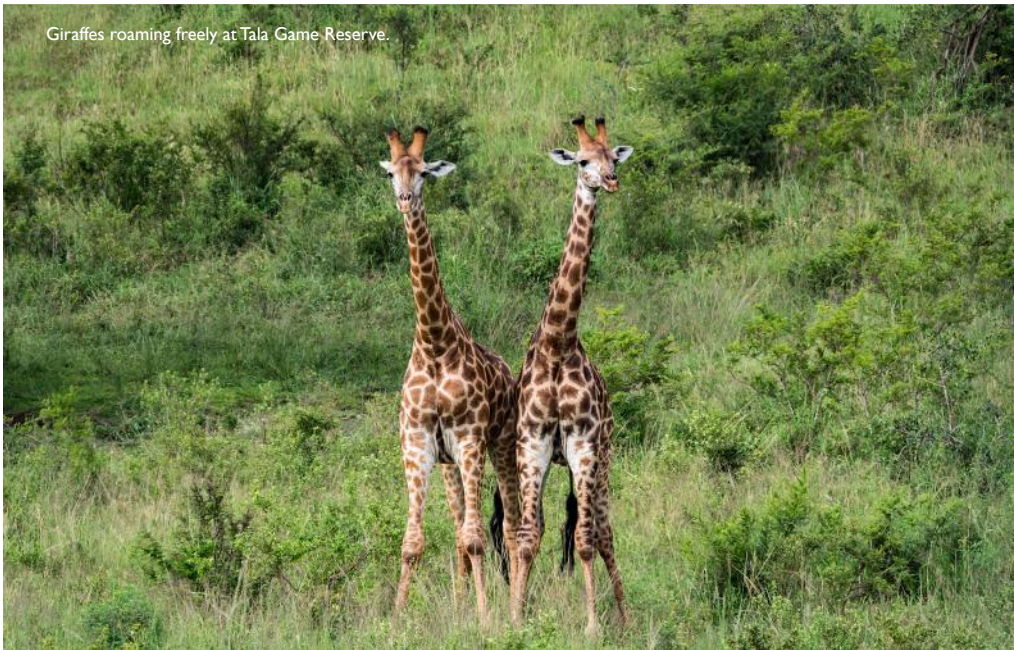
Aliwal Shoal and Protea Banks stand out as two of South Africa's most extraordinary diving destinations, where raw adventure, rich biodiversity, and meaningful conservation converge. These untamed reefs offer far more than thrilling shark encounters. They provide a rare opportunity to witness healthy ecosystems, responsible tourism, and community stewardship working in harmony. Whether you are drawn by apex predators, the challenge of offshore diving, or the spirit of exploration, South Africa's shark sanctuaries promise experiences and perspectives that stay with you long after you surface.

If planning a trip feels overwhelming, you can also join a fully supported expedition. I have partnered with Agulhas House to organise a June-July journey where every detail, from flights and visas to accommodation, meals, transfers, and dive operations, is taken care of. Non-divers are welcome, and training or upskilling can be arranged for those who want to build experience before the main dives. Instead of coordinating logistics yourself, you can simply join the group and focus on the adventure.

However you choose to visit, these reefs are worth the journey. Aliwal Shoal and Protea Banks are not just places to dive; they are powerful reminders of how awe-inspiring, resilient, and worth protecting our oceans truly are.

Camouflaged guitar shark resting on the seabed.


A dive leader delivers a pre-dive briefing at the lodge before heading out to sea.



Giraffes roaming freely at Tala Game Reserve.

Lake Eland viewed from the Oribi Gorge hike.

# SOCOTRA:
## THE UNEXPECTED DIVE FRONTIER

WORDS & PHOTOGRAPHY BY **HAMID OBAID AL ALI**

Exploring Yemen's most mysterious island above and below the surface.

Socotra Island has long captured the imagination of travellers, photographers, and naturalists. Often described as the most alien-looking place on Earth, the island is famous for its surreal landscapes and endemic plant life found nowhere else on the planet. The iconic Dragon's Blood Tree, with its umbrella-shaped canopy and ancient, mythical presence, has become the symbol of Socotra's uniqueness. Walking among these trees feels like stepping into another world – one defined by isolation, resilience, and time.

Yet despite its global reputation as a land of extraordinary natural beauty, Socotra remains largely overlooked as a scuba diving destination. For most visitors, the island's wonders exist above the surface – in its mountains, dunes, and otherworldly flora. Few realise that beneath its surrounding waters lies an equally compelling, and largely unexplored, marine ecosystem.

My own journey into Socotra's underwater world began almost by accident.

## A FIRST GLIMPSE BENEATH THE SURFACE

I first visited Socotra several years ago, drawn by its legendary landscapes and photographic opportunities. Like most visitors, my focus was entirely on the island itself-the Dragon's Blood forests of Dixam Plateau, the towering sand dunes of Arher, and the stark beauty of its coastline. Diving was not part of my plan.

During that first trip, however, curiosity led me to attempt a single dive. It was not heavily planned, nor was it promoted as a must-do activity. Socotra was simply not known as a diving destination. But what I saw during that brief descent left a lasting impression. Even close to shore, marine life appeared abundant and unafraid. Fish were noticeably larger than those in more heavily dived regions, and the reef showed signs of minimal human impact. That one dive planted a seed.

I left Socotra with a sense that there was more beneath the surface – something worth returning for.

## RETURNING WITH PURPOSE

In November 2025, I returned to Socotra with a completely different objective: to explore its underwater world seriously. This time, I came fully prepared. I brought all my personal scuba diving gear, including my underwater photography system, knowing from my previous experience that local equipment availability and maintenance could be uncertain.

