Inspiring People to Care for our Oceans Since 1995

DIVERS FOR THE ENVIRONMENT

WWW.EMIRATESDIVING.COM | MAGAZINE | SEPTEMBER 2023 | VOLUME 19 | ISSUE 3

ARCHIREEF'S BIOBLITZ

THE NATURE TECH COMPANY FOCUSED ON RESTORING MARINE ECOSYSTEMS

• IN THE WHALE EDA MOVIE SCREENING • **REEF CHECK NEWS** • DRYFOB PRODUCT REVIEW • **ONE BREATH HOME** • DOWN TO THE STABLES • **CLEANUP ARABIA** • DIVING DESTINATIONS

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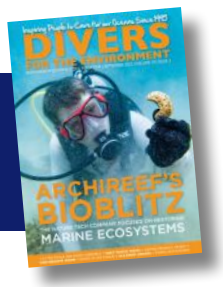
DIVERS FOR THE ENVIRONMENT

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 released in December 2023. Send all articles, feedback or comments to: **magazine@emiratesdiving.com**

COVER

PHOTO BY ALLY LANDES
Archireef's BioBlitz Project



REDUCE REUSE RECYCLE

UNDERWATER PHOTOGRAPHY

DIVING DESTINATIONS

HEALTH & SAFETY

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**

GORDON T. SMITH
Gordon has lived and dived in the Middle East region for the past 36 years. He is a frequent visitor to south east Asia, in particular to Indonesia and the Philippines. Nudibranchs and seahorses are his favourite subjects, and he's always ready to dive in the UAE due to the variation in subjects he encounters.
www.instagram.com/gordon.t.smith

NATASHA MAW
Natasha is a nature nerd, ocean addict, and founder of One Breath Travel. Ever since she can remember, she's had her head underwater; lost in rock pools, collecting shark books, bingeing Steve Irwin and listening to her grandparents' stories about their lives at sea. Her love of nature led her to a degree in Biological Sciences after which she began to pursue a career in conservation and followed her heart to some incredible places around the world.
www.onebreathtravel.com

DR ADA NATOLI
Ada is a specialist in population genetics applied to conservation of species. Having been involved in whale and dolphin research since 1992, she is a member of the IUCN Cetacean Specialist List and founder of the UAE Dolphin Project.
www.uaedolphinproject.org

AMOS NACHOUM
Amos is a professional wildlife photographer and explorer. He is renowned for his close-up underwater photography of large marine animals such as whales, sharks, leopard seals, crocodiles, anacondas, and polar bears. He has received numerous awards for his work and has been featured in publications around the world. In addition to his photography, Amos is also an environmental activist and works to raise awareness about the importance of conserving the world's natural habitats and wildlife.
www.biganimals.com

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**.

Reef Checkers completing their practical exams in Dibba, Fujairah.

HOT SUMMERS WORLDWIDE
LIVING WITH GLOBAL WARMING

IBRAHIM AL-ZU'BI
Co-Founder

Welcome to the September magazine issue of 'Divers for the Environment'.

I hope you have managed to explore somewhere new this summer despite the alarming global temperatures the world over, or at least had some time to recharge your batteries to tackle the final quarter of the year.

As you know, rising temperatures have a direct effect on rising sea levels, and a huge impact on the fragile marine life. Scientists consider marine life – especially coral reefs – the planet's first defence line against climate change as it is the first eco system to be impacted by the rise of temperatures. As global temperatures continue to rise we are keeping an eye on all our coral reefs ready to report any coral bleaching activities. As responsible divers, we act as Ambassadors and Eco Warriors seeing the change of our marine habitats first hand. Being environmental divers, we raise awareness to as many people as we can through our photos and videos as everyone has the responsibility to protect our planet, whether it's on land or underwater.

With EDA's ongoing Reef Check Training, Rania has certified enough eco divers to begin our survey dives. We are really looking forward to getting those started with the eco team. Find all our updated Reef Check news and all the Reef Check Worldwide news in the designated Reef Check section. If you want to become a certified Reef Check Eco Diver, get in touch with the EDA team.

EDA's annual Cleanup Arabia is confirmed on the 11th of November this year. Let's ensure we do the best we can to keep our oceans as clean as possible. We are looking forward to seeing you all there. A big thank you in advance to all our clean-up volunteers, and of course, our partners. Together, we make a difference!

Happy reading and safe diving,

Ibrahim Al-Zu'bi

Ibrahim Al-Zu'bi

AN EDA MOVIE SCREENING
IN THE WHALE
THE GREATEST FISH STORY EVER TOLD

We had a fantastic night with our members for the In The Whale's first audience screening on the 3rd of August at Deep Dive Dubai to show David Abel and Andy Laub's new documentary film.

It's a story of bad luck, good fortune, and some good laughs along the way. We'll be extra vigilant on our dives from now on. You never know what to expect in life, it might swallow you up.

SYNOPSIS

In the shark-filled waters off Cape Cod, Michael Packard has long tempted fate. For several months a year, Packard and his longtime mate, Josiah Mayo, cast off nearly every morning around dawn and navigate through the half-light to their diving grounds off Provincetown, the idiosyncratic, isolated community where they grew up at the tip of the Cape. Packard buckles on his scuba tank and plunges into the cold waters to hunt on the seafloor.

As the region's last-remaining commercial lobster diver, the 57-year-old father has had his share of harrowing experiences, which include close encounters with great whites, nearly drowning, and having to pull up the body of a fellow diver. He even survived a plane crash in the jungles of Costa Rica, where he ran a charter fishing business. But what happened to him on a routine dive during a clear June morning was something he never imagined possible, and many around the world refused to believe.

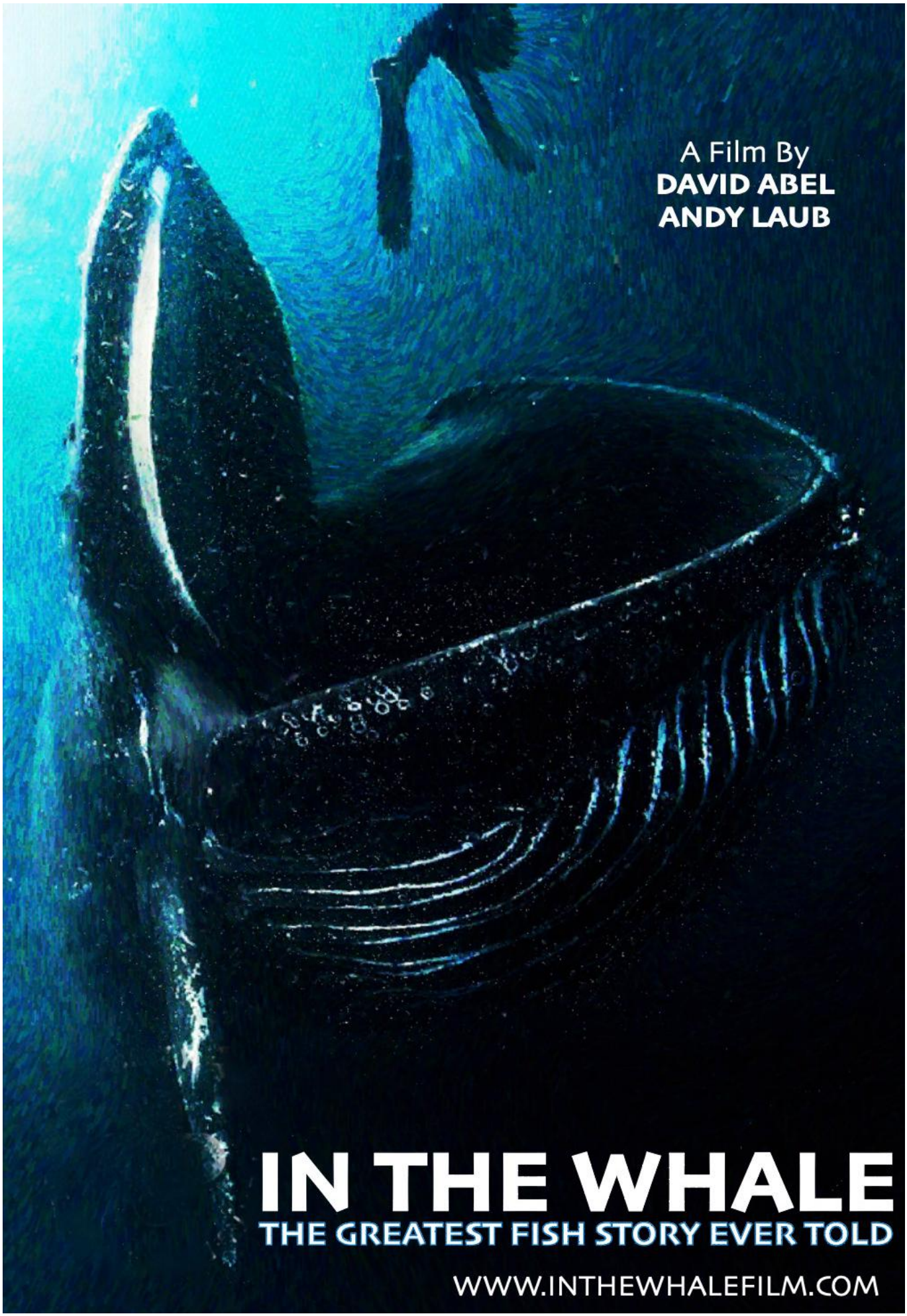
In an experience of biblical proportions, Packard was engulfed by a humpback whale, caught in the watery cavity of its massive mouth. After some 30 seconds of a pitch-black captivity, in which he expected to die, he was spit out, fins first, to the surface, where Mayo and another fisherman rescued him.

The publicity was similarly dizzying for the reclusive fisherman, whose survival story spread around the world in news dispatches. But what came after the limelight dimmed was even more significant for Packard.

WANT TO JOIN OUR EVENTS?

Our social event and online EDA Movie Screenings are only accessible to EDA members. Members must register by email to join our social event, or to receive the special link to view the films online.

You can register for EDA membership or renew it via our website here:
www.emiratesdiving.com/membership-form


A Film By
DAVID ABEL
ANDY LAUB
IN THE WHALE
THE GREATEST FISH STORY EVER TOLD
WWW.INTHEWHALEFILM.COM

THE MENA OCEANS SUMMIT
A REVIEW IN PICTURES

What an incredible 2 days we had in partnership with Goumbook, the event organisers for the MENA Oceans Summit for World Ocean Day, on the 8-9 of June. It was great catching up with so many members at the event.

The MENA Oceans Summit was the first dedicated forum in the MENA region focused on accelerating the pace of comprehensive clean ocean action, to conserve and restore ocean ecosystems, tackle climate change and ensure development of blue economies within sustainable frameworks.

Engaging under four key streams – (first day) Blue Economy, Blue Governance, Blue Research, and (last day) Blue Collective – the forum brought together a diverse range of global leaders, policymakers, researchers and the private sector to address ocean health to an outstanding audience participation.

The first day led to some very interesting panel discussions and intense fireside chats on the challenges, developments, and opportunities on ocean action for the first 3 key streams.

EDA's Digital Online 2023 exhibition was also on display, celebrating this year's underwater photography winners. We want to thank the Arbor School Dubai for providing us with the display easels.

The last day was the Blue Collective which activated as an educational, awareness, and engagement platform which encouraged the youth and wider community to take part in workshops of critical dialogues and envision themselves as ocean ambassadors.

The workshops included a Climate Fresk workshop run by Goumbook, and a movie screening of Unmasking Monsters Below which was the closing activity, and the perfect ending to a great event!

A huge shoutout to the Hilton Dubai Palm Jumeirah for their incredible hospitality hosting the 2 day event!


MENA Oceans
SUMMIT & EXHIBITION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MENA Oceans

THE TRANSFORMATIVE POWER OF OUTDOOR ACTIVITIES

HOW FREEDIVING IMPACTS WELL-BEING AND MENTAL HEALTH

BY **BASSEL OUNAH – APNEA ZONE DIVING & SNORKELLING CLUB**

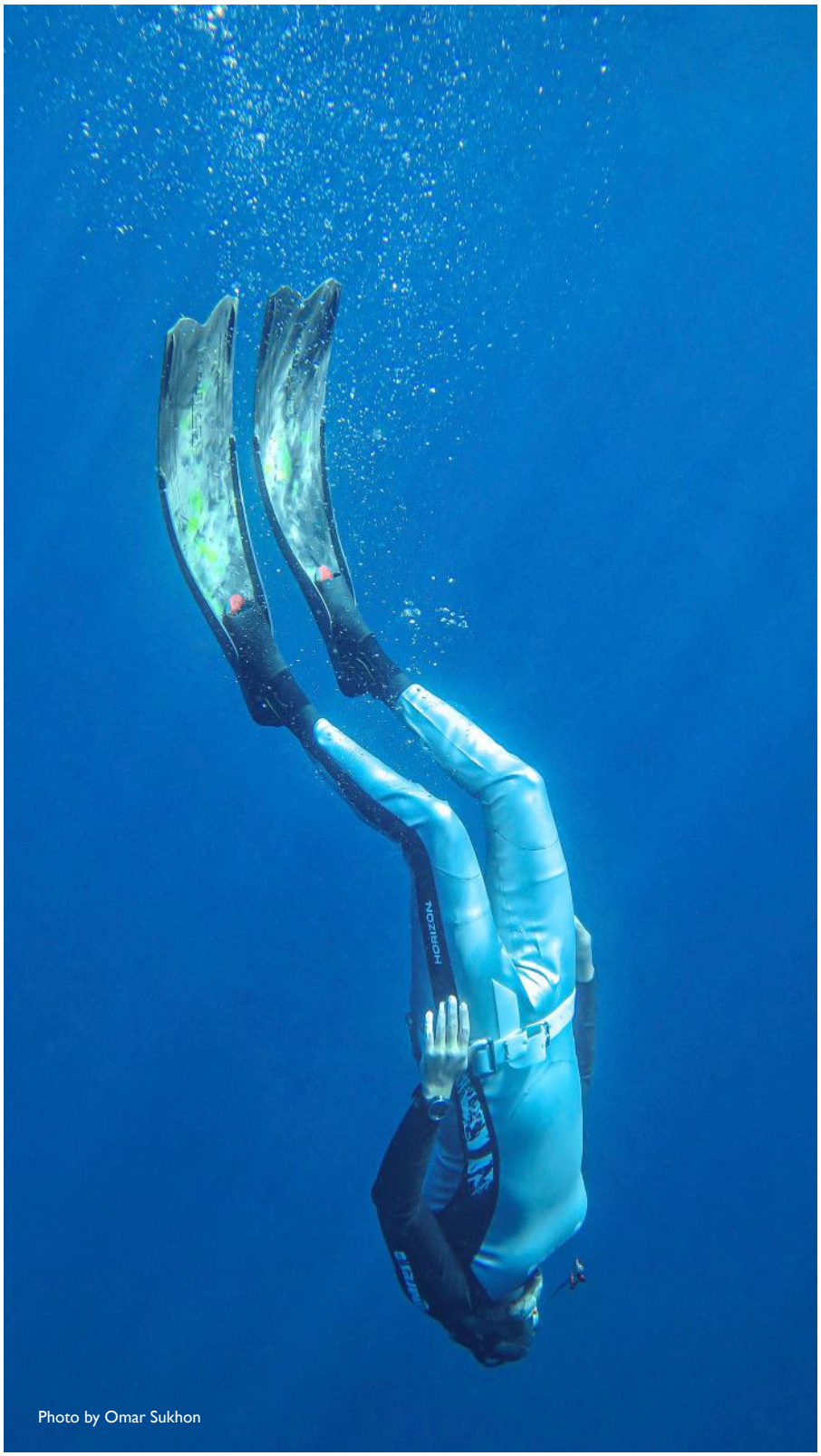


Photo by Omar Sukhon

In today's fast-paced world, where stress and anxiety are prevalent, prioritising our well-being and nurturing our mental health have become increasingly important. Engaging in outdoor activities like freediving can offer a transformative experience beyond physical exercise.This article explores how participating in outdoor activities, particularly freediving, can positively impact our minds, nourish our souls, and help us navigate challenging times.