This preparation proved essential.

Socotra's diving infrastructure is extremely limited. In fact, during my visit, I found only one operational dive centre on the island. Unlike established dive destinations with multiple operators, dedicated dive boats, and standardised procedures, diving in Socotra remains in its earliest stages of development.

There are no purpose-built dive vessels. Instead, dive guides arrange transportation using local fishermen's boats. These small, functional vessels are designed for fishing, not diving – but they serve the purpose of providing access to nearby reefs and offshore sites.

This raw, improvised approach is part of Socotra's character. It is not polished. It is not commercialised. And that is precisely what makes it special.

## THE REALITY OF DIVING IN SOCOTRA

Diving in Socotra requires both preparation and realistic expectations.

Costs are significantly higher than in most established diving destinations. A single shore dive costs approximately US$100, while a single boat dive costs around US$150. These prices reflect the logistical challenges of operating in such a remote location, rather than luxury or extensive infrastructure.

Equipment availability is limited, and maintenance standards may not meet the




expectations of experienced divers, regulators, buoyancy compensators, and other essential gear often show signs of heavy use and limited servicing. For this reason, bringing your own equipment is strongly recommended – not only for comfort, but for safety and reliability.

Yet despite these challenges, the reward lies in what Socotra offers beneath the surface.

## A MARINE ENVIRONMENT UNTOUCHED BY MASS TOURISM

What Socotra lacks in infrastructure, it compensates for with its authenticity and biodiversity.

The island's isolation has protected its reefs from the pressures of mass tourism and overfishing seen in more accessible regions. Marine life here appears less conditioned to human presence. Fish approach more closely, their behaviour natural and undisturbed.

Even during shore dives, I encountered large specimens of reef fish such as groupers, snappers, and trevallies of impressive size. Schools of fusiliers moved across the reef in synchronised motion, while surgeonfish and parrotfish grazed along coral formations.

Among the most notable species found in Socotra's waters are:

- Giant Trevally (*Caranx ignobilis*)
- Yellowfin Tuna (*Thunnus albacares*)
- Napoleon Wrasse (*Cheilinus undulatus*)
- Green Sea Turtles (*Chelonia mydas*)
- Hawksbill Turtles (*Eretmochelys imbricata*)
- Reef Sharks, including Grey Reef Sharks (*Carcharhinus amblyrhynchos*)
- Moray Eels
- Large Groupers and Snappers
- Schools of Barracuda

Socotra's location at the convergence of the Arabian Sea and the Indian Ocean contributes to this diversity, creating nutrient-rich waters that support a wide range of marine life.

## VISIBILITY AND SEASONAL CONDITIONS

Visibility in Socotra is not consistent year-round. Seasonal currents, plankton blooms, and monsoon cycles influence underwater clarity.

The best time for diving in Socotra is generally between October and May, with November through February offering the most favourable balance of calm seas and improved visibility. During these months, water conditions are more stable, and access to diving sites is easier.

Outside this window, particularly during the southwest monsoon season (June to September), sea conditions become rough, and diving may be impossible.

Planning your visit during the optimal season significantly improves the diving experience.

## A DESTINATION FOR TRUE EXPLORERS

Socotra is not a destination for those seeking convenience, luxury dive resorts, or perfectly organised dive operations. It demands preparation, flexibility, and patience.

But for divers willing to accept these challenges, Socotra offers something increasingly rare in the modern world: authenticity.

Here, diving feels like exploration again.

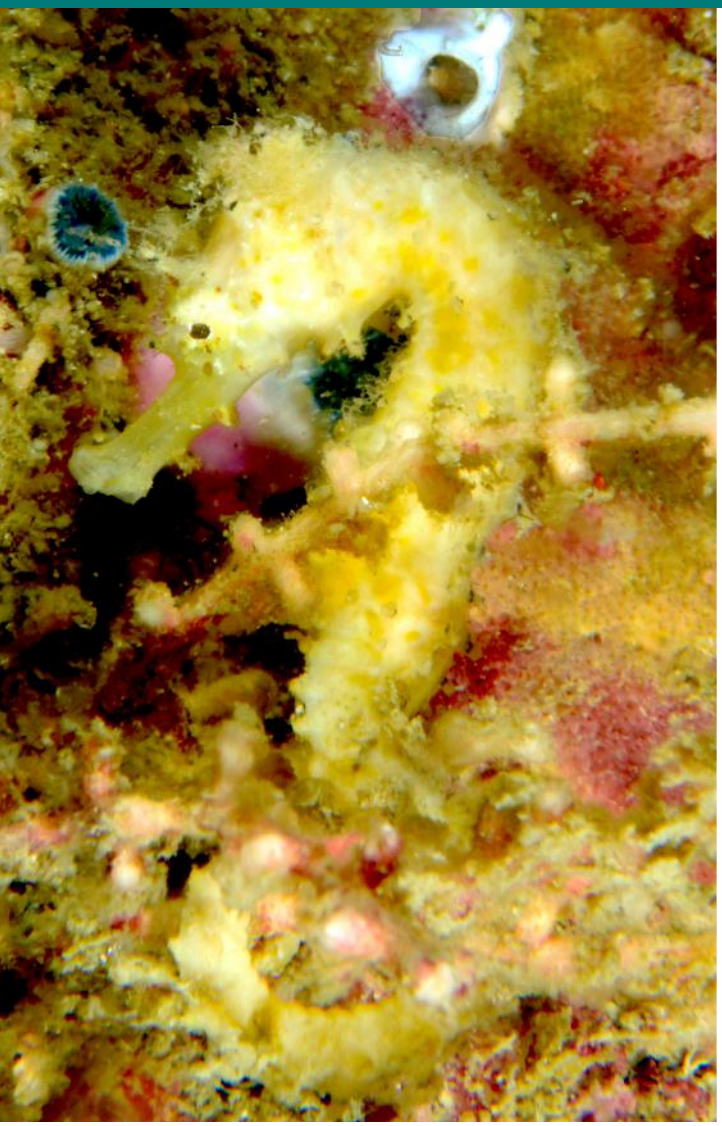
There are no crowds. No busy diving schedules. No heavily trafficked reefs. Throughout my time on the island, I was diving alone with the guide – there were no other divers, no groups, and no schedules to follow, only the quiet rhythm of the sea and the freedom to explore at our own pace. Only raw ocean, an untouched ecosystem, and the quiet privilege of witnessing a marine environment that remains largely as it has been for centuries.

Above the surface, the Dragon's Blood Trees stand as symbols of isolation and endurance. Below the surface, the reefs tell the same story. Socotra is not yet known as a diving destination. But perhaps, one day, it will be. And for those who experience it now, it remains one of the last true frontiers of underwater exploration.

# PULAU PAYER

WORDS AND PHOTOGRAPHY BY **GORDON T. SMITH**

The dives on Tyre Reef and the Jetty proved to be a major nudi fest! On the third dive, I barely moved from the end of the jetty.



Now that I've left the UAE, my nearest dive location is Pulau Payer Marine Park in the Malaysian state of Kedah, north of Penang and south of Langkawi in the Malacca Straits.

Comprising of four islands, the largest of which is Pulau Payar, and three smaller isles (Pulau Kaca, Pulau Lembu and Pulau Segantang) this marine park is spread over two nautical miles. None of these islands are inhabited and are strictly regulated by the Fisheries Department of Kedah to maintain their pristine condition.

I was now limited to dive there via Langkawi until someone put me in touch with another macro diver, Azzudin, based in Kuala Lumpur. He was running a macro trip via the only dive op based on the west coast of peninsular Malaysia in Kuala Kedah near Alor Setar, called the "Nudi Dive Centre" – which was very appropriate for me being a nudibranch buff.

After contacting Azzrudin, I was added to the last remaining spot in his group of six divers for a two-day trip to Pulau Payer.

The advantage here was that there was no flying involved.

## GETTING THERE

My initial plan was to hire a car and drive to Alor Setar and stay overnight Fri-Mon.

I booked a hotel, Leverage Business Hotel in Alor Setar, highly NOT recommended, my room had no window for starters, and barely any space to swing a fin, as well as only two electric sockets, one of which was in the most unusual place about five feet from the floor.

My wife and her family were highly negative about me driving to Alor Setar, and suggested using a Grab taxi, which reluctantly I did. Hauling dive gear to the train station at Butterworth to take the train to Alor Setar was out of the question given all the stuff I usually dive with.

Grab cost me AED262 (USD70.81) each way, but it was the most convenient option. The hire car would have cost me only AED344.92 (USD93.93) for three days, but with fuel costs and highway tolls (x3) this was definitely the cheaper option, and will be the best way to continue doing this in future.

The cost of diving at Nudi Dive Centre was MYR800 (AED748 / USD202.23) for six dives, which is quite reasonable when I compare it to UAE diving.

That said, the facilities are basic, this is a "no frills" dive centre, and the boat only accommodates six divers and 24 tanks (including tanks for the two dive guides).

## THE DIVING

The dive centre is based on the Kedah River, and takes about five minutes to reach the sea (Malacca Straits) and a total time of 45 mins to reach Pulau Payer Marine Park. Diving from Langkawi may be closer. It's something that I need to check.

## DAY 1

Our first day was windy and a bit bumpy on the way out, something that may have contributed to a camera problem, more about that coming up.

We moored next to a couple of other boats from Langkawi and geared up, dropped in, and headed into what started to be around 3-4m vis. It gradually got worse, and we ended up in less than a metre visibility. Divers, some of whom were definitely not from our group, were crashing into me. It was almost impossible to see anything. Worse than any dive I have dived in the UAE, with maybe the exception of the Cement Wreck off Umm Suqeim in Dubai.



The second and third dives had much better vis at around 3-4m and I was able to see other divers, but my main issue was now the camera. My strobes appeared to not be firing properly but I was unable to diagnose the problem until I was able to open up the housing back at the hotel later that evening.

## CAMERA PROBLEM SOLVED

I noticed that the camera flash had popped up. This is something that is required when using fibre optic cables, but I use an electronic cable to trigger my strobes. In this mode, the electronic trigger was now disabled.

I figured that the bumpy ride out had caused the camera flash to pop up, or possibly when the camera was being handled prior to it being passed to me, causing the button to have been inadvertently pressed by mistake.

This has happened once before when I was in Tulamben in Bali, but only for one dive.

The solution? Tape the pop up flash down.

## DAY 2

We had calmer waters, making it a less bumpy ride out. I tested the camera on the boat prior to getting wet, and it was good to go.

Our first dive was at the same site as the day before, but with much better vis. Thankfully, I managed to get a couple of shots of the seahorse that had been spotted on day one.

The next two dives on Tyre Reef and the Jetty proved to be a major nudi fest! On the third dive, I barely moved from the end of the jetty.

## THE COST BREAKDOWN

The six dives were priced at MYR800 (AED746) with transportation at MYR280 (AED261) each way, making it a total of MYR1,360 (AED1,268). The hotel was cheap at GBP52.26 (AED262.62) through booking.com for three nights.

The total cost for my diving weekend was AED1,530.62 (USD389.92), breaking it down to AED191.32 (USD48.74) per dive.

This included tanks (air only) as well as lunch and snacks on the boat, and post dive food once back at the dive centre.