Connecting with nature is one of the most significant benefits of outdoor activities like freediving. Immersing ourselves in the underwater world allows us to detach from the hustle and bustle of everyday life and embrace a tranquil and awe-inspiring environment. The vastness of the ocean, the vibrant marine life, and the sense of weightlessness create a profound sense of connection and mindfulness.

When faced with hardships or stressful situations, outdoor activities are a powerful tool for stress reduction. Engaging in freediving enables individuals to leave their worries on the surface and focus solely on the present moment. Rhythmic breathing techniques are meditative, promoting relaxation and mental clarity.

Freediving requires a harmonious connection between the mind and body. As individuals immerse themselves in the ocean's depths, they must develop a deep understanding of their body's responses and limitations: the heightened awareness fosters self-reflection, personal growth, and an increased appreciation for the body's capabilities. By nurturing the mind-body connection, freediving empowers individuals to build resilience and face challenges head-on.

Engaging in outdoor activities like freediving allows us to experience a state of mindfulness and flow. The focus required to navigate underwater, regulate breathing, and observe the marine environment creates a sense of complete absorption in the present moment. This state of flow, where time stands still, promotes mental clarity, enhances concentration, and brings joy and fulfilment.
Facing fears and pushing boundaries are integral to freediving. Each dive challenges individuals to overcome the fear of depth, darkness, or the unknown. By conquering these fears, freedivers build resilience, develop a growth mindset, and boost self-confidence. The transformative experience of pushing limits transcends everyday life, empowering individuals to face challenges with renewed courage and resilience.

Engaging in outdoor activities, especially freediving, offers more than physical exercise; it can positively impact our mental well-being and nourish our souls. The connection with nature, stress reduction, mind-body connection, mindfulness, and overcoming fears all contribute to a transformative experience that enhances our overall well-being. In times of hardship or facing challenges, outdoor activities like freediving can provide solace, renewal, and a path toward personal growth and healing. So, dive into the depths, explore the wonders of the underwater world, and let your mind and soul flourish.

EAD & THE NATIONAL AQUARIUM HAVE RELEASED 81 TURTLES BACK INTO THEIR NATURAL HABITAT TO CELEBRATE WORLD SEA TURTLE DAY

In line with the Year of Sustainability that focuses on the sustainable enhancement of natural habitats and biodiversity and minimising the effects of climate change, the Environment Agency - Abu Dhabi (EAD), in partnership with The National Aquarium (TNA), released 81 turtles back into their natural habitat at Saadiyat Rotana Resort & Villas in celebration of the World Sea Turtle Day on June 16th.

The turtles were released by His Excellency Dr Mugheer Khamis Al Khaili, Chairman of the Department of Community Development in Abu Dhabi and EAD Board Member, Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of EAD, His Excellency Saleh Mohamed Al Geziry, Director General of Tourism at Department of Culture and Tourism (DCT), Dr Mohammed Salman Al Hammadi, Undersecretary of the Biodiversity and Marine Life Sector at the Ministry of Climate Change and Environment (MOCCAE), Mr Manuel Rabaté, Director of Louvre Abu Dhabi, as well as members of the community.

The Agency announced that since the Wildlife Rescue Programme was launched in August 2020, a rescue and rehabilitation programme developed in collaboration with TNA, a total number of 800 turtles have been rescued and a total number of 500 have been released. Since August of last year a total number of 178 turtles have been rescued and a total number of 81 have been released so that they can grow and reproduce, ensuring an increase in their numbers.

Stranded turtles are rescued by a team of scientists from EAD and the TNA, which first checks their health and then investigates how the turtles were stranded. Depending on the turtle's health diagnosis, a rehabilitation programme is initiated until they are fully recovered. Once the sea water temperatures are warm enough, they are then released back into the wild.

Her Excellency Dr Shaikha Salem Al Dhaheri on the occasion said, "More than once a year, we are always keen to release turtles back into the wild so that they can return back to their natural habitats and thrive. We are always on the lookout for stranded turtles as part of the Wildlife Rescue Programme in partnership with The National Aquarium and, once found, we pay very special attention to ensure they are well rehabilitated and healthy enough to survive in their habitats. Our greater goal is to ensure that Abu Dhabi's waters are abundant with species so that future generations can learn and enjoy nature."

"Today we released the rehabilitated turtles and some were fitted with satellite tracking devices on their back to monitor their movement and swimming patterns, as well as their path of migration. This helps our scientific experts learn more about them. Abu Dhabi's waters are home to more than 5,500 sea turtles, both Green and Hawksbill turtles, and we would like this number to increase. That is why we are eager to always return them into the water as opposed to keeping them in an aquarium."

Paul Hamilton, General Manager at TNA, commented, "2023 has seen further growth for the Wildlife Rescue programme with the inclusion of the Louvre Turtle Sanctuary, increasing our capacity to care for turtles as large as 100kg. 2023 will also see the launch of the Wildlife Rescue ambulance, providing immediate first aid to endangered marine life at the rescue site. With over 800 rescues performed over 3 years, Wildlife rescue is now one of the largest turtle rehabilitation projects in the world, having a significant impact on the wild populations of these endangered species. We remain focused on bonified marine education and conservation."

Last year, EAD signed a Memorandum of Understanding with the Department of Culture and Tourism - Abu Dhabi (DCT Abu Dhabi) to create a pre-release turtle rehabilitation area at Louvre Abu Dhabi, in the waters surrounding the museum. The sea turtles are able to convalesce under the expert supervision of marine biologists from both EAD and TNA.

Shaikha Al Nowais, Vice President Owner Relationship Management, Rotana Hotel said, "At Rotana Hotels, we hold the preservation of the environment as one of our highest priorities. The turtle release initiative holds profoundly a very special place in our hearts. Saadiyat Island, known for being home to a diverse range of wildlife, including turtles, has inspired us at Saadiyat Rotana Resort & Villas to be eagerly dedicated to not only safeguarding the environment and preserving Abu Dhabi's wildlife but also to the transformative power of education. Through this initiative, we are able to engage with the community, particularly children, and raise awareness about the vital importance of environmental preservation. We firmly believe that every action taken, contributes to creating a better world for future generations."

The Agency has been researching, monitoring and protecting marine turtles in Abu Dhabi since 1999 and has succeeded in maintaining a stable population in Abu Dhabi's territorial waters. The emirate houses two of the seven species of turtles found on the planet – both of which are threatened – the critically endangered Hawksbills, and the endangered giant Green Turtles.

The rehabilitation programme has revealed that several turtles showed signs of cold stunning – a condition in which sea turtles become very weak and inactive from exposure to cold temperatures. The cold-stunned turtles become lethargic and are eventually unable to swim causing them to float on the surface of the water. In some cases, cold stunning can also lead to a build-up of barnacles on their shells, which hampers the turtle's ability to move.

The satellite tracking of rehabilitated turtles over the past few years has revealed that the turtles have remained mostly within the Arabian Gulf. An earlier study on the migration of green turtles (2016-2019) showed foraging green turtles in Abu Dhabi water use Ras Al Hadd in Oman as their primary nesting destination. Findings from satellite tracking help inform local and regional management strategies, population assessments, and threat management.

Saadiyat Island Abu Dhabi which is located within Al Saadiyat Marine National Park where the turtles were released is home to a diverse ecosystem of protected marine and wildlife animals, connecting residents and visitors to Abu Dhabi's pristine and bountiful nature. The 'Middle East's Leading Beach Destination' reaffirms its commitment to protecting its natural surroundings and its inhabitants and offers guests the opportunity to observe native animals in their natural habitats.

AS PART OF THE SUSTAINABILITY AWARDS OF CAPITAL FINANCE INTERNATIONAL EAD WAS RECOGNISED AS BEST REGIONAL ENVIRONMENT AGENCY

The Environment Agency – Abu Dhabi (EAD) was recently named the Best Regional Environmental Agency in the Middle East and Africa in 2023 at Capital Finance International's (CFI) Sustainability Awards.

The Agency was recognised for its long history in executing regional first and large-scale projects in environmental conservation and is the first environmental agency in the Middle East to win this award since its launch in 2012.

The Agency, long acknowledged as the largest environmental regulator in the Middle East, was awarded for a series of projects, including species re-introduction, marine restoration, air and marine water quality monitoring, climate change action, management of groundwater and soil, research and outreach programmes, as well as youth engagement, and many others. Another factor was EAD's oversight for the permitting and assessment of facilities in the emirate of Abu Dhabi, which has witnessed a significant rise in compliance in the industrial sector.

Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of EAD, on the occasion said, "At EAD over the past few decades we have worked extremely hard to achieve our position of the leading environmental regulator in the region. By winning this award, bestowed on us by Capital Finance International, it means that what we are doing resonates beyond the boundaries of the UAE and we have reached a global audience. We are honoured to be recognised and will be inspired to achieve even more in the hope of continuing to position Abu Dhabi as a global leader in sustainability and the conservation of the environment."

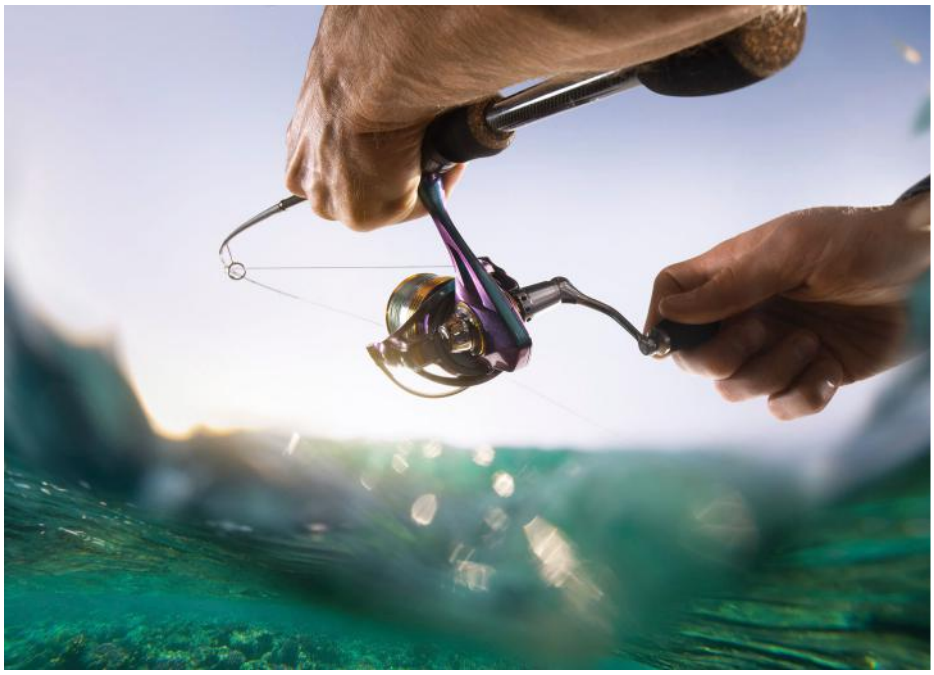
Mr John Mann, Awards Director from CFI said, "Environmental sustainability is never far from the thoughts of Capital Finance International. EAD has been recognised by our awards panel as the principal exemplar of positive action across the MENA region. The panel applauds EAD's significant and enduring achievements when addressing major conservation projects."

Examples of regional-scale projects pioneered by EAD include: the coral restoration project that strives to grow a million coral reefs, the planting of a million mangrove seeds in Abu Dhabi to mitigate the effects of climate change, and commissioning a unique research vessel that will conduct marine research in the Arabian Gulf. Built in Spain, the vessel's maiden voyage to Abu Dhabi covered 25 countries and 8 seas and conducted a world-first Atmospheric Research Expedition to measure air quality along its route.

The Agency was also the first in the region to introduce the remote sensing of vehicle emissions, with laser-based NASA spin-off technology measuring vehicle emissions in Abu Dhabi. It is also the pioneer of the largest species re-introduction programme, that has relocated 500 Scimitar-Horned Oryx to Chad after being close to extinction.

IN SUPPORT OF RECREATIONAL FISHING ACTIVITIES AND PROMOTION OF MARINE FISHING SPORTS IN THE EMIRATE

EAD ISSUES A DECISION TO REGULATE RECREATIONAL FISHING IN ABU DHABI



The Environment Agency – Abu Dhabi (EAD) has issued Decision No. (4) of 2023 of the Chairman of the Board of Directors of EAD, regarding the regulation of recreational fishing in the Emirate of Abu Dhabi. This comes with the aim of supporting recreational fishing activities and promoting marine fishing sports in the Emirate.

The provisions of the decision will apply to recreational fishermen and the organisers of marine fishing competitions across the Emirate of Abu Dhabi. The decision prohibits the practice of recreational fishing and the organisation of marine fishing competitions in the emirate's waters without obtaining a permit from EAD.

The decision defines that recreational fishing can be practiced by anglers or users of pleasure boats. The recreational fishing gears may include line and hooks or spear guns while practicing free diving, or by any other methods specified by EAD, whereas conducting marine fishing competitions is limited to legal persons working in the field of marine activities.

The decision specifies the terms and conditions for obtaining a recreational fishing license: the applicant should not be under 18 years old; however, those below that age are allowed to accompany an adult holding a valid recreational fishing license. A license request application must be submitted to the EAD according to the relevant form along with the necessary documents. Applications for both an annual or weekly recreational fishing license can be submitted through the "Tamm" government services portal.

In order to obtain a permit for marine fishing competitions, the decision stipulated that the organisers shall be responsible for safeguarding the event by providing necessary arrangements, tools and equipment for security and safety and any other requirements specified by EAD.

An application must be submitted to the EAD according to the relevant form, attached with the relevant documents, and information on the proposed location, date and time of the competition. In addition, organisers must specify the type and quantity of the targeted species, fishing tools and gears that will be used in the competition, and the number of participants. Applications must also specify how they plan to dispose of the fish caught and any other details that the applicant considers relevant.