I was fortunate enough to get transportation to the dive centre from the hotel in Alor Setar by another member of the group, otherwise I would have had another AED35 to add for Grab taxis.

## THE MARINE PARK GUIDELINES

The owner of Nudi Dive Centre, Liza, is a fabulous host and joined us on the second day, but only to do one dive.

I was hoping to return to dive here before Ramadan starts, but I may have to wait until after the end of May as the Kedah Fisheries Department introduces certain guidelines to help preserve the marine park and only allows tour operators registered with them to conduct tourism activities.

The Payar Island Marine Park limits visitors to 100 per week in a bid to preserve its biodiversity. The park is closed to tourists on Tuesdays and Wednesdays every week, and closes to tourists between the 1st of March to the 31st of May each year.

**FOLLOW GORDON:**
www.instagram.com/gordon.t.smith

Gordon has lived and dived in the Middle East region for over 36 years, and now resides in Penang, Malaysa. Nudibranchs and seahorses are his favourite subjects.

**CHECK OUT NUDI DIVE CENTRE:**
www.instagram.com/nudidiversmalaysia

# MANAGING FEAR WHILE DIVING

WORDS BY **LAURA WALTON**


Photo by Matteo Verenna

Fear is the cold wave of emotion that can feel like a solid barrier against forward movement. One of the most primitive of human emotions, fear forms part of an adaptive reaction to danger in the environment. When threatened, our biological system offers up a range of states to support survival: freeze – flight – fight – fright – flag – faint (Schauer and Elbert, 2010). All are of only limited use underwater and can tend to create more problems than they solve. Combining these psycho-physiological reactions with depth can stimulate further issues and physiological drivers of fear, for example due to the impact of gas density, narcosis and hypercapnia, see Fear and Loathing in Scuba Diving by Klaus Stiefel. And of course, the risks of the fight/flight state are fairly clear to any diver with a basic grasp of diving physiology, with rapid ascent being one of the most frequently reported incidents.

In diving, there are plenty of potential sources of immediate fear. From the various issues that can arise with equipment, through to the occasionally aggressive marine life encounter or boats getting too close for comfort. Beyond the array of threats offered by the underwater environment there are the pre-existing issues that divers may bring. Phobias of sharks, fish, snakes, submerged objects, enclosed spaces, heights, dark and open water: all mean a risk of a strong reaction when the feared object is encountered. Triggers of prior unresolved trauma can sometimes, though not always, be found in the water too. As well as those solid threats to safety are the less tangible human fears of failure, rejection and loss of control.

## SO, IS FEAR TO BE AVOIDED?

Well, yes and no. The physiological effects of the threat response for example in changing breathing pattern to rapid and shallow, or even breath holding, and the racing heart can cause problems when diving. Underwater this can quickly escalate into panic. Plus, the way that fear grips and steers attention can make it hard to think and problem solve. However, the concern does not come from fear alone, but the cascade reaction to the threat. Walking through the defence reactions, you can see where trouble forms.

The initial reaction – freeze – to stop and become more alert, is adaptive and can help us underwater. It's the point that we can be aware of a problem and consider what we will do about it. STOP-THINK-ACT. Similarly, a little bit of fight/flight can be useful in providing energy for action, but it's a state that can soon get out of control underwater. This can happen for physical reasons, such as the fast shallow breathing heightens stress, and from psychological sources such as the thoughts about what will happen and the resistance to feeling the emotion.

All can send the diver towards the panic cycle, and they lose the ability to think and act clearly. Where fight or flight is not an option, the next stage is fright. This is where the emotion of fear will be most intense, because in this state a person is effectively paralysed, and still conscious of the threat. From there, the person begins to disconnect and numb out from emotion, they have no energy (flag) or even fall into unconsciousness (faint). Clearly these latter stages have a negative impact in diving situations.

Although fear may be experienced within these reactions, fear is only one aspect. Fear is an emotion: it's the wave of energy moving through the body in a natural progression. The middle part of that wave is physiological processes, such as the release of stress hormones. This can be an issue, but it's really the cascade reactions that lead to incidents.

Fear alone is not the problem. We feel anticipatory fear when stimulated to perceive a source of threat. That could be an actual threat, but also our own thoughts can set off the defence reaction. "What if I run out of air?!" and "I don't think I am ready for this deep dive". Fear is often a signal that something may be wrong and a reminder to take effective action. Fear reminds us where our limits are and encourages a pause to reflect on whatever we are doing.

If anything, as divers we need to have fear. We also need the ability to regulate emotion and

attention in the face of fear. What we do not need is the reactive, energetically-demanding and unthinking state that fear can drive us to when we resist it. The way we resist fear can cause more problems than the emotion of fear. Firstly, not heeding valid fear can mean a diver going into a situation that they are not prepared for. Secondly, the unwillingness to feel strong emotions like fear can stimulate panic in itself. By this I mean a diver has an issue and, rather than notice the fear and do something about the problem, they turn in the other direction, running from the fear and taking attention away from the problem. Given that this will tend to create more problems, the panic escalates out of control. Thirdly, ego-defences can make it hard to call a dive on feeling fearful. Fourthly, avoidance behaviours that do not lead to improved safety and increase risk, because the intention is focused on avoiding fear (rather than addressing the problem).

## HOW TO DIVE WITH FEAR

Fear is always a possible experience, so learning to dive with fear is an important part of being a diver. That does not mean putting ourselves in danger, but instead being open to fear as a signal and developing skills (both technical and psychological) that support safe diving. It may even mean holding fear when telling a fellow diver that you have decided to miss a dive. Here are some options:

- Reduce the chances of meeting situations that trigger intense fear. That can be done through proper training and experience, building the skills and confidence needed for the level of diving that is undertaken. Uncertainty is the main driver of fear. By gaining effective skills and response through training and practice, we address some of that uncertainty because we know what to do.
- Address pre-existing anxieties, phobias and traumas. In particular, it is recommended to address any water-related fears before learning to dive. Where strong reactions or tension have built up after bad experiences in diving, these can also be addressed out of the water. (Note, this is a bit different where PTS comes from situations unrelated to diving, when people often find being underwater is a respite from the trauma triggers).
- Notice what you are carrying into the water, such as interpersonal stresses, and try to address this before the dive to enter the water with less of a stress-load.
- Understand fear as a wave of energy in motion. It has a trigger, then a cascade of hormone and nerve actions, and then peters out into a release of that energy. If something gives you a brief fright on a dive, taking a few moments to allow that wave to pass can be helpful.
- One of the most powerful practices for fear is also the most simple: pause. An ability to pause and bring awareness to fear, and what it is telling you. This may be useful information, like a reminder to check your gauges.
- Learn how to defuse from thoughts and emotions. This is the skill of stepping back and having awareness of the emotion, knowing that it is happening while also knowing you are the context for the experience. The distance is like a fire-break, and can allow you to either notice something that requires action, perhaps even ending the dive, or letting go of the fear.
- Acceptance and willingness: most of the chaos that arises from the threat reaction is not fear, it's the added stress that comes from resisting the experience of fear. Being willing to feel an uncomfortable emotion can calm down the reaction, which helps to keep breathing and the heartbeat at a useful rate, as well as keeping the intelligent part of the brain online.
- Radical acceptance: Some divers are also likely practising radical acceptance; facing fear by fully embracing the worst-case outcome. Although this is probably more for the cavers and deep tech divers, it's an interesting practice. For a dramatised version of what radical acceptance looks like in diving, check out the documentary "Last Breath".
- Learn the meta-skill of mental rehearsal. Studies have shown that mental rehearsal of scuba diving skills can reduce stress and subjective fear when learning to dive or do something new. It also helps in developing competence, so that fear becomes less likely.
- Exposure to feared situations: Given the right circumstances, allowing the feeling of fear when doing something will tend to mean less fear is felt on each repetition. Good training incorporates measured exposure to the nerves related to failing and will have in-built safety nets so that students can feel a little of the fear, learn to do the skills needed to fix the actual problem, without too much of a risk.
- Exposure to feeling fear. You can do this at home on the sofa! Imagine the thing you are concerned about then watch how your body reacts. Bring awareness to the feeling and create space for it to be there. By allowing your body to relax even when feeling fear, you are teaching it to regulate effectively, making runaway reactions less likely, because you are more confident of tolerating the feeling.

And then there are therapies that help address recurring anxiety, anticipator fear or blocks to performance. I find Eye-Movement Desensitisation & Re-Processing is particularly useful for divers. It can be used to reduce the distress and the chance of being retriggered that sometimes is left after a bad experience. It also has uses in creating calmer and more effective behavioural responses for future scenarios.

Let's not fear, fear. Not only is fear, and learning to handle it, part of diving, it also reminds us how valuable the experience is. There's a theory with extreme sports: that we love them so much because the closeness to the possibility of death generates the joy of feeling alive. How close we get to that line varies between people. For recreational divers, it's more like looking over a steep drop with a solid barrier, while for the adventurers it's leaping off with a parachute. But in all cases, openness to fear also brings openness to joy and awe.

## PULL QUOTES

- "When something bad happens, you have an immediate physiological response. Your heart starts to race and your mind erupts into a million and one thoughts. I try to immediately take a deep, slow breath, and think to myself, "Emotions, you won't serve me well right now." Jill Heinerth
- "If you don't embrace your fear, you will spend your entire life running from it." Jill Heinerth

## THE SIX DEFENCE REACTIONS (SHAUER AND ELBERT, 2010)

These researchers postulate that the cascade "Freeze – Flight – Fight – Fright – Flag – Faint" is a coherent sequence of six fear responses that escalate as a function of defence possibilities and proximity to danger during life-threats. These are the six responses:

**FREEZE:** An initial orienting response to pause and scan for threat and sources of help.

**FLIGHT/FIGHT:** A physiological state of high arousal that aids an organism to escape the threat. (Similar state, different behaviours).

**FRIGHT:** Where fight/flight are not available, or unsuccessful, a physiological state of being frozen in fear.

**FLAG:** The physiological arousal level falls and there is disconnection, reduction in ability to think and emotional numbness.

**FAINT:** A state of immobility and, often, unconsciousness.

## REFERENCES:

Schauer, M., & Elbert, T. (2010). Dissociation Following Traumatic Stress Etiology and Treatment. Zeitschrift Fur Psychologie-journal of Psychology, 218, 109-127.

**ABOUT THE AUTHOR**

Laura Walton is a clinical psychologist and scuba diving instructor bringing together psychology and scuba diving to help people with their diving. She provides specialist psychological services for scuba divers and accessible courses. Laura has been guiding and teaching scuba diving in the UK since 2012, and is currently a PADI Master Instructor.

**https://www.fittodive.org/**

# POPULAR, AND TRICKY!

## THE TOP 6 DIVE SITES THAT DEMAND EXTRA CAUTION

WORDS BY **CLAUDIO DI MANAO**

Exploring some of your favourite dive destinations. Here's what you need to know to dive them safely and confidently.