Licensees must abide by the terms and conditions as specified by the EAD in the fishing license or the fishing competition permit, whether in relation to the number of people, number of trips, fishing sites, types and numbers of fish and marine species allowed to be caught, environmental requirements, health and safety, or any other relevant information.

The internationally recognised diving flag must also be displayed when spearfishing. There must be at least three (3) persons (a driver and two holders of a recreational license for spear gun use) on board the boat while fishing with a speargun. Upon completion of the fishing trip, a report with details of species and quantities of caught fish species is to be submitted to EAD through the means specified by the Agency.

Valid recreational fishing licenses or marine fishing competition permits must be presented upon request by an EAD employee or other competent authority. This also applies to holders of internationally accredited license for free diving.

A recreational fishing license or a marine fishing competition permit must be used by the licensee only and should not be used by anyone other than the licensee. Fish or marine species caught must not be disposed of until returning to land or reaching the anchorage or landing area and should not be sold. This is in addition to not catching or keeping marine species, or any part thereof, for ornamental purposes.

Pertaining to fish species and quantities allowed for recreational fishing, the decision referred to Ministerial Resolution No. 580 of 2015 regarding the prohibition of fishing, selling and marketing smaller sizes of fish that are below the minimum length allowed, and any relevant legislations that regulate fishing seasons or sizes, and adherence to the permitted daily fishing quota of 24 fish species per person, and per pleasure boat as indicated in the decision.

The decision also prohibits fishing, trading, keeping, or causing damage to any of the types of marine living aquatics that are specified by the decision, which include: painted sweetlips, yellow grouper, red coral, seahorses, parrot fish, sharks and stingrays of all kinds, sea turtles, whales and dolphins, dugongs, and corals.

FOLLOWING APPROVAL OF THE ABU DHABI CLIMATE CHANGE STRATEGY

EAD OUTLINES PLANS TO ACCELERATE CLIMATE ACTION AND STRENGTHEN THE EMIRATE'S RESILIENCE

As part of its continued strides to uphold the global aim in keeping the rise in average temperatures between 1.5 and 2 degrees Celsius, and as an affirmation of the UAE's climate action leadership, the Environment Agency - Abu Dhabi (EAD) has outlined plans for the Abu Dhabi Climate Change Strategy, which was recently approved by the Abu Dhabi Executive Council.

THE STRATEGY AIMS TO:

- Reduce the Emirate's emissions by 22% within 5 years
- Equivalent to CO_2 emissions sequestered by 500 million trees for 10 years
- Support the UAE Net Zero by 2050 Strategic Initiative
- Protect key sectors from the impact of climate change to become more resilient and agile

The comprehensive five-year plan will strengthen the Emirate's environmental resilience, achieve concrete progress towards achieving full climate neutrality, and further enhance Abu Dhabi's contribution to the UAE's global sustainability leadership, and attract investment as part of a secure and sustainable economy.

"Abu Dhabi is not alone in facing the impacts of the global climate change, and we must take proactive measures to mitigate and adapt," said Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of EAD. "Our plan provides proactive solutions to promote economic diversification through innovation and the use of low-carbon technologies."

"Through this strategy, critical sectors, such as infrastructure, energy, environment and health will be enhanced to ensure not only business continuity but also climate resilience and agility. Having one of the most climate resilient and adapted places in the region will attract further investment and give added confidence to businesses and individuals to move to and invest in Abu Dhabi," she added.

HE Sheikha Al-Mazrouei, the Executive Director of Integrated Environmental Policy and Planning Sector at EAD elaborated, "Our goal is for all these sectors to be fully adaptable to any possible repercussions of climate change by 2050. Over the next five years, we will also reduce the Emirate's emissions by 22% from their 2016 levels, which is equivalent to CO_2 sequestered by 500 million trees for 10 years."

This emission reduction target represents Abu Dhabi's commitment to the recent announcement of the UAE's emission target reduction of 40% by 2030 – compared to business as usual. Abu Dhabi is committed to achieving its target through a reduction of absolute emissions by 47 million tons of GHGs by 2030.

The strategy was developed in collaboration with the Department of Energy, Department of Municipalities and Transport, Department of Economic Development, Abu Dhabi Agriculture and Food Safety Authority, Abu Dhabi Public Health Centre, and Abu Dhabi Waste Management Company. EAD also coordinated with the Ministry of Climate Change and Environment, and the Abu Dhabi National Oil Company (ADNOC), Emirates Global Aluminium, Mubadala and other private sector leaders.

Drawing on the Emirate's long history of sustainability, Abu Dhabi Climate Change Strategy will be implemented at an accelerated rate across two pillars: mitigation, which will involve reducing climate emissions while maintaining economic growth; and adaptation, which refers to enhancing the resilience and agility of key economic sectors against climate risks. The strategy will employ 81 initiatives and 12 strategic projects across key areas, including low-emissions vehicles, mangrove restoration, green procurement, building codes, negative emission technologies, decarbonisation, and cleaner renewables.

HE Dr Al Dhaheri concluded, "The launch of the Abu Dhabi Climate Change Strategy is another example of the UAE's climate leadership in the regional and global arena. It follows in the footsteps of being the first nation in the region to ratify the Paris Agreement, the first nation in the region to truly invest in cleaning its power supply by turning to renewables, and the first in the region to set a pathway to net zero by 2050. All of this is founded on the teachings and practices of our founding father, the late Sheikh Zayed Bin Sultan Al Nahyan, and the commitment to sustainability of his sons."

DEEP DIVE DUBAI AND THE UAE CHESS FEDERATION
CELEBRATED INTERNATIONAL CHESS DAY UNDERWATER

Deep Dive Dubai is a world-class academy dedicated to diving excellence. On the 20th of July, it celebrated International Chess Day, in a way that it knows best, underwater. The world's deepest pool collaborated with the UAE Chess Federation to honour the day that is dedicated to the chequerboard strategy game.

Deep Dive Dubai's provided the magical, unique setting, and the UAE Chess Federation nominated four of its players to battle it out for the top prize. Emiratis Mohammed Saeed, Khalifa Alhafti, Mana Saeed, and Omran Alhosani, who have proudly represented the UAE at local, regional, and international tournaments, were set a new challenge around their beloved game.

The quartet was trained by Deep Dive Dubai's expert instructors before being kitted with wetsuits and shallow dive gear. Deep Dive Dubai's experienced staff and safety teams were on hand during each round to ensure the player's comfort and safety.

Jarrod Jablonski, Deep Dive Dubai's Director, stated, "We are thrilled to partner with the UAE Chess Federation and bring together these two passions in an innovative manner. Deep Dive Dubai is deeply invested in sharing a deep passion for the underwater realm, and hosting this underwater chess tournament perfectly aligns with our vision."

Deep Dive Dubai welcomes divers of all skill levels to embark on a unique underwater chess adventure. The specialised set is a regular feature at Deep Dive Dubai. The 32 chess pieces are made of stone, allowing them to remain sturdy while submerged.

The facility offers novices and experts an unforgettable experience tailored to each person's ability. Come and explore the wonders of the world's most exceptional deep-water facility, where everyone can discover the joy of diving.

For more information, please visit Deep Dive Dubai: **www.deepdivedubai.com**

PADI AND BLANCPAIN EXPAND PARTNERSHIP TO LAUNCH CRITICAL GLOBAL SHARK & RAY CENSUS

PADI® (The Professional Association of Diving Instructors®) and Swiss prestige watchmaker, Blancpain are combining resources to work towards saving 30% of the ocean by 2030 – with the two organisations teaming up to create the Vulnerable Marine Species Programme. Blancpain's support will be key in funding the Global Shark & Ray Census, a new citizen science initiative that is slated to launch Earth Day 2024 and is designed to help protect vulnerable marine species around the globe from extinction.

PADI and Blancpain have been kindred spirits in Ocean conservation starting over two decades ago with a whale shark identification project. This latest evolution comes one year after both organisations announced an expanded commitment to partner and increase the number of marine protected areas (MPAs) around the globe. As a founding partner of PADI's Blueprint for Ocean Action, Blancpain accelerated the creation of PADI's MPA Programme and its flagship citizen science programme, Adopt the Blue™. Millions of recreational divers now have the direct ability to choose to be Ocean Torchbearers and directly engage in meaningful marine conservation activities while exploring the Ocean.

"Blancpain has long been committed to real engagement in Ocean Conservation issues. Working together, will be a force multiplier in achieving our shared Ocean Conservation goals" says Dr Drew Richardson, CEO of PADI Worldwide and Chairman of PADI AWARE Foundation. "Blancpain's expanded support of PADI's Vulnerable Marine Species Programme forges a juggernaut combining the Blancpain Ocean Commitment with the PADI Blueprint for Ocean Action in advancing positive ocean change."

Now, with the generous support from Blancpain, PADI and global non-profit partner PADI AWARE Foundation™ will build and deploy the largest underwater citizen science programme designed to protect sharks and rays from extinction. In addition, PADI AWARE Foundation's Mission Hub Community Grant Programme will include support for both MPA and Vulnerable Marine Species Grantees internationally and at a local level. These grants support critical conservation initiatives in local communities all around the world.

PADI AWARE Foundation is among the world's most successful shark and ray conservation organisations, with a 30-year track record of groundbreaking conservation measures for the oceanic whitetip shark, great hammerhead, giant manta ray, whale shark, and mako sharks – along with many other vulnerable species. Last year at CITES (the Convention on Trade of Endangered Species of Wild Fauna and Flora) in Panama City. PADI was invited to CITES and asked to provide specialist advice and research to all attending government representatives. This helped secure support for a critical vote to double the amount of protected shark and ray species. To date, the PADI AWARE Foundation and PADI have helped secure protection measures for over 105 species of sharks and rays.

"With a growing base of divers interested in shark conservation, the Global Shark and Ray Census enables divers to function as diving citizen scientists in order to collect high-quality data and information on vulnerable shark species. Engaged divers across the planet who choose to participate will directly help accelerate national and global protection measures where they are needed most," continues Richardson.

If you would like to personally support the PADI AWARE Foundation and Blancpain in creating positive ocean change, donations can be made to the PADI AWARE Shark Appeal. Blancpain has generously agreed to match donations 1:1, which will go towards supporting the development of the Vulnerable Species Programme.

www.padi.com

ABOUT BLANCPAIN

Founded in 1735 by Jehan-Jacques Blancpain in the Swiss Jura, Blancpain is known as the world's oldest watch brand. Loyal to its tradition of innovation and confirmed by countless horological complications invented over the years, the Manufacture is constantly pushing the boundaries of watchmaking to take this art to places where it has never been before. Blancpain's Ocean Commitment programme pays homage to the brand's significant historical links with the ocean, having launched the world's first modern diving watch, the Fifty Fathoms, in 1953. This milestone moment in Blancpain's near 300-year history marked the starting point of its collaborations with the ocean community, which have typified the 70 years since, as has its support for ocean conservation initiatives.

www.blancpain.com

PADI PARTNERS WITH GLOBAL SKINCARE BRAND MEDIK8 TO SUPPORT POSITIVE OCEAN CHANGE PROJECTS

PADI®'s global non-profit the AWARE Foundation™ is teaming up with leading sustainability-focused skincare brand Medik8 to save our most critical ecosystem on the planet – the ocean.

As the new corporate sponsor of the PADI AWARE Foundation's 2023 Community Grant Programme, Medik8 will be supporting four grassroots conservation projects that range from protecting megafauna like turtles and whales from entanglement to fuelling hands-on citizen science initiatives like seagrass restoration.

The PADI AWARE Community Grant Programme is designed to award ocean protection initiatives that are in direct support of the United Nations Decade of Science for Sustainable Development in five distinct categories: coral restoration, developing marine protected areas, eliminating marine debris, reducing the effects of climate change, and protecting species threatened with extinction such as sharks and turtles. In 2022 PADI AWARE™ dedicated nearly one-quarter of its public funds to empower local communities to take action for our shared blue planet.

"Last year we launched the Grant Programme to directly support PADI Members and NGOs driving meaningful conservation projects, often who have little or no funding support," says Danna Moore, PADI AWARE Foundation's Global Director. "This year, due to the collaboration with Medik8, we can provide more resources directly to local communities that need them most. Medik8 is a like-minded organisation that shares our science-based, sustainability-driven, and community-oriented values – and will be a strong partner committed to helping us create positive ocean change."

Medik8's support of the PADI AWARE Community Grants programme is in line with their ethos of making a positive impact through driving sustainability strategies with everything they do – from reducing carbon impact and waste to investing in being an ethical business with direct social investments. Their connection and deep love for the ocean is rooted in Medik8's founder Elliot Isaacs, who is a PADI Master Scuba Diver™.

"As a brand, we strongly believe that increased social investment will allow us to make a more significant mark on wider society," says Alexandra Florea, Head of Sustainability at Medik8. "Working with grassroots organisations who understand exactly what is needed on the ground will mean we can generate the greatest impact. We chose PADI as our long-term charitable partner because, like us, they put science at the heart of everything they do to bring about positive results."

The PADI AWARE Grantee projects Medik8 is sponsoring fuel the impact of local citizen science initiatives driving global change like Kosamare, a grant recipient from 2022 and now 2023. The other three grantee projects have also been selected and range from marine debris removal to climate change mitigation – and are set to be announced in the coming months.

KOSAMARE SEAGRASS RESTORATION | KEFALONIA, GREECE

One of the first collaborative projects on the line-up will be Kosamare, a project that seeks to monitor and restore seagrass and install permanent eco-moorings in high-density areas in the Posidonia meadows in the North of Kefalonia. In its first year, the project has been able to engage students from Greece and all over Europe in one of the most important ecosystems in the Mediterranean. This project demonstrates the ability of small organisations and communities to mobilise for change in the face of the climate crisis.

"The admirable goals of this critical project fall very much in line with our own carbon reduction targets," says Flora. "By significantly increasing the presence of seagrass – a blue carbon habitat – this initiative will boost both biodiversity and wider protection measures for the Mediterranean Sea."

The PADI AWARE Community Grant programme is open to all PADI Dive Centres around the world, along with locally-based NGOs and charities working on marine conservation issues that operate on a budget below $1 Million USD.

"With incredible partners like Medik8 who are equally committed to creating positive ocean change, a swell of hope for our shared blue planet is becoming stronger with every project we support – further proving that the ripples from local action really do have a global impact for us all," says Moore.

The next round of proposal submissions is on 4 April 2023, with more information at **www.padi.com/aware/grant-funding-criteria**.

PROTECTING YOUR SKIN AND THE BLUE PLANET

It's not just vitamin D and Vitamin 'Sea' divers are exposed to, but the sun's potentially harmful rays.

Julie Andersen, Senior Global Director of Brand for PADI Worldwide – a passionate environmentalist, diver of 25 years, lover of the oceans and Founder of Shark Angels, gives us the lowdown on what to consider when choosing a sunscreen that's safe for our bodies and the Blue Planet.