Divers, as we all know, are travellers. The DAN Europe alarm centre regularly receives requests for assistance from members from all over the world. Interestingly, the distribution of calls on the world map shows which are the favoured destinations by European DAN members. It also shows that a substantial number of calls for assistance comes from a selected cluster of specific dive sites. We decided to take a closer look at these sites, and selected the first six on the list. The aim is not to discourage divers from visiting those sites. On the contrary: we want them to continue to travel and dive there too, but with a few extra tips to improve safety. An increasingly informed community is a safer community.

### ARE SOME DIVE SITES/DESTINATIONS RISKIER THAN OTHERS?

That a coral garden at -12m in clear, protected waters presents less of a challenge to a diver than a deep wreck lashed by currents is quite intuitive. Some dives require more experience, specific training and equipment which must be appropriate to the conditions one intends to face. Nonetheless, DAN receives requests for assistance more frequently from some popular, most dreamed of and famous diving destinations. It's the law of the big numbers. World class dive sites such as the Thistlegorm and the Zenobia wrecks, or Dahab's Blue Hole are frequently the aim of diving pilgrimages. It's not surprising then that we have statistically recorded more incidents at these locations compared to other destinations with a similar environment.

We analysed the most important aspects of these dive sites, using valuable input and assistance from dive professionals who are familiar with the sites, and part of the local diving community.

The list only takes into account the calls managed by the DAN Europe alarm centre, and does not include requests for action submitted to other organisations such as Harbour Offices, Police, SAR, the various NHSs etc.

### THE TOP 6

### #1 BLUE HOLE

**Dahab, Sinai Peninsula, Egypt – Shore Diving**

The Blue Hole in Dahab is a true Mecca for technical divers and freedivers from all over the world. It is a very deep (over -120m) karst sinkhole formed by erosion within the fringing reef. At -55m an archway connects the Blue Hole's inner waters with the open sea. According to several sources, the Blue Hole is the dive site where most fatal diving accidents occur in the world.

#### CRITICAL ISSUES

- Good visibility and good sea conditions can be deceptive about depth and the dive's difficulty
- Disorientation
- A diver unfamiliar with the site may wander too long at depth, or even get lost, while searching for the arch (exit tunnel)
- Unskilled divers venturing beyond the limits of their training level
- Narcosis
- Freedivers plunging without a safety team, or without a buddy
- Bets between divers
- Dehydration

#### SURVIVING THE DIVE

**Community notes by the author, who has 12 years of experience as a dive guide and instructor in the Red Sea, Chamber Attendant at HyperMed in Sharm El Sheik.**

#### FOR RECREATIONAL DIVERS:

Much preferable is the tour of the outer wall, entering and exiting the Blue Hole through a shallow saddle (at -6 metres) or even starting the Dive from The Bells. The inner walls of the Blue Hole are barren, completely devoid of attractions at recreational depths. Hydrate yourself. Attempting to cross the arch with a 12-litre exposes yourself to: severe narcosis, disorientation, running out of air.

#### FOR FREEDIVERS:

Do not dive alone [Ed. note: This is a cardinal rule of freediving; always have a buddy ready to effect a rescue). Always rely on some of the many local freediving centres.

#### FOR ALL OTHERS:

Rely on local technical diving centres or guides of confirmed professional rigour. Check your equipment. Get hydrated.

### #2 SS THISTLEGORM

**Shaab Ali, Gubal Strait, Gulf of Suez, Egypt – Wreck Dive**

The wreck of the Thistlegorm is considered by many a time machine lying on a 32-metre seabed. As a British cargo ship, she was crammed with military supplies and ammunition when she sank in October 1941 after a bomb dropped by a German bomber. The wreck contains jeeps, trucks, small tracked vehicles, motorbikes, and weapons. A local saying claims that the Thistlegorm collects in more revenue than the Pyramids of Giza. However, this dive site accounts for the highest number of diving incidents in the Sharm El Sheikh area.

#### CRITICAL ISSUES

- Strong currents, rough seas and poor visibility are the norm
- Square profiles
- Performing the safety/decompression stop at the same depth on the same ascent line can be a treacherous task for a large group of divers.
- Boats manoeuvring at the surface
- Ladders and platforms are extremely mobile in rough seas
- Lack of rest (the trip to the wreck can start very early in the morning)
- Dehydration and nitrogen accumulation can contribute to the onset of DCS

#### SURVIVING THE DIVE

**Community notes by the author**

Memorise carefully the guide's briefing. If you descend or ascend along a mooring line and current is present, NEVER think to lose your grip. If you lose your group, ascend along the mooring line. If you can't recognise your boat's mooring line, don't waste time and climb up from any. Floating platforms on the surface and propellers are your worst enemy: when ascending as well as descending ALWAYS LOOK UP towards the surface. While entering the water, move away from the platform immediately. During the descent, and especially on the ascent, along the line check your buoyancy constantly. Follow the guide or the group, do not linger. Forget compressed air: use Nitrox. Avoid clubbing at least the night before. Don't wait until you are thirsty to drink, hydrate yourself beginning the day before.

### #3 MS ZENOBIA

**Larnaca, Cyprus, Eastern Mediterranean – Wreck-Dive**

This Swedish-built ferry sank near the port of Larnaca in 1980 due to an error in the on-board software that pumped ballast water to the wrong side. About 170 metres long, she lies banked on her port side between 17 and 42 metres depth with her well known cargo of cars still on board. As this dive is quite easy to perform, it is suitable for an external tour by open water divers. Currently, it is one of the most visited wrecks in the world.

#### CRITICAL ISSUES

- Sharp metal


- Square profile
- Disorientation due to severe wreck dislocation
- Unskilled divers venturing beyond the limits of their training
- Marine life stings
- Failures on checking the no decompression limit (NDL)
- Dehydration

### SURVIVING THE DIVE

**Community notes by Chris Demetriou, Dive Centre Manager, DAN Instructor Trainer, Chamber Attendant, Chamber Operator, Cyprus**

Before diving it is good to get informed, be fit and have insurance. Reliable centres can be found through the Cyprus Diving Centre Association (CDCA), DAN HIRA centres or ISO EN 24803-compliant centres. Listen and follow the dive briefings, you will see more and the guides know the best spots. Use mooring lines for controlled descents and ascents, wear a computer, use nitrox and monitor your NDL. Penetration dives vary in difficulty: be aware of your limits, your gas requirements and have the correct equipment for each dive. The wreck has sharp edges and marine life can sting, so good buoyancy control is essential to avoid both types of danger. Also, keep in mind that temperatures in Cyprus can get very hot, so stay hydrated.

## #4 HAVEN

**Arenzano, Liguria, Italy – Wreck Dive**

Amoco's 344-metre-long supertanker caught fire in April 1991 in Genoa Harbour. It contained 144,000 tonnes of crude oil and 12,000 tonnes of fuel. After breaking its moorings, it drifted and burned, then sank one mile off the coast of Arenzano on a 90-metre seabed. The oil spilled from the Haven caused the worst environmental disaster in the Mediterranean Sea. It is the largest visitable wreck in the Mediterranean. Following some serious accidents involving recreational divers, diving activity is now strictly regulated and monitored.

### CRITICAL ISSUES

- Depth
- Possible disorientation in the blue, even while holding a line.
- Square profile
- Divers' failing to perform their equipment checks
- Dive planning errors
- Currents
- Long distances between points of interest

### SURVIVING THE DIVE

**Community notes by Niccolò Crespi, Tech Instructor, Commercial Diver, Italy**

The wreck doesn't have any specific critical issues, the visibility is often excellent, fishing nets or other entanglements are not present, and the engine room itself is very large. Technical divers typically rely on a line for penetration attempts and typically stay hydrated. The biggest issue about the Haven, in my opinion, is in the heads of some divers. Despite local operators insistently repeating to perform pre-dive rebreather checks and remember to open their oxygen valves, there have been a number of cases of hypoxia in the very first minutes of the dive. Always use the mooring lines for ascents and descents. For those wishing to take an external tour of the wreck, the use of a scooter/DPV is recommended.

## #5 GARDA LAKE

**Lombardia/Veneto/Trentino-Alto Adige, Italy**

The largest of the Italian lakes, whose shores bath three Italian regions, is a well-known destination for divers from northern Europe, who can find more exciting depths and a nicer climate in Garda than in the Baltic Sea or the winterly frozen alpine lakes. In addition to the typical freshwater life, Garda Lake is home to wrecks dating back to WWII. Diving conditions may vary in the presence of winds.

### CRITICAL ISSUES

- Depth
- Square profiles
- Divers venturing beyond the limits of their training

- Failure on assessing one's own limits
- Bad dive planning
- Dehydration
- Bets between divers

**SURVIVING THE DIVE**

**Community notes by Davide De Lorenzi, Dive Centre Manager, DAN Instructor, Italy**

Lake Garda hosts almost vertical walls plunging even beyond -200 metres. Many of the available dive sites are accessible from the shore, so divers don't feel the need for the support of a diving centre or boat. A trained, organised and competent diver will find everything he or she wants. The factors that predispose to diving accidents are often the following: dehydration, cold, fatigue, breathing gas density, and dive planning. The first piece of advice is to use common sense. Understand whether to dive or abort the dive. Listen to your inner voice before engaging in the dive.

**#6 EL HIERRO**

**Canary Islands, Spain**

Among the Canary Islands, El Hierro is one of the wildest. Local fishing around the island is artisanal only, and the volcanic walls are home to marine life treasures and deep canyons. Out of the whole list, it is the only destination with a peculiar critical side: getting to altitude after diving. This is also the main cause of requests for assistance to DAN Europe from El Hierro. It seems that many divers choose to stay in resorts or holiday homes sited at altitude. Notably the main town, Valverde, is situated at 571m above sea level.

**SURVIVING THE DIVE**

After diving, it is never a good idea to go to altitude – let alone fly – for the next 24-48 hours, depending on the repetitiveness and depth of performed dives. For sea level diving, the limit set by DAN and the most respected research institutes is 300 metres above sea level.

**CONCLUSIONS**

For the most part, there are no inherently dangerous dives, only dives that require more attention, training, proper planning, fitness, and awareness about one's own limits. This applies to all dives with similar characteristics to those listed above. If other dive sites are not in the Top 6 list, there is one simple reason: fewer divers go there.

One last thing we'll never stop repeating: dehydration is one of the main contributing factors to decompression illness (DCI). It is especially true where temperatures are high, and the air is dry. Dehydration can be as well a consequence of alcohol drinking, consumption of theine and caffeine (contained in many colas and energy drinks) and sweetened soft drinks. It is always good to start hydrating a few days before the beginning of the diving week by drinking water and taking hydrating salts.

Acknowledgements: Chris Demetriou, Davide De Lorenzi, Niccolo Crespi.

**ABOUT THE AUTHOR**

DAN Member since 1997, Claudio Di Manao is a PADI and IANTD diving instructor. He's the author of a series of books and novels about diving, including Shamandura Generation, an exhilarating portrait of Sharm el Sheikh's diving community. He collaborates with magazines, radios and newspapers, talking and writing about diving safety, marine life and travels.

# DO YOU KNOW?

## OCEANA: PROTECTING THE WORLD'S OCEANS

OCEANA Protecting the World's Oceans

**WHO THEY ARE**

Oceana is the largest international advocacy organisation focused solely on ocean conservation. Oceana's mission is to protect and restore our oceans.