What are the primary concerns when it comes to sunscreen & the oceans/reefs?

Sunscreen is an essential item for those at work or play in the sun but not all sunscreens are created equal. Some, even those labelled as reef safe, can harm marine life and kill coral.

Shockingly, more than 14,000 tons of sunscreen are washed off our bodies and into the oceans each year, posing a significant threat to marine life and coral reefs. The most significant source of ocean-harming petrochemicals isn't from beach-goers and scuba divers, but the wastewater created when we wash off these chemicals in the shower or flush them down the drain. Most wastewater treatment plants are unable to remove these synthetic ingredients, leading them to flow into the nearest body of water, ultimately reaching the ocean.

The side-effects of sunscreen in the ocean are alarming.

Sea anemones, which are closely related to corals, and mushroom coral can turn oxybenzone – a chemical that protects people against ultraviolet light, into a deadly toxin that's activated by light.

Recent studies found that chemicals in sunscreens are accumulating in Mediterranean seagrasses. Scientists studying seagrass meadows off the coast of Mallorca, Spain discovered ultraviolet. Since the Mediterranean Sea is shallow, small and very enclosed, concentrations of UV-absorbing chemicals can reach high levels. This discovery could have broader implications for an ocean ecosystem that provides critical habitat and foraging grounds for marine life, strengthens coastal areas against erosion and storm damage, and sequesters carbon

UV-filtering sunscreen chemicals have been shown to harm fish, turtles, and dolphins with exposure to these contaminants posing serious risks to their survival.

These same chemicals also damage coral reefs – most specifically in tourist destinations like Hawaii, Key West and Palau.

It is crucial to recognise that what is harmful to the oceans is often harmful to humans as well. Oxybenzone is proven to inhibit coral reproduction but also reduces testosterone levels in men disrupting their reproductive systems and development. Initial studies show the chemical lingers in the body and has been found in amniotic fluid, urine and blood as well as the breast milk of both human and dolphin mothers.

Physical sunscreens use minerals like zinc oxide to reflect harmful UV rays, while chemical sunscreens absorb UV rays using ingredients like avobenzone, benzophenone/oxybenzone, ecamsule, and octocrylene.

To protect both our skin and the reefs, it is recommended to use sunscreens with physical UVA and UVB filters, such as zinc oxide and titanium dioxide, which form a physical block on the skin instead of being absorbed.

What sunscreen ingredients are harmful to reefs, and how so? Are some more harmful than others?

There are two types of sunscreen, physical and chemical. Physical sunscreens use minerals, such as zinc oxide, to reflect harmful UV rays while chemical sunscreens absorb UV rays and typically contain ingredients such as avobenzone, benzophenone/oxybenzone, ecamsule and/or octocrylene.

These chemicals are not only bad for coral, they may be bad for humans too. A recent FDA study found chemical sunscreen ingredients can enter the bloodstream and remain in the body for 24 hours or more after application.

Studies have shown even tiny concentrations of chemicals such as oxybenzone and octinoxate from sunscreens can cause corals to be more susceptible to bleaching and also damage their DNA in the lab.

To protect both our skin and the reefs, PADI recommends applying an SPF with physical UVA and UVB filters before going beneath the surface. Look for active ingredients like zinc oxide and titanium dioxide, which form a physical block to shield skin from absorbing any rays – whereas chemical filters absorb UV and turn it into heat that's released from skin.

What is the difference between "reef-friendly" and "reef-safe"?

Unfortunately, the term 'reef friendly' is not regulated, so you can't always trust products with this description. It's important to check the "active ingredients" label on the back of your sunscreen to ensure is does not include reef-harming chemicals. The size of minerals can also have an impact. Opt for micro-sized (or non-nano) mineral sunscreens to avoid toxic nanoparticles. Lotions are preferable to spray or misting sunscreens, especially those that contain titanium dioxide as inhalation can be harmful to health. Additionally, choose products that reduce single-use plastic packaging, such as reusable containers, those with high recycled content, or made from biodegradable plant-based materials like cardboard.

PADI loves Stream2Sea an eco-conscious skin care line that is healthy for us and our planet. Stream2Sea's products have undergone extensive testing to ensure their safety for freshwater fish, saltwater fish, C. elegans, and coral larvae.

www.padi.com

FOR THE OCEANS

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EDA'S NEW ECO DIVERS REEF CHECK CERTIFIED

FEATURE AND PHOTOS **ALLY LANDES**

EDA's Reef Check Trainer, Rania Shawki Mostafa has certified 8 more eco divers! The second Reef Check group was certified on the 11th of June, and the third group on the 24th of June. Having passed their theory tests online within the fields of Substrates, Invertebrates and/or Fish, the practical exams were held at 3 Rocks in Dibba, Fujairah with Divers Down and was a positive success for these eco divers who are now certified to take part in our upcoming survey dives through their qualified fields.

Congratulations to Ahmad Melhem, Johanna Kaehler, Julia Andreas, Lier Yeo, Khaldoon Walid Monir Nabhan, Shijo Skaria Jose, Azra Thabassum, and Ben Blunsdon. Well done guys!

WAS THE REEF CHECK ECO DIVER COURSE BENEFICIAL FOR YOU AS A DIVER?

"I've started seeing the reef in a different and better way. I would definitely recommend the course to other divers. Thank you so much for everything you have done, with special thanks to Rania."
Ahmad Melhem

"Very. I learnt more about coral in just a few days, than I have in my previous 20 years of diving. I would recommend it to other divers, but there should be two dives so the mistakes of the first dive can be practiced immediately."
Ben Blunsdon

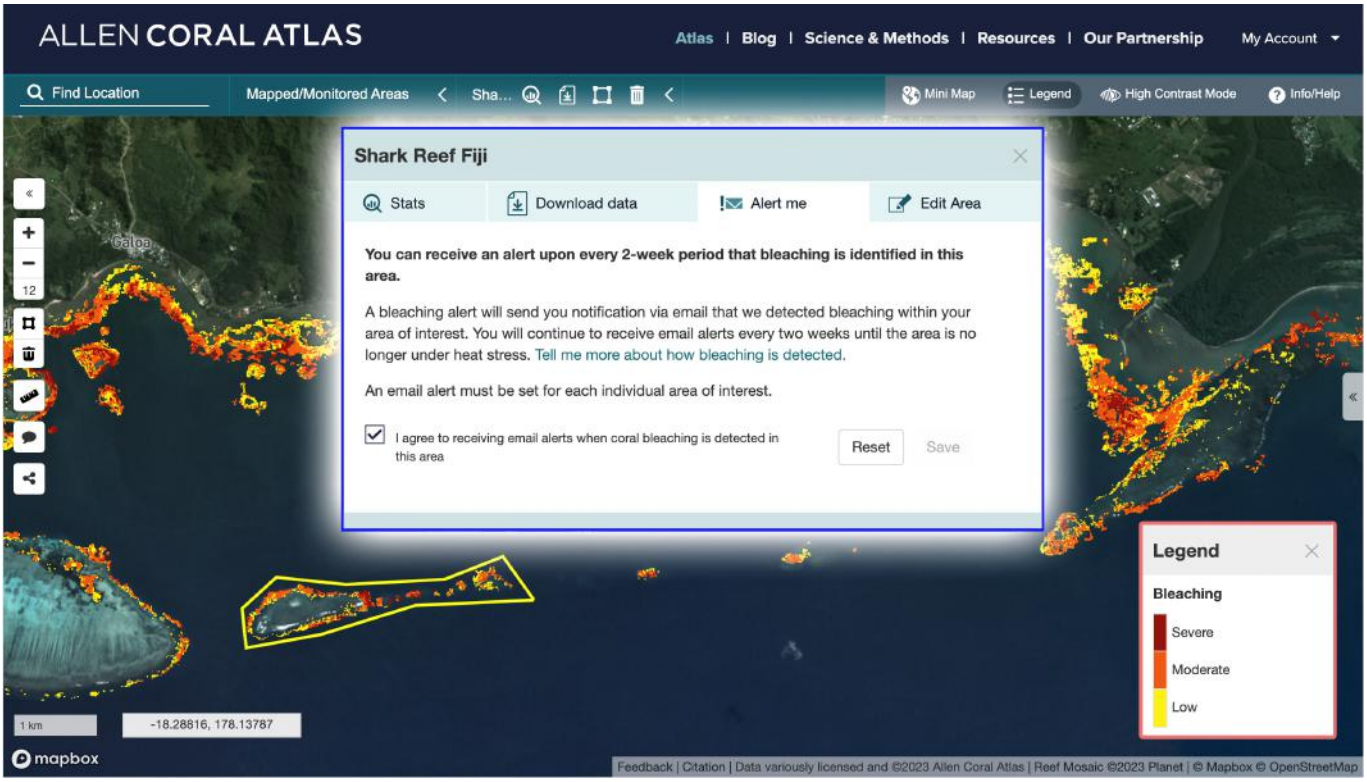
"Very beneficial! I am more aware now of what I see underwater and learned a lot in general. Meeting cool new people is another big plus. I personally like diving with a purpose (other than training). The whole experience was amazing and I would definitely recommend it to every (regular) diver. You guys are amazing, please keep going."
Johanna Kaehler

"It targets all UAE divers into one platform. It adds value to my career, and I recommend it to other divers."
Saeed Saif Majed

Photo by Layla Nouilati


Photo by Rania Shawki Mostafa

ALLEN CORAL ATLAS
NOW OFFERING BLEACHING ALERTS



The Allen Coral Atlas team is excited to release an incredible new feature. Atlas users can now sign up for bleaching alerts for their favourite coral reef areas! This is timely as we are in the development of El Niño, which calls for a high probability of coral bleaching worldwide.

Here's how it works: Every two weeks, new bleaching data is uploaded to the Atlas. This monitoring data is cued by the NOAA Coral Reef Watch (Bleaching Alert Level 1). Log on to the Atlas and sign up for alerts for a country's marine region, a marine protected area or draw a custom reef area of interest and you'll receive an email notifying you whenever there's been bleaching detected in that area. It's like having a direct line of communication with the reefs themselves!

The goal is to assist coral reef managers, decision-makers, scientists, and anyone with a passion for these magnificent ecosystems by providing valuable information about coral bleaching at various scales, helping everyone stay informed about the state of our reefs.

www.allencoralatlas.org

REEF CHECK ST. KITTS & NEVIS PARTNER
SECURES FUNDING FOR PROGRAMMES

BY **CARE SKN** (Coralreef Assistance Restoration and Education in St. Kitts & Nevis)

NASC (Nevis Aquatic and Sailing Center) and CARE SKN (Coralreef Assistance Restoration and Education in St. Kitts & Nevis) work in partnership with a passionately held core mission: to engage with the Nevis Community and promote the teaching of marine health and activities.

A key immediate task is to form a steering committee of local representatives with a primary objective to reach out to and attract a broader base of young Nevisians to the Center's programmes.

CARE SKN submitted an application to the GEF Small Grants Programme that was successfully accepted for funding support under the programme's focal area of Biodiversity Conservation. NASC was able to provide the necessary co-financing through fundraising events and generous donations that were specifically ring-fenced for the development of the Aquatic Community Center's facilities. Sincere thanks to all our valued supporters and volunteers!

This amazing project attracted US$80,000 GEF SGP funding to finance:

- A significant coral nursery of 40 trees in Majors Bay
- Reef Check EcoDiver certification training
- Coral nursery husbandry training
- Marine biology classes for the community
- Public awareness
- Construction of bathroom and changing facilities
- Construction of educational centre and classroom

All of the above will improve the success,

This exciting development could not have been realised without the advice, encouragement and support of Ilis Watts and the GEF SGP National Steering Committee.

quality, safety and hygiene of the programmes offered by NASC and CARE SKN.

NASC's programmes all take place in Nevis' marine backyard. As a non-profit dedicated to improving the skills and fitness of the participating swimmers and sailors, the conservation and health of the ocean's habitats is of critical importance. The CARE SKN interactive classes in marine biology are conducted for NASC's camp participants during the school holidays and the young students learn how to respect and protect marine life.

NASC and CARE SKN are stronger together, sharing the centre's stunning oceanfront location, the onsite facilities, boats, equipment and educational aids. Swim and Sail Programme participants and volunteers are encouraged to support CARE SKN, physically working to restore coral reefs and planting the coral nurseries on land and at sea.

CARE SKN's focus is coral. As a non-profit NGO, the organisation is dedicated to restoring the reefs in St. Kitts & Nevis and spreading awareness. The education and training are key components for a successful and supportive restoration plan. This includes marine biology classes, Reef Check EcoDiver certification courses, science projects and consultations. The next Reef Check EcoDiver course, scheduled for July 2023, will teach participants how to survey and analyse coral reef health.

CARE SKN successfully completed a pilot project installing a small coral nursery in the summer of 2022. A larger 40 coral-tree nursery is set to be built in early 2024 with the ultimate goal of 215 trees to build an efficient reef restoration programme to conserve a high biodiversity on the reefs in St. Kitts & Nevis.

MALAYSIAN REEFS IMPACTED BY BLEACHING, GHOST NETS AND CROWN-OF-THORNS

BY **REEF CHECK MALAYSIA**

ABOVE: 100kg of ghost nets being removed by divers at Mantanani Island. **TOP RIGHT:** Corals bleaching as the water temperature reaches 32°C. **BOTTOM RIGHT:** 2,181 Crown-of-Thorns collected from a four day COT clean-up session done in Sabah.

Reef Check Malaysia's team is busy on the ground as we enter the peak time of the season. However, Malaysia is experiencing a heatwave that is expected to last until August 2023, according to the Minister of Energy and Natural Resources Malaysia.

The temperature has recently gone as high as 37°C (98.6°F) during the day and our team has reported that the underwater temperature reached as high as 32°C (89.6°F). This is a cause of concern as our team has observed signs of bleaching in the corals.

Due to this, our team is actively monitoring the situation and activating our bleaching response plan to mitigate the situation.

In addition, ghost nets (fishing nets that have been abandoned, lost or discarded) are still haunting our ocean. Teams at each of our bases have had their hands full with removing ghost nets from damaging the reefs and trapping marine life to their death.

In Sabah, our team removed 100kg of ghost nets in Mantanani Island. It took seven people to remove the 20 to 30m long net. In Tioman, ghost net removal is almost done weekly. In May, our team, along with the Tioman Marine Conservation Group (TMCG), removed 440kg of ghost nets in one session.

On top of that, our team has also been responding to the Crown-of-Thorns (COT) starfish outbreak. In Darvel Bay, off Sabah's east coast in Lahad Datu district, our team, with the help of Sabah Tourism, Culture and Environment Ministry and divers from Sabah Parks, Lahad Datu Fisheries Department, Darvel Bay Diving Group and the NGO Larapan Youth, held a clean-up to remove this predator. The team managed to remove 2,181 COTs from the four-day COT clean-up session.

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.

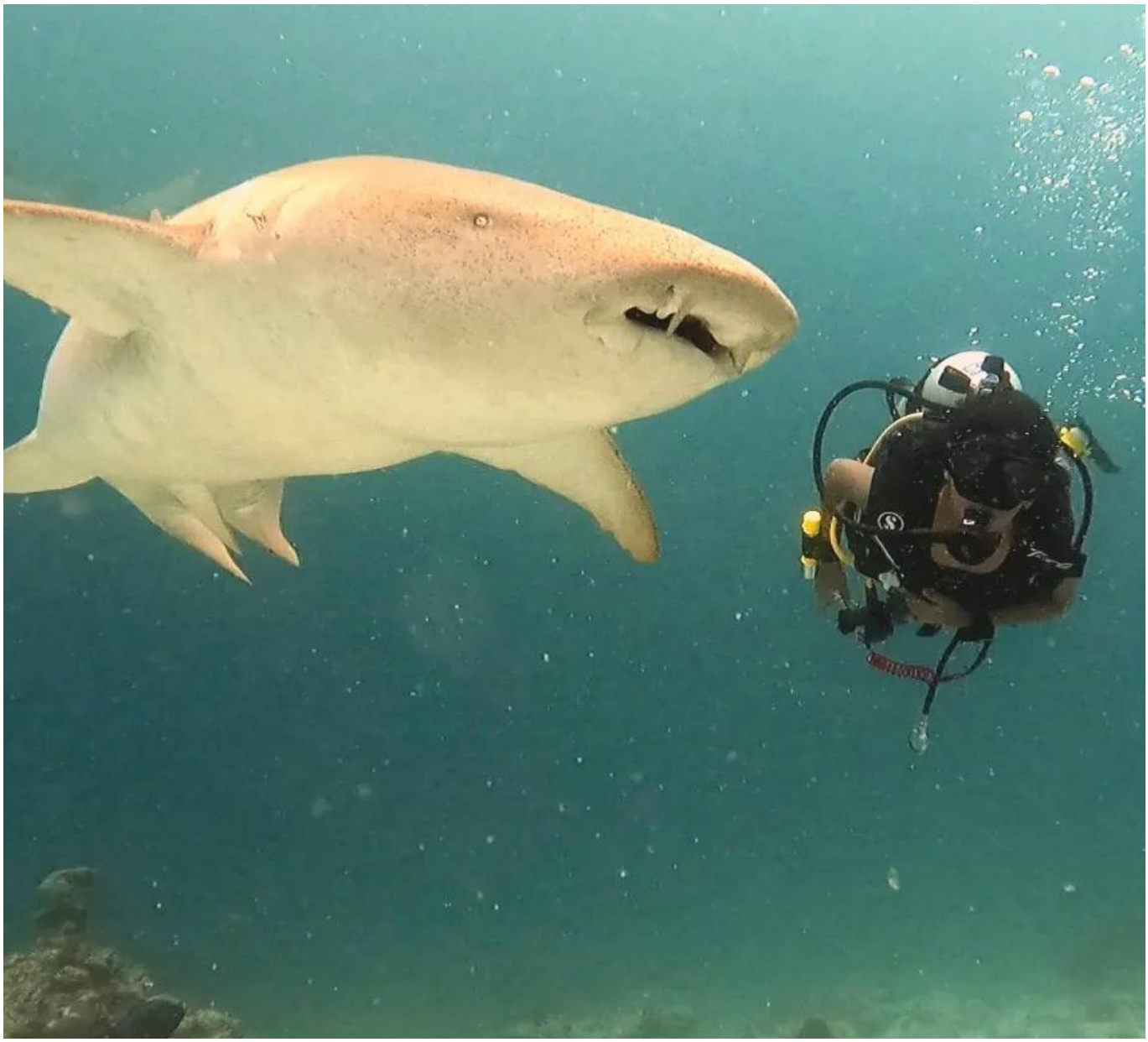
EDA
جمعية الإمارات للغوص
Emirates Diving Association

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

MY SUPER MEMORABLE 25th DIVE!

BY **TISYA PANIGRAHI** (JUNIOR ADVANCED OPEN WATER SCUBA DIVER)

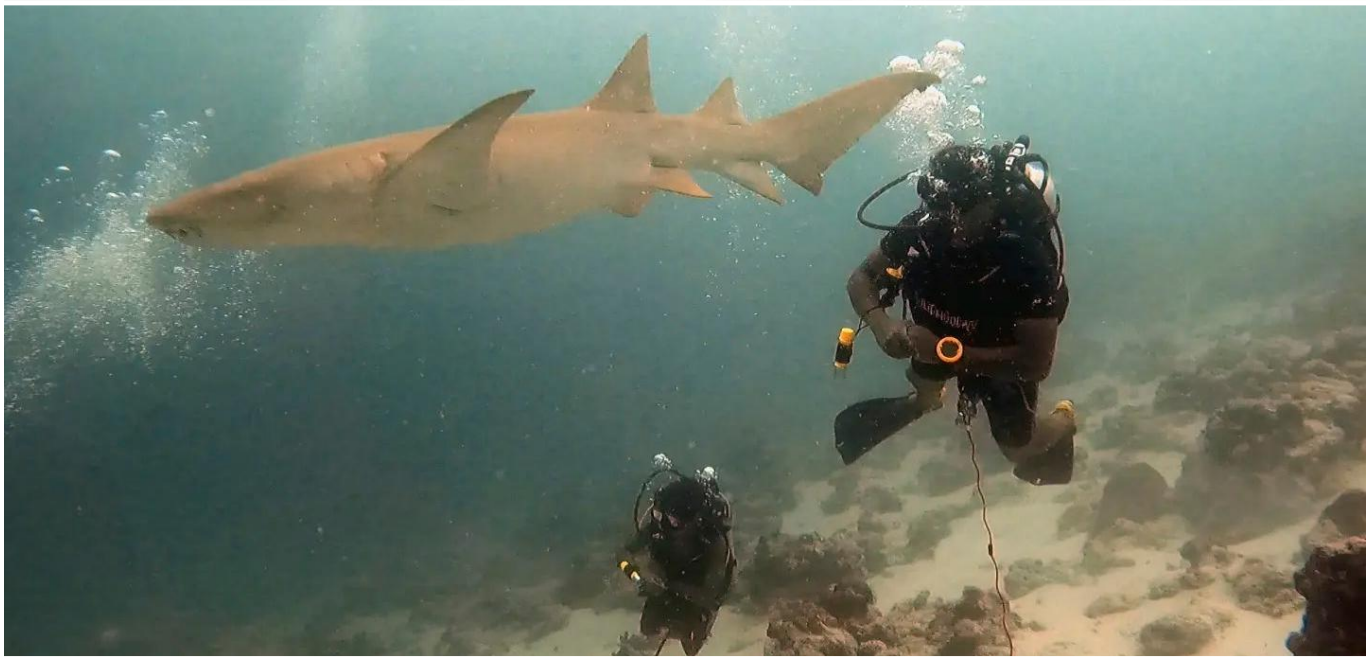


When I first entered the water, I couldn't see much, apart from the sandy bottom and my fellow divers. But then, suddenly, from the corner of my eye I saw the nose of a big creature. That's how I knew that I had begun the Alimatha Shark Dive, the world famous dive site at Alimatha Island, Maldives back on the 16th of December 2022.

Nurse sharks may be the most gentle and carefree creatures I have seen. Majestic creatures, grey, decorated with these beautiful black spots all over their bodies. They are huge fish too, the biggest one I saw was probably 10 feet long! As we were descending, I could already see a swarm of these sharks in the distance, but it appeared that they were just as curious about us as we were of them. I later learned that the resort that we were diving with used to feed them, so they probably approached us with the intention of going back with full stomachs.

The divemaster caught our attention and told us to take out our reef hooks (a tool that is used by scuba divers to remain stationary in strong currents while diving) and instructed us to attach it to a stable rock or boulder. When he signalled this, I realised just how strong the current we were swimming against, was. I suppose I was too mesmerised by the sharks to notice that I was getting tired from kicking so hard.

We were looking for a spot to anchor ourselves, and we hit the jackpot. We saw a shiver (the name given to a group of sharks resting) of nurse sharks sleeping on the sandy bottom. We were a bit far away, and I naturally looked down at my dive computer to check my depth. It turns out I was at 18 metres. I am a certified Junior Advanced Scuba Diver which means I can go as deep as 21 metres. I wanted to go as close to the sharks as possible. I looked for the divemaster who coincidentally was telling my dad he couldn't go any deeper (he was merely an Open Water Diver). He had reached his limit of 18 metres. I got the divemaster's attention and asked if I could go deeper. He was reluctant, but when I indicated to my computer, he obliged. That would probably be one of the greatest moments of my life. Not only getting to see the sharks closer, but surpassing my father who is 31 years older than me (that was probably the only reason he did his advanced course earlier this year in April).



As if the dive could not get any better, we unhooked ourselves and then proceeded to move to another location. While we were swimming, a shark decided to let me know it was there and bumped into my shoulder. That was not the end of it though, another shark grazed my leg. It was not I who bumped into the sharks, but the sharks bumped into me. It's worth noting that you should never touch any sea creatures. This may aggravate them, and it wouldn't look too good for you.

We saw a shark approach the sandy bottom. It looked as if he was going to rest, but it turned out he had an itch. He turned around and started rubbing his back against the sand. He did this for a couple of seconds before finishing and returned back to his family.

From the corner of my eye, I saw my father being escorted back up to the boat. I didn't think much of it at that moment, but apparently, he was running out of air. The divemaster did not want to end the dive for the rest of us. As he left, I looked up and saw a swarm of about 30-40 sharks against the sunlit waters. It was beautiful. I looked around to see all of the other divers looking up as well.

I loved this dive and if any of you want to experience what I did, then I recommend doing it with an Advanced Open Water course. The experience will then be up close and personal (though Open Water divers are welcome). The Alimatha dive just kept getting better and better, and it is my favourite dive I've done to date.

MORE INFO:
Tisya dived with Fulidhoo Dive based at Fulidhoo Island, Maldives along with her father Priyadarshee Panigrahi.
www.fulidhoodive.com


DRYFOB
DRYFOB

DRYFOB

FEATURE **GORDON T. SMITH** PHOTOGRAPHY **ALLY LANDES**

So, you're all geared up and ready for a shore dive at some remote location, or maybe at a busy beach with your buddies, what do you do with your car key if nobody is staying behind to watch over the contents of your vehicle?

So, you're all geared up and ready for a shore dive at some remote location, or maybe at a busy beach with your buddies, what do you do with your car key if nobody is staying behind to watch over the contents of your vehicle?

20 years ago, this was not an issue, a spare key on a piece of string did the job of keeping your valuables locked in your car while you did your dive with the key around your neck under your wetsuit, no problem, I did this for years when I lived in Saudi Arabia.

However, nowadays everything is electronic and getting your car key wet is going to be a major problem, not to mention expensive!

For those of us who live in the United Arab Emirates, with a very low crime rate, we might not worry too much about this. People frequently leave their vehicles unlocked, or stash the key in a non-obvious place (I don't recommend the exhaust if you want to keep the key clean), or perhaps use a magnetic box that works well under the car, and out of sight.

Most thieves are opportunistic and although the risk here in the UAE is low, in other countries perhaps not so much. Bonaire in the Caribbean has a bad rep for rental vehicles being broken into whilst people go shore diving according to reports on ScubaBoard.

The best solution of course is to take your key with you, but how do you keep it dry and functional?

Enter DRYFOB, a simple canister manufactured from anodised aircraft aluminium, designed by a couple of scuba divers who faced similar issues.

This simple container has a double O-ring and has been tested to -100m (11 Bar). The standard size (illustrated) will accommodate most car keys and can be easily attached to a BCD, inside the BCD pocket or in a drysuit or some wetsuit pockets, and even in tech shorts pockets that are becoming more common these days.

If your vehicle has a large key fob as found on some Jeeps and other vehicles, there is a larger version available, in fact there are two larger versions with the extra-large being specifically designed for those who travel and dive with a Personal Location Beacon (PLB).

My personal DRYFOB has done hundreds of dives now, and I've added a small boltsnap to it, which I clip onto the lanyard inside the pocket attached to my wing harness, very secure even when I have to access the pocket when I'm underwater. So, from my perspective it's well tested with 100% success, and gives peace of mind during my shore dives too.

Standard colours are red and blue, but there are still limited stocks of some other colours including yellow, purple, orange and green.

Check out the DRYFOB website for more info: **www.dryfob.com**

DRYFOB SPECIFICATIONS

	OUTER DIAMETER	LENGTH	INNER DIAMETER	LENGTH	WEIGHT
STANDARD	50mm	110mm	42mm	95mm	104g
LARGE	54mm	115mm	46mm	100mm	121g
EXTRA LARGE	78mm	140mm	70mm	122mm	221g

ARCHIREEF'S BIOBLITZ

FEATURE AND PHOTOGRAPHY **ALLY LANDES**

"The BioBlitz is a citizen science experience in which we sample a lot of areas in and around the oceans that we want to monitor to better understand the baseline that we're working with as far as marine species are concerned, as far as abundance is concerned, and as far as diversity is concerned. This is the cornerstone of a larger marine biodiversity project that we are working on."

EDA Volunteer, Angela Manthorpe collecting samples (sea cucumber) on one of the exploratory dives.

LEFT-RIGHT: First Row – Guest Scientists, Mandy Bemis & Abby Uehling, Archireef's Data Product Manager Mohammad Younes, Archireef's Marketing Manager Mayez Kabbara, Archireef's Co-founder & Chief Commercial Officer Deniz Tekerek; Second Row – Volunteer Namitha Jasim, Guest Scientist Robert Lasley, EDA Volunteer Angela Manthorpe; Third Row – Archireef's Back End Engineer Mohamad Oghli, Archireef's Business Development Manager Olivia Wu, EDA Volunteer Gordon T. Smith, Archireef's Sustainability Communications Advisor Flo Janin, Anantara Hotel Sir Bani Yas Island's Activity Guide Mark Penfield, and Anantara Hotel's Cluster Marketing Executive Jennilyn Lustria.

Congratulations to Archireef for assembling and managing an incredible two weeks for their BioBlitz campaign. They opened their project to volunteer citizen scientists, and those accepted into the programme – including some of our EDA Members – were all an incredible asset to the Archireef team and guest scientists.

As part of a marine biodiversity conservation project spearheaded by ADQ, Environment Agency - Abu Dhabi, and Archireef, Archireef's mission was to discover and study the marine invertebrates found in the Arabian Gulf in Abu Dhabi. They achieved their target of collecting over 1,000 specimens from both the sea and the mangroves, pushing marine conservation to the forefront with Anantara Hotels, Resorts and Spas as the support hosts.

Everyone worked from early mornings out in the field to late nights in the lab sorting all the specimens collected. There were unpredictable weather fronts postponing some of the dives, but they carried on and trudged through mangrove mud wasting no time getting all the DNA needed in the 2 week timeframe.