**THEIR APPROACH**

They lead strategic, directed campaigns that achieve measurable outcomes for the oceans. Oceana leverages law, science, grassroots activism, advocacy, and strategic communications to win policy change around the world.

**THEIR IMPACT**

They have won more than 325 victories and protected over 4 million square miles of ocean.

**WHAT DOES OCEANA DO?**

The oceans connect us all. They cover two-thirds of our blue planet and contain most of the life on Earth. They are as important to us as they are vast.

But the oceans face many threats – from overfishing, habitat destruction, oil and plastic pollution, and the killing of threatened species like turtles, whales, and sharks.

They win science-based policies in important coastal countries that rebuild abundant and biodiverse oceans. With more than 325 victories, Oceana's campaigns are delivering big results.

A restored, healthy, and abundant ocean can help fight climate change, sustain livelihoods, and feed more than 1 billion people a healthy seafood meal every day, forever. Together, we can save the oceans and help feed the world.

**THEIR HISTORY**

After a 1999 study discovered that less than 0.5% of all resources spent by environmental non-profit groups in the United States went to ocean advocacy, a group of leading foundations – The Pew Charitable Trusts, Oak Foundation, Marisla Foundation (formerly Homeland Foundation), Sandler Foundation, and the Rockefeller Brothers Fund – banded together.

To fill the gap, they created Oceana: an international organisation focused solely on oceans, dedicated to achieving specific, time-bound policy victories that help protect and restore the world's oceans.

The Ocean Law Project – also initiated by The Pew Charitable Trusts – was absorbed into Oceana in 2001. In 2002, Oceana merged with American Oceans Campaign, founded by actor and environmentalist Ted Danson, to more effectively address our shared mission of protecting and restoring the world's oceans.

Since its founding, Oceana has expanded its campaigns to nine coastal countries and the European Union and protected over 4 million square miles of ocean.

**FOR MORE INFO, GO TO:**

https://oceana.org

www.instagram.com/oceana

## UNDERWATER CLEANUP ARABIA EVENT

### UNDERWATER DIVE CLEAN-UP | DUBAI ISLANDS MARINA
Saturday 28th March 2026 | 8:15am

This is our first underwater clean-up at the Dubai Islands Marina. We're looking forward to tackling this new space with you. Spaces are limited and on a first come, first served basis, make sure to register to the event.

**OPEN FOR REGISTRATION**

Email Kacy to register your spot at: **projects@emiratesdiving.com**
(Please note, you must be an EDA Member to take part)

## DIGITAL ONLINE 2026

### EDA'S UNDERWATER PHOTOGRAPHY & FILM COMPETITION

**1. COMPETITION OPEN FOR PHOTOGRAPHY & VIDEO SUBMISSIONS**
2nd March - 3rd April 2026: Rules & Guidelines on page 69

**2. AWARDS NIGHT & EXHIBITION**
Thursday 14th May 2026 | 7pm | Deep Dive Dubai

We are very much looking forward to this year's Digital Online Underwater Photography & Film Competition's Awards Night social event with our partners at Deep Dive Dive. We have inspiring Judges on our panel (page 72), and our prize sponsors continue to offer this year's winners some incredible prizes (pages 70-71). We hope you will join us in congratulating this year's winning photographers and videographers, and enjoy the evening with a bite to eat whilst mingling with other members to see the new photography and films in the exhibition.

## ONE-OFF EVENTS

Professional underwater photographer Justin Lutsky and underwater model/mermaid Abbey Blake will be in the UAE on the 30th of April to capture new works for their underwater portrait photography in Deep Dive Dubai (DDD).

### 1. JUSTIN LUTSKY MODELLING & PHOTOGRAPHY EXPERIENCE AT DDD
Thursday 30th April 2026 | Deep Dive Dubai | By Schedule

**Would you like to gain a one-off underwater photography and modelling experience with Justin and Abbey?**
Email Justin directly to enquire: **justin@submergeunderwater.com**
- Spaces are very limited.
- Please note that you will have to pay Deep Dive Dubai for your dive to take part.

**www.submergeunderwater.com**

### 2. JUSTIN LUTSKY MODELLING & PHOTOGRAPHY PRESENTATION AT DDD
Thursday 30th April 2026 | Deep Dive Dubai | Doors Open 6:30pm | Starts 7pm

This presentation will delve into the unique challenges and specialised techniques required to capture breathtaking images of models beneath the water's surface. Justin and Abbey will discuss topics such as lighting, buoyancy control, working with safety divers, and interacting with marine life. Drawing from their extensive experience, they will share invaluable insights and tips for creating captivating underwater portraits that showcase both the subject's essence and the beauty of the underwater environment. This presentation promises to be an engaging experience for both seasoned underwater photographers and those intrigued by this mesmerising genre.

Email Kacy to book your seat to this one-off event: **projects@emiratesdiving.com**

## UNDERWATER CLEANUP ARABIA EVENT

### UNDERWATER DIVE CLEAN-UP | PALM JUMEIRAH WEST MARINA
Saturday 2nd May 2026 | 7:15am | EDA Members & Partners Only

Register to the second part of Palm Jumeirah Marina's underwater clean-up. We swept the East Marina on the 15th of November 2025 where we collected 176kg. Let's see how much underwater waste there is to clean-up in the West Marina.

Registrations are not yet open to this event!

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# ENTER DIGITAL ONLINE

## EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION 2026

**SUBMISSION DEADLINE**

Friday 3rd April 2026 at 11:59pm (GST)

**DIGITAL ONLINE**
جمعية الإمارات للغوص
EMIRATES DIVING ASSOCIATION
PHOTOGRAPHY AND FILM COMPETITION