The opportunity given to make new discoveries, learn how to identify rare species, and document unique ecological interactions within our marine environment has been a wonderful experience for all the volunteers involved, and I want to thank Archireef for reaching out. There is still so much to look forward to once all their lab results come back. Here are the interviews all about the project.

THE ARCHIREEF TEAM

INTERVIEW WITH DENIZ TEKEREK AND FLO JANIN

Ally Landes (AL): Hi Deniz, can you give us a breakdown of Archireef and what you guys do?

Deniz Tekerek (DK): Sure! I am the Co-founder and Chief Commercial Officer at Archireef. Archireef is a nature tech company that's focused on restoring marine ecosystems. Just over three years ago, we brought onto the market a proprietary product called Coral Reef Tiles, which are basically clay-made tiles about 50 centimetres in vertex, weighing about 12-13kg each. We place these Reef Tiles on the seabed and plant coral fragments onto them, thus helping corals access a substrate for a stronger foundation and better growth opportunities.

AL: Do you only do this in Abu Dhabi?

DK: We first deployed the solution in Hong Kong, just over three years ago, and have monitored it since. In that time, the Reef Tiles performed particularly well in coral survivorship. We have retained about 95% of the corals that we initially planted.

As a result of this success, we were approached by companies based in Abu Dhabi, which wanted to deploy our solution there. Since then, we've moved a sizeable part of our operations over to Abu Dhabi and continue to focus on Hong Kong and the UAE in particular.

AL: How long are you planning to be here?

DK: We are very much here for the long term in order to accelerate coral reef restoration in the Arabian Gulf. There are a lot of opportunities to help restore coral reef populations across the region and we look forward to being a key player in this.

AL: Tell us about the BioBlitz.

DK: The BioBlitz is a citizen science experience in which we sample a lot of areas in and around the oceans that we want to monitor to better understand the baseline that we're working with as far as marine species are concerned, as far as abundance is concerned, and as far as diversity is concerned. This is the cornerstone of a larger marine biodiversity project that we are working on with ADQ, as well as with the Environment Agency - Abu Dhabi. We will be creating the country's first comprehensive database on marine species, focusing on those that are cryptic and a lot more inconspicuous than charismatic species such as dugongs, or dolphins.

We've brought over a set of volunteers to Sir Baniyas Island, and we selected 5-8 sites that we would travel to on a daily basis over a two week

A look into the lab work led by Archireef's guest scientists with the volunteers involved in the 2 primary stages: Pre-Processing (Step 2) which involves taking marine specimens captured in the field then sorting them according to their taxonomic groups for further work. This involves taking specimens or substrate samples, extracting the creatures, sorting them into their groups and adding a unique label. And Vouchering (Step 5) which is the final stage of the lab workflow process. It involves extracting a small piece of tissue from each specimen which is stored in an ethanol solution for preservation. Then the specimen's physical body is preserved in a jar using a suitable solution; either ethanol or formalin.

period. We collected different types of samples whether that was sediment, targeted species, water samples, dead corals, and more. The idea was for us to find as many species as possible. We've now processed over 1,000 samples. We've brought some of the US's leading marine scientists over to Abu Dhabi from the University of Florida, and we've got a scientist here from the University of Guam. They are experts in their individual fields – crabs, as well as worms for example. And we're looking at these inconspicuous species to understand the marine biodiversity of Abu Dhabi.

AL: How many volunteers have you had?

DK: We had an overwhelming response. More than 100 people applied, but we only had about 15 to 20 spots. It turned out that those that we ended up selecting were such great value in terms of going beyond the volunteer work, that we didn't need any more than 15 at this point.

AL: Can you explain the volunteers' roles in the project?

DK: The volunteers' roles were to stay in the lab and help process samples. We set up a lab in one of the facilities here to simply sort out the specimens when they came in, and then to initially extract them, sort them, and to eventually pass them on to the scientists for taxonomic work. Finally, we took photos which will end up in a comprehensive database.

AL: Flo, tell us about your role with Archireef.

Flo Janin (FJ): I joined as the Sustainability Communications Adviser at Archireef. I advise the team and our clients on alignment with global ESG frameworks and standards, including the emerging Task Force on Nature-related Financial Disclosures (TNFD), and also look at blue finance to help accelerate our impact. I only joined the team in March. I was here attending a conference about sustainability in Dubai and I came across Archireef and their story really wowed me! I approached Deniz and we met in Abu Dhabi. As an ocean lover myself, I was very happy that I had done so as I then discovered the passion they have behind coral restoration, as well as their nature positive attitude which I also adhere to.

AL: Can you tell us more about your outlook on the ocean and coral reefs in particular?

FJ: Leading up to COP28, there are a lot of sustainability programmes focused on land, but we would like more to be done collectively about ocean protection and restoration, especially since we provide turnkey solutions for companies in order to get more easily involved.

We know that globally we've lost 50% of our coral already, but it's not all doom and gloom. It's about doing something about it with urgency. The way we are approaching this at Archireef is scientifically based, unlike some other organisations. We have spent years developing the world's first 3D printed reef tiles, and are thrilled to have tangible proof to show that they are extremely successful in Hong Kong, and now in Abu Dhabi.

At Hook Island for example, we deployed 40 square metres of our Reef Tiles already and we can clearly see that the coral is thriving. We were on the site only recently and were able to witness the changes first-hand, with so many fish showing on the boat depth monitor. When we dove the site, we could clearly see that the fish had made this their home. Everywhere else was sand, there was nowhere to hide or settle, but our Reef Tiles were thriving as a new home for corals as well as a host of species, which was truly magical to witness and great news for the biodiversity of our waters.

AL: What is significant about Archireef's move to Abu Dhabi?

FJ: For us to have expanded to Abu Dhabi so quickly after being established in Hong Kong has been a critical milestone towards achieving active coral reef restoration on a global scale. Our ultimate mission is to create coral highways and build a global network of substrates to help save and recover coral reefs around the world.





The team on one of the dive expeditions set to discover a new location for specimen collections.

We are working closely with the Environment Agency - Abu Dhabi. I also want to take this opportunity to thank EDA for having been a big advocate for Archireef, and our BioBlitz in particular, because several of your volunteers actually came onboard and have been fantastic contributors.

AL: Can you explain how the 3D printing technology works?

FJ: That's what is so different about what we do, and it's very much a world first using 3D printing technologies, which is also very big in the Middle East in terms of solving design challenges through eco-engineering. It's also a very sustainable way of doing it and we're incredibly proud as we now have our own production facility in KEZAD where we're able to print tiles on a daily basis. Now we're building stock as we're talking to clients across the UAE and the Middle East to deploy additional coral reef sites.

I think for us, the BioBlitz concept is a natural extension of what we do. With our Reef Tiles as our hero product, it allows us to really build scale in achieving our goal, recreating those corals that we've lost already, and reconnecting existing ecosystems with new sites.

We have also launched a climate literacy campaign specific to the ocean for the region. The UAE in particular is going big on this and has actually mandated that kids learn about the ocean in schools. We have a dedicated team that's being put together to actually deliver this. Deniz can talk a little more about the work that we're doing on that side.

DK: In Hong Kong, for example, we already work with 6-12 year olds on the general topic of ocean literacy. We've gone through hundreds of students at this stage, and we walk them through longer programmes or individual workshops that help them develop a much better understanding as to the value the ocean holds, and how we need to protect and preserve it. This is something that we're now bringing to Abu Dhabi with our partners as well. Starting from August, we are running regular workshops with the purpose of getting the local youth on their ocean journey, to give them a better understanding of what can be done to preserve the value of the Arabian Gulf and the seas. In this context, the connection with EDA is important because someone at a young age who develops a passion for the oceans will probably, eventually want to become a diver, and a young diver might want to develop a better understanding of the oceans.

Diving might be regarded as exclusive and limited to a few. Doing the BioBlitz, and doing it in collaboration with EDA members has shown us how we can enhance the experience of diving to deliver something that goes beyond the sport. I think it's something you guys already do with Reef Check for instance, you could see this BioBlitz as something that is an additional enhancer or an additional supplement to having a more comprehensive experience that isn't diving alone, but it's diving and knowledge combined and I think this combination works really, really well.

AL: I also wanted to ask what corals you work with on your Reef Tiles?

DK: It just depends on the region that we're in. So the tiles themselves are designed after a Platygyra coral which is very good at dealing with sedimentation stress. In the actual deployment, we select a variety of corals from nurseries we partner with. This might include Porites or Acropora, for example. It just depends on the region and the availability of the corals in that region and which ones make sense locally. We slightly adjust the designs according to the local conditions whether there is more salinity, whether the pH levels are different, or the temperatures are different, etc. We will then change the design, or the algorithm input into our 3D-printer according to that data and then that will create the right type of space for the right type of corals.

FJ: Something else I wanted to mention is

L-R: Robert and Gordon photograph each subject processed; Samples which have been through the pre-processing and vouchering stages; Abby; Robert; and Mandy hard at work.

that we are in discussions with several large UAE entities both Abu Dhabi and Dubai based on their COP28 strategies which we really feel a connection to being based in Abu Dhabi, and contributing to the UAE sustainability agenda. We're currently working on our presence and also working with other entities that are looking to elevate their voice in the field of sustainability. A lot of them do some really, really good things, but when it comes to the ocean, they sometimes don't really know where to start because it's not an easy thing to do.

Planting trees seems easier and more accessible than restoring the ocean, which is something else entirely. We're talking to them because we have turnkey solutions, we're able to take it from its starting point, to its actual deployment and maintenance. We're working hand in hand with a team that is actually really involved with us, which we love. For example, ADQ was here at the deployment earlier this year, they were here again with us for the BioBlitz, and we want this to be a story that they bring home to their colleagues and families. Similarly, the Environment Agency has supported and guided us from the initial deployment of tiles to the identification of the BioBlitz sampling sites. They bring this to life.

We're also developing a VR technology that allows us to bring this to non-divers to take this amazing story of how coral life is developing on our tiles back to their offices, or back to an exhibition space such as COP28.

Something that's also really important for us, is that the COPs have been talked about as a great place for discussions, but for us it's also really important to see action. We really want COP28 to be a big legacy for the UAE, and we're hoping that with our discussions – with our clients – that we are able to physically leave a footprint of new coral reef deployments, pre, during, and also long after COP28.

We're also very thankful to have had Hub71's support since we landed in Abu Dhabi, and also for taking us to Vision Golfe and VivaTech 2023 in Paris. We saw that NatureTech Startups are really rising and everyone is embracing it. Large companies realise that it's important to look towards startups for innovation, and they're very much embracing these conversations.

The community itself is also growing for climate tech startups with everyone supporting each other. We're even talking about trying to form a consortium to approach banks so we can actually scale up our actions much faster with a new type of bond. It's an exciting time to be in this space, and I think it's one to watch out for with Archireef in the future.

DK: I think one aspect of that is also how critical it is. I don't know if you've been in startups before, but I think startups in themselves have a very high mountain to climb. It's not an easy thing to create a startup, let alone to grow one. But I think it's even more difficult in nature tech or in the space that we're in, because it's so nascent. There's a limited understanding of how nature tech should be monetised, for example. Thankfully, we've been able to develop some impactful public-private partnerships, and that has helped kickstart Archireef.

The industry that we're in doesn't really have legs unless groups come together. As I mentioned earlier, the EDA connection is a very interesting one for us, even if it initially seems slightly blurry. But when you really dig into it, and the people that actually were EDA members that came on site, the amount of conversations I've personally had with them, shows that there's a depth of interest that goes beyond the basics. With that being the case, it creates a great community appeal. That's something that's critical not just to the survival, but to the growth of companies like ours. We don't see any point in being brash, or being loud about what we do by ourselves, but I think it needs to be something that's driven through these public-private partnerships. I think in Abu Dhabi in particular, we've been able to establish that. We can see a lot of benefit in creating these

The exploratory expedition into the mangroves looking for new samples. Several species that hadn't yet been collected were found.

sorts of dynamics between ourselves and organisations like yours.

I regard the BioBlitz in particular as a testament to the fact that, what we talk about in theory, we can also put into action via collaborations. I think us being here together and bringing this fairly large group of people together – over this period, we've probably had something like 50-60 people involved in all of this – that it's actually putting words into action. That's something that we really want to drive more and more of. It was eye opening to see how big the interest actually was and how many EDA members came to us and said, "what you guys are doing is amazing; and, make sure you let us know when you do it again."

Funnily enough, we had almost all the elements covered in this BioBlitz. One EDA member got up at 6am and went to the beach with another volunteer, rather randomly and started collecting plastic. It's just all encompassing, and that was something really surprising to me, but it just showed the power of community, and I think that, again, going back to what I said on public-private partnerships, I think they can only work if egos are left behind. People come together, and we then drive forward, together. We don't even care if people talk about Archireef. They can just talk about the BioBlitz and that's good enough. We don't have to be mentioned front and centre.

What's more, at the next MENA Oceans Summit, we can actually talk about what we have done, physically speaking. So that's pretty exciting. If we talk about what we actually did together this year, that's already an indicator to the audience to understand how they can get involved, given how often that question comes up – "How do I get involved?" – and I think this is a how!

INTERVIEW WITH MOHAMMAD YOUNES

Ally Landes (AL): Hi Mohammad, tell us what your role is at Archireef.

Mohammad Younes (MY): I'm the Data Product Manager at Archireef. My main role is to understand how we can leverage data, especially the data we collect when monitoring our coral restorations. Ultimately, my goal at Archireef is to build software products that keep our clients connected to their marine restoration projects and give them a clear understanding of how it is progressing via an interactive bespoke dashboard, which can be integrated into their ESG reporting framework.

This Archireef Marine Biodiversity Project is a project that I took on when I first joined the company given the huge data component, a marine invertebrate database which will include data on the types of species found during this BioBlitz, as well as other field surveys. The cloud-based platform will also include a genetic database where a DNA Barcode for each specimen will be recorded.

We also visited Oman to partake in a BioBlitz by Gustav Pauly, a world leading marine invertebrate taxonomist. We got first hand experience with him through the whole lab process. We took that knowledge and information and translated it for what we were doing here in the UAE, making it as streamlined and efficient as possible, and taking every opportunity to enhance the workflow for our project.

Before starting the project, we looked at the software requirements and designed bespoke cloud-based applications. The workflow was another really important aspect of this work to ensure we seamlessly transferred the data generated in the lab as well as the field onto our online database, also taking into account shareability with our stakeholders, the Environment Agency - Abu Dhabi, and the universities involved in the project.

At the moment, we are building the backend applications for DNA Barcode data, once we have the DNA Barcodes ingested from the sequencing lab, it will go through Bioinformatic analysis to make sure the data is clean and suitable for further use.

Once back at the lab, the team begin the pre-processing stage and sort the subjects into groups and add a unique label for the next step in the process.

I was deeply involved in preparing our BioBlitz, engaging with the scientists, securing the volunteers, and organising some of the operational aspects. It was really amazing seeing it all come together over the last two weeks so successfully.

AL: How important is the role of data processing for this biodiversity project?

MY: As a nature-tech startup, we are constantly exploring ways we can innovate and improve. One main focus we have for this year is to become a truly data-driven company. The fact that all our assets are marine-based, we face a significant challenge in having to translate physical, ecological parameters into digital information. For us, diver-based ecological surveys are not granular enough and not scalable. For that reason we are leveraging three core technologies that will enable us to extract high resolution ecological data on our artificial coral reefs.

First, we use Structure-from-Motion (SFM) Photogrammetry and Computer Vision to effectively visualise, classify and quantify the benthic organisms inhabiting our Reef Tiles. With this technology, we are able to produce stunning 3D and 2D "digital twins" of our restoration sites, then extract metrics such as coral cover and growth rate.

Although, coming up later in our roadmap, the second technology is Environmental DNA (eDNA). With eDNA we are able to detect a wide variety of marine taxa, not just charismatic organisms like turtles and dolphins, but small cryptic species like worms, shrimp, crabs and even nudibranchs. With such a granular overview of species composition, we can effectively understand the ecological functioning of coral reef restoration and determine how that progresses with time.

Last but not least, we utilise 360° videos to create immersive virtual reality environments which serve as a great visual tool to understand what's living at our restoration sites. Our content development team works with marine ecologists to build an engaging and informative virtual reality environment for our clients and students. These environments include annotations and contextual information that explains the roles of key species inhabiting our restoration areas.

Personally I'm very excited to be building these solutions and to deliver this valuable data to our clients. At the moment, unlike Hong Kong, most of our current UAE restoration projects are over 150km away from Abu Dhabi, meaning that our clients may not be able to regularly engage with their own restoration sites. We however want to keep our clients constantly connected with the progress of the restoration, and we are able to achieve that with an interactive web dashboard. Through these applications, our clients will always have access to insightful data about their coral restoration sites available for their use at any time, whether it is to check in on the project or to consolidate key metrics for their ESG reporting frameworks.

SCIENTISTS:
INTERVIEW WITH HAMAD AL JAILANI
Environment Agency – Abu Dhabi (EAD)

Ally Landes (AL): Hi Hamad, tell us about your role in the biodiversity projects?

Hamad Al Jailani (HJ): I'm a marine scientist in the Marine Biodiversity Assessment and Conservation section at the Environment Agency - Abu Dhabi. I'm leading a number of initiatives and projects at EAD, including Abu Dhabi's coral restoration and rehabilitation project, and marine habitat surveys. EAD gives high priority to the continuous monitoring and assessment of marine environments to guide the selection of priority conservation actions for key habitats and endangered species and to make informed decisions for the development of the marine environments to ensure their sustainability.

As part of EAD's Marine Biodiversity Assessment and Conservation team, and through our seasonal and annual surveys, we collect and analyse the data and include the information for highlighting key biodiversity areas for

Olivia and Flo topping up each voucher specimen with ethanol solution for the preservation before they are packed and sent off for research.

protection. EAD also has a vast understanding and historical information on the local ecology and cultural uses and benefits of the biodiversity components in our environment.

My role in this biodiversity project was to analyse data and provide local knowledge, to give the project a robust baseline to identify the most biologically vital areas in which Archireef could maximise their data and standardise sample collection.

In addition to that, I've been diving in Abu Dhabi's waters my whole life and as a local scientist, I'm fortunate to have a unique insight into our local water's ecology.

AL: Why were these sites selected?

HJ: These were selected due to their high diversity in living marine organisms and abundance of species. These highly diverse and healthy sites are a great start for the project, giving us an overview of the uses of these areas and their habitats for recommendation. This would, in turn, gives us a large sample number in a short time, enhancing sampling and increasing the amount of specimens for updating and verifying our scientific database. Additionally, we carefully chose sites that are varied in characteristics and habitats, with one being a coral dominant site while the other, more algae dominant, allowing us to collect a diverse sample set, and correlate species with habitats more effectively.

AL: How important are these sites to Abu Dhabi's marine biodiversity?

HJ: They're highly important as they represent some of the areas in Abu Dhabi where the biodiversity is resilient to climate change. It's important for further understanding, and the implementation of nature-based solutions for adaptation and mitigation of climate change.

These sites also give a snapshot of the different habitats that are found across the emirate and species found around them to guide the selection of priority areas for conservation.

AL: How is EAD looking at citizen science as a channel to support marine conservation?

HJ: Our founding father, Shaikh Zayed bin Sultan Al Nahyan said, 'The environment is everyone's responsibility,' making it a precious legacy for generations to come. Therefore, it is very important to include the public in marine conservation and increase their awareness of the importance of their participation through our many platforms, citizen science programmes and smart applications like Abu Dhabi Nature. There are many people who are passionate about the sea who want to make a positive change. The lay citizen is now able to get involved in protecting our seas and we at EAD fully support this endeavour.

INTERVIEW WITH ROBERT LASLEY

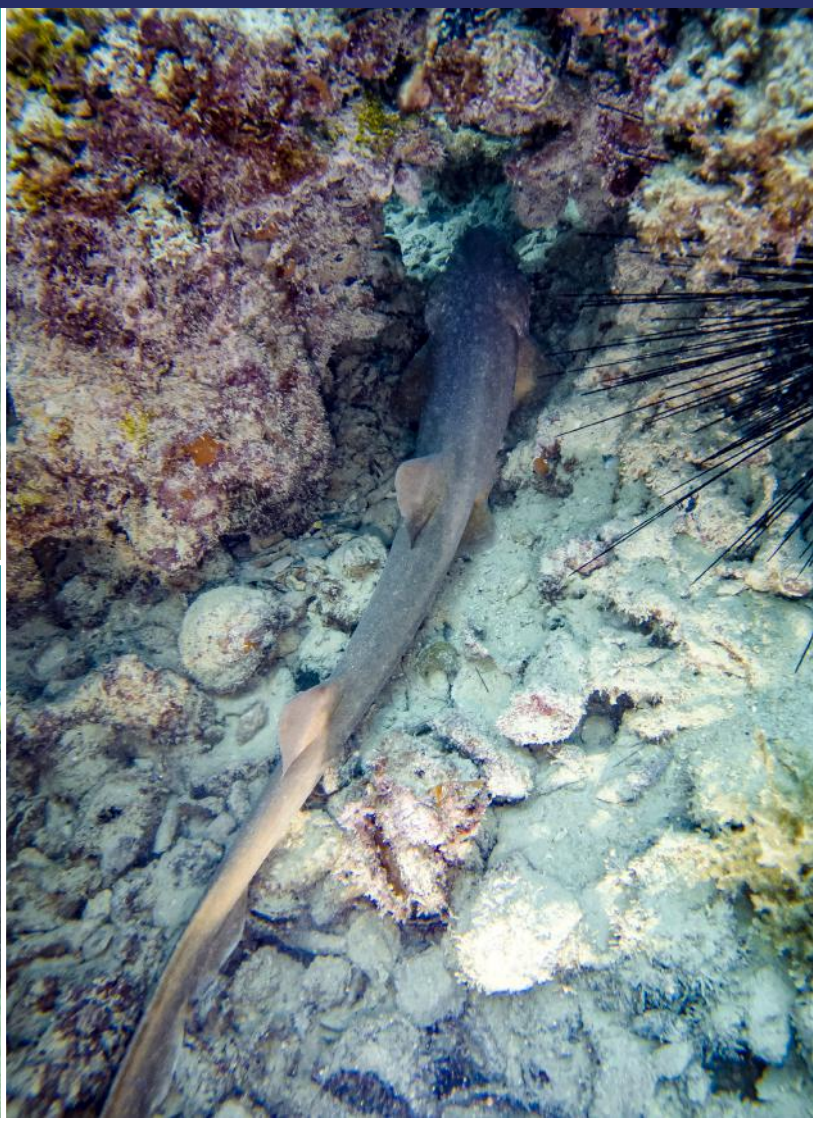
Ally Landes (AL): Robert, tell us where you're coming from and your role in the BioBlitz.

Robert Lasley (RL): I'm based at the University of Guam. I'm a curator of crustaceans there, and I just started the position in January. I'm interested in marine biodiversity in general. I work in a team with Abby and Mandy and several other people, all stemming from the Florida Museum. We do these biodiversity surveys in many places, and we're interested in basic biodiversity, taxonomy, where things live, but also all the stuff that stems from that: conservation, and evolutionary studies. I'm particularly interested in crabs – crab classification (taxonomy), crab evolution, phylogenetics, and how different crab species are related. And then how they speciated, looking at geography and natural selection, and combining all of these things, using genetics to help taxonomy, but also understand evolutionary history.

I'm here trying to collect everything. I think it's really important to get baseline data on where things live, what they are, especially now that we're losing a lot of organisms due to what humans are up to. But again I'm particularly interested in crabs. Going forward, documenting new species and new records from these areas is what I'll be doing first, and then I think a lot of these collections will end up in taxonomic works and evolutionary studies.

AL: How many crabs do you think you got on this BioBlitz?

RL: I don't know. I get overwhelmed with all the diversity. Crabs here (in the sites we've sampled) are not that diverse, frankly. But I would imagine anywhere from 20 to 30, or maybe more species. Let's say 20 to 40 species of crabs, and that's true crabs. There are also things like porcelain crabs, and hermit crabs, that I'm not including in that count.



We were fortunate to see an Arabian Carpetshark or Arabian Bamboo Shark (*Chiloscyllium arabicum*) on one of our dive expeditions.

AL: Why aren't they true crabs?

RL: They're just not part of this evolutionary lineage which we consider, "true crabs". Many of the crabs that we eat, like flower crabs, are true crabs. They have their own unique evolutionary history and morphology. The easiest way to tell them apart is to look at the walking legs. True crabs generally have four walking legs on either side – so four legs and then one claw – whereas things such as porcelain crabs (not a "true crab") only have three walking legs and one claw. Hermit crabs (also not "true crabs") are oddballs. They live inside of shells. And then there are other things like king crabs that we haven't come across here. They're different.

I'm interested in the true crabs – the scientific term is Brachyura. And it's just a quirk of my personality and fate. I got interested in those a long time ago and ran with them. There are 7,000 species of those known, so I have my work cut out for me. Switching to other groups is not something I'm interested in at this stage. There's plenty of work to be done in the true crab world.

AL: When you say flower crabs, is that another name for the blue crabs?

RL: I think the scientific name is *Portunus segnis*, but… colloquially, the term is blue crab or flower crab. In Singapore where I did my PhD, they say flower crab. In the US there's a somewhat related species we call a blue crab. So it just depends on where you are.

Marine biodiversity is incredibly rich and complex. There are likely over 1 million species in the sea, and for most of them, we don't even know their names – let alone their ecological roles. Given the danger marine ecosystems are facing from development, climate change, pollution, and ocean acidification, discovery and documenting baseline information is important. That is what we are doing. We are documenting where species live, discovering new species, recording ecological data, and preserving and disseminating this information to understand and protect our imperilled ecosystems. I am very grateful to be part of this Archireef's BioBlitz and to work in this unique part of the world.

INTERVIEW WITH MANDY BEMIS

Ally Landes (AL): Hi Mandy, tell us about your work and your involvement in the BioBlitz.

Mandy Bemis (MB): I work at the Florida Museum of Natural History as one of the collection managers of invertebrate zoology there. We manage the state invertebrate collection for the state of Florida. I'm here as one of the taxonomists/science team that was invited to help assess the biodiversity. We find lots of critters, pretty much anything without a backbone, and take a clip for DNA, voucher the specimen, they're pretty rudimentary IDs in the field, but we'll take them back and get a better idea of the diversity out there.

AL: What is vouchering?

MB: A voucher specimen is the museum catalogued specimen that is available for scientists and researchers to study and verify. For most of these specimens there will exist a voucher, a tissue subsample, and a photo. In some cases – if the specimen is very tiny for example, we will have only a subsample or only a voucher. But even for the tiny things, if we get enough samples we can still have all three for a given species, just maybe not for every individual of that species.

AL: So will you guys take all the specimens back to the US for the study?

MB: No, not all of it. The tissues and the DNA work will be done here.

EDA Volunteer, Angela Manthorpe hard at work taking tissue samples and preserving the specimen for further research.

Pretty much anything you want to do, whether it's conservation or sustainable harvest or management, or control – whatever you want to do – having an idea of what's there is the most basic first step. Unless you know what everything is, you can't manage it or you can't conserve it, you can't control it, whatever your goal is. This is foundational for anything going forward. We have a lot of projects in this region, in the Red Sea, and then all of Oman's coastline.

AL: How does it look here compared to the Red Sea?

MB: I wasn't actually on the Red Sea trip, those were other people in the lab so it's just, the things we find here, and the things we don't find also. It's surprising that we haven't found very many sea cucumbers, and not a lot of flat worms, usually we don't find a lot, but more flat worms than sea cucumbers? That's crazy! We've been surprised to not find more of those. Usually the findings in the Red Sea and Oman – we've been back over three or four years to those places – Oman happened in the middle of COVID so there was one year where we didn't go, but we have a lot more specimens from those places and this is the first one in the UAE.

Every year we go and find something new. I'm sure there's stuff out there that we still haven't found. Especially with invertebrates, you think oh, we've got it, and then you just keep finding more and more. Even today, being the last day of the project, some of the stuff we have, a lot of that is duplicates that we've already found before, but when I'm going through them, even then, there's still new stuff we're discovering.

INTERVIEW WITH ABBY UEHLING

Ally Landes (AL): Hey Abby, what's your role in all of this?

Abby Uehling (AU): I'm a PhD student at the University of Florida at the Natural History Museum, so I'm in the same collection as Mandy.

I first met some of the Archireef team in Oman because they came to watch the BioBlitz we were doing there. I was introduced to them, and then they asked Mandy and I to come and participate to help out in the process here. I'm part of the research team that has experience in this whole process, and the taxonomic sides of it as well.

AL: How is this different from what you've done in Oman?

AU: The whole process is very similar, but a lot of that has been exploratory so you don't quite know what to expect, especially in the diving. Sometimes we don't know what's here at all, so we have to hop in and see before we really know, just because there hasn't been a lot of diving in some of these areas. So the aspect is similar, but I would say Oman was a lot colder.

I was there for six weeks during January and February 2022. And then again in November and December of last year, so the water was definitely colder that time of year. Oman has such a long coastline with different conditions, and very different habitats. It's less reefy in the south where they get the seasonal upwellings, and there are more patchy coral communities. A lot of my dissertation work is focused around the Arabian Peninsula, but there's always a lot of interesting questions everywhere to find answers to.

AL: What do you specialise in?

AU: Sea stars.

AL: How many do you think you've collected?

AU: I think at this point, about three species, maybe more. We found a load of the genus I study here, so that has been really exciting. And they're a very cryptic species, which means they're hard to ID because they have very subtle differences in morphology. There's at least two, but there might be more!

EDA VOLUNTEERS:

INTERVIEW WITH GORDON T. SMITH

Ally Landes (AL): Gordon, how did you find out about the BioBlitz and get involved in the project?

Gordon T. Smith (GS): I've been an EDA member since many years and heard it through you. I've been here at the Anantara Desert Resort for about a week. Minus a couple of days I've had to get back to Dubai, but I've been helping out with Archireef's BioBlitz in the area and it's been extremely interesting for me because I hadn't realised how much diversity there was in dead coral which I knew existed, but I hadn't realised how much life there was really until this week.

Personally, I think it's a brilliant idea to start looking at these areas and finding out what is around before anything happens. Although I think it's a bit too late in some areas, but it's good to get a baseline of the creatures in the region.

AL: What has the BioBlitz given you as a diver?

GS: It has opened my eyes to some of the life I may usually pass by when I'm diving. I'll be looking a lot closer. I'm a macro fanatic anyway and this is right up my street. I'll certainly take a deeper look at the critters I now come across.

INTERVIEW WITH ANGELA MANTHORPE

Ally Landes (AL): Angela, how did you get involved in the BioBlitz?

Angela Manthorpe (AM): I'm an EDA member and I also heard about the BioBlitz through you.

I'm a lifelong learner, and passionate about natural history so it looked like an excellent opportunity to use some of my leave to help the scientific effort. In the past I've taken part in Earth Watch projects and in Biosphere Expeditions, so this is something right up my alley. It was an opportunity to learn more about the natural history environment, and the underwater environment, so I signed up.

AL: Have you done a full week?

AM: I originally I intended to do 2, 4 day blocks but the weather affected my plans to come initially, but having seen the logistics involved with how long it takes to get here – your first day of participation once you've arrived, is almost gone – so I took the whole week off. I was also given the opportunity to go diving, so I just thought it was worth taking the whole time off to contribute to this.

AL: Would you do it again?

AM: I would absolutely do it again. It is just so worth taking leave to help in this sort of effort. I found it really satisfying. To follow some of the things that I found underwater myself, and I get to watch and go through the process of the lab work, the photography, and then to take tissue samples and preserve the specimen – I can see that my own efforts are actually contributing to this bigger picture. I found that really great. I see that I can make a difference, because I'm just used to looking at the little stuff, but now I'm finding that I'm able to find different species just because I kind of know the environment and know where to look.

Rob said that he's never found people so keen to go out into the mangroves. We went out there yesterday and we just sampled a whole load of new stuff we found. We found several species that hadn't yet been collected and that's from grubbing around in a mucky environment, but that's the sort of location where you can find lots of different things.

INTERVIEW WITH VICKIE LANGTON

Ally Landes (AL): Hi Vickie, how did you find out about the BioBlitz and get involved in the project?

Vickie Langton (VL): I found out about the project through an email circular from EDA. I also went to check on the Archireef website, filled in the form that was sent through EDA and waited patiently for a response. I was so looking forward to it and I had already blocked out my schedule. There were a couple of email exchanges with a member of the Archireef team who wanted to find out more information from me. It made me realise how specialised the team was going to be, as well as how many applications they must have received.

When the confirmation email finally came in, I was ecstatic! They had setup a WhatsApp group to get us in touch with the coordinator – it was all smooth sailing from there.

AL: How long did you participate?

VL: 5 days, from the 19-23 July.

AL: What has the BioBlitz given you as a diver?

VL: An unforgettable adventure!!! I signed up for a purely dry experience working in the lab so that I could learn some of the behind the scenes activities with the scientists on the team – which I got, and more. Understanding the workflow of the lab and all the different work stations was wonderful. For many people, pouring over a pile of mud or sifting through sand sounds like torture; but for me, being given the opportunity to watch, learn, train, do AND contribute, was phenomenal.

Even though I had signed up as a dry participant, I also went on a collection dive with the dive team and helped lead a small exploratory expedition into the mangroves – every opportunity that was presented to me resulted in my learning so much.

As a diver, being in the company of other like-minded people who have a passion for conservation and environmental preservation really touched my heart. There were so many conversations I had with the core team and the other volunteers which delved deep into the issues that we are so enthusiastic about.

AL: Would you do it again?

VL: Hell yeah!

Archireef

ABOUT ARCHIREEF

Archireef offers nature tech solutions to restore degraded marine ecosystems. They combine expertise in marine biology and the latest technologies in 3D printing techniques and material science to create artificial habitats that are best suited for threatened marine life.

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MARINE SCIENCE IN THE UAE:
A NEW RESEARCH FIELD & CHALLENGE FOR YOUNG UAE SCIENTISTS

FOREWORD **ADA NATOLI** FEATURE **HAMDA ALMOSAWI**
PHOTOGRAPHY **BRYANA COPE** AND **ADA NATOLI, UAE DOLPHIN PROJECT – ZAYED UNIVERSITY**

I believe that there must be more participation by women in STEM fields for the UAE to have a knowledge-based, innovation-driven economy, as well as a sustainable future. I hope that my story inspires the Emirati youth to be fearless and relentless in going after their dreams!

Underwater images can be useful in identifying body scars and nicks on the pectoral fins to support the information gathered through dorsal fin Photo-ID.

Humpback Dolphin – Photo Identification relies on capturing the best possible image of the dorsal fin of both the Indo-Pacific bottlenose dolphins and the Indian Ocean humpback dolphins.

"You love what you care for, and you care for what you know". This has always been our motto at the UAE Dolphin Project. Conservation cannot work without knowledge. The more people know, the more these conservation and sustainability programmes gain results.

It is still very new to many people that we have dolphins in our UAE waters. Since its inception, the project has engaged with many schools, and public and private stakeholders. We have encouraged the general public to get involved with our surveys, to experience firsthand the research on these charismatic species, to understand the struggles they face in anthropogenic impacted waters, and to witness the beauty of this UAE marine environment.

In the past few years, we have taken this to a higher level. Having joined Zayed University, the aim was to grow a new generation of young scientists that will hopefully share the message and the knowledge even further. Today's article is by a young Emirati woman that has taken the challenge. We hope more will join in creating a fleet of strong researchers that use the best scientific evidence to support the formulation and implementation of effective conservation measures, ensuring the survival of these beautiful species and their habitat for years to come.

Growing up as a UAE National in Abu Dhabi, I was passionate and interested in animals and the natural world, especially the ocean and its creatures, particularly dolphins. I've always wanted to work with animals in some capacity, helping to conserve and protect them from the dangers of climate change, and human activity. Hence, I pursued a BSc in Environmental Science and Sustainability at Zayed University, with my interest primarily being in the biological and ecological aspects of the environment. I aimed to specialise in marine life biodiversity in the future and coincidentally heard about Dr Ada Natoli and her line of research in whale and dolphin ecology and conservation. Discovering that dolphins are present and frequently spotted in the UAE surprised me, sparking my interest to learn more. I've always been fascinated with these species, but to learn they were present in my home drove me further to pursue my knowledge of the UAE waters and its marine life.

Fast forward to February 2022, I approached Dr Ada Natoli to discuss my interest in focusing my final research project on marine mammal research. She suggested I assist on her project which was applying mark-recapture methods on photo-identification (Photo-ID) data to estimate the population of Indo-pacific bottlenose dolphins in Dubai's waters. With strong determination, I successfully completed my senior project under her guidance from February until December 2022, committing myself far above the required 8 weeks to fully experience the project.

I worked tirelessly in the past year on my research topic, completing my senior project report, titled: Monitoring the Population Status of the Indo-Pacific Bottlenose Dolphin (*Tursiops aduncus*) in Dubai Waters Using Photo Identification Methods. Working on this

Bottlenose Dolphin – Photos used for mark-recapture must include the entire fin, perpendicular to the camera, with the sun behind you, to see the smaller notches and scars that are unique to each individual.

project was both a challenge and a delight. I worked mainly on Photo-ID and analysis of the data accessed by Dr Ada Natoli and her assistant Bryana Cope through the Dubai Dolphin Survey. This work was only part of an extensive web of interconnected efforts done by the UAE Dolphin Project team, and the volunteers who dedicate their time to fieldwork on boat surveys twice weekly. Joining the surveys was challenging as a student because of time constraints and my preoccupation with courses and studying. Therefore, I was not able to join the survey until later. In November 2022, I went out on my first Dolphin survey under the lead of Dr Ada Natoli.

We started the survey at 6am on a pleasant breezy day; the sea was calm, perfect for spotting dolphin fins. I was tasked with observing signs of possible dolphin activity in the water, and collecting environmental and behavioural data. After some time, our patience was rewarded with a sighting of two elusive species in the same location, the Dugong and Finless Porpoise! Photo ID and behavioural data collections of both species followed the excitement. After losing the group, we continued with the survey.

Our final sighting was on our way back into the marina where an Indian Ocean Humpback Dolphin approached my side of the boat and jumped, surprising us at the end of our trip. Data collection followed; this included the interactions with jet skis and boats that saw the sighting, giving us an idea about the danger these species might face from human interaction. This field work experience solidified my determination to continue my efforts in marine mammal conservation. It was an excellent opportunity to get hands-on field experience in relation to survey techniques, data collection, and behavioral observations – and to improve my practical skills. Despite the practical difficulties inherent in working in the open sea, I believe that taking part in the field work helped me gain a deeper understanding of the threats dolphin populations face as a result of anthropogenic interference with their habitats, which encouraged me to pursue further research in this field.

Photo-ID is a lengthy process that requires a lot of patience, perseverance, and an eye for detail. Luckily, I find it satisfying to tackle this challenging type of work. Dorsal fin images are collected on boat surveys which are a critical element to capture, acting as a fingerprint. Each fin has a unique shape, pigmentation, scars, nicks, and notches; some individuals have distinctive marks. In contrast, others have "clean" fins, which makes them more challenging to distinguish. Body scars can aid in identifying individuals but can only be used to track individuals over time. The fins can aid in population estimates of the survey area, revealing information regarding life history, calving intervals, and individual characteristics. It was interesting to identify different individuals and then to recognise them months later in another sighting, while identifying their calves and watching them grow.

As part of my project, I developed a new protocol to aid the currently utilised Photo-ID technique and overcome some of the challenges I faced while working. I was proud to present my results at the Zayed University


AP426

OPPOSITE PAGE: Hamda taking environmental data during a boat-based survey. This data is recorded whenever there is a change in direction, weather, or any sightings of other marine wildlife. **ABOVE:** An Indo-Pacific bottlenose dolphin jumping from the water close to Dubai shores during a sighting earlier this year. **BELOW:** Other important images that are taken are of groups of individuals. Through the photo identification process, we can determine if the same individuals stay together consistently, and track mother-calf pairs. This group of bottlenose dolphins has one juvenile in the mix, the fin is not as large and has few nicks and scars.

2023 World Environment Day, and ended up winning first place at the Poster Competition for senior student projects. This was a monumental moment for me as my work has received some recognition, and this has pushed me to continue doing my best. I am extremely grateful for it.

Through this project, I gained a deep understanding of the fundamental issues related to the conservation of marine species locally and internationally. I developed an interest in the role of environmental policies in species conservation, with the hope I will be a crucial contributor to protecting these remarkable species. During the last year, I also took part in two international conferences and presented my project as a student in the Undergraduate Research Scholars Program (URSP) at Zayed University. These opportunities were life-changing, and they taught me many life skills on the personal and professional levels and broadened my horizon by meeting new people and gaining new experiences. This experience has directed my career plans and interests towards focusing on marine science research and conservation.

After my graduation, I have continued to work with the UAE Dolphin Project, expanding my work on Photo-ID, joining more surveys and taking up a more permanent position, but also joining unexpected events such as the assessment of a whale skeleton found in Abu Dhabi. As a young Emirati woman, pursuing a career in marine biology is important to me because it shapes my identity and purpose in life, and allows me to contribute to my country's future and to the solution of global environmental issues. I believe that there must be more participation by women in STEM fields for the UAE to have a knowledge-based, innovation-driven economy, as well as a sustainable future. I hope that my story inspires the Emirati youth to be fearless and relentless in going after their dreams!

U.A.E. DOLPHIN PROJECT

VOLUNTEERING

If you would like to volunteer with us, please send us an email to 'team' and join in to help collect essential information on the UAE's dolphins and marine animals.

team@uaedolphinproject.org
www.uaedolphinproject.org
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ONE BREATH HOME

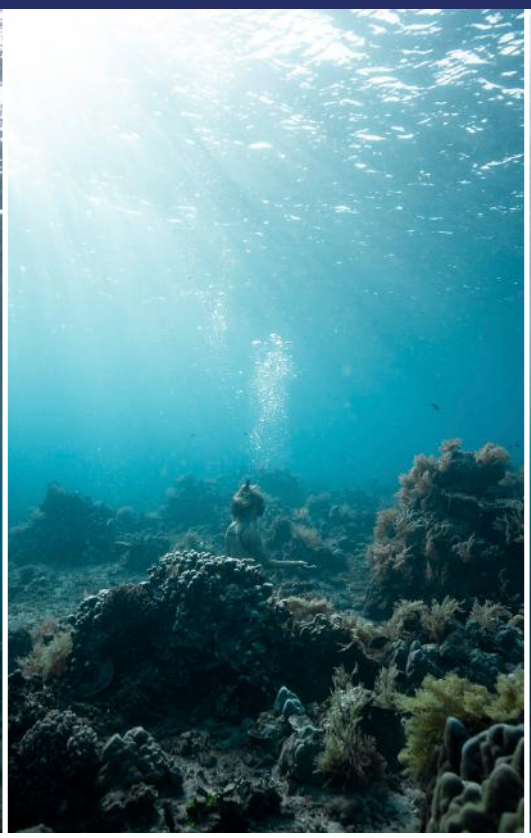
FEATURE **NATASHA MAW**

As much as I feel at home in the Ocean, my journey into freediving was an interesting challenge both physical, mental and one that I feel changed my life for the better. This is a story of my personal journey into freediving and how it helped me find my way back home to myself.

Photo by Elizabeth Morri Sides


composites
composites

Photos by Francesa Swain



Being half Egyptian I was lucky to grow up with regular visits to the Red Sea every year. My head was always underwater and my backside always sunburned! I would listen in awe to my grandparents telling stories about their lives in Egypt. Days spent at sea diving, wild encounters, sharks, spearfishing, cooking their catch of the day and sleeping underneath the stars. I wanted to connect with the ocean like they did, beyond scuba. I wanted to freedive!

It took me several years until I decided to learn freediving properly. Although I was convinced I was going to love it, I had a lot of fear around trusting my breath underwater for longer than a few seconds. However without all that bulky scuba gear, I felt an unparalleled sense of freedom and intimacy that I wanted to explore.

At the time I finally decided to give it a go, I was a competitive powerlifter and it was a dear friend from the gym, who was a freediver herself, that brought me along to Fujairah to start my course there.

I remember my very first deep dive. After 2 minutes of relaxed breathing, my coach squeezed my shoulder and said, "OK, whenever you are ready". I took one last full breath and just as I was about to remove my snorkel, a loud voice in my mind jumped in the way: *Are you sure you're ready?*

Me: *Yes, this is my last breath.*

Thoughts: *Hang one second… how do you know which breath is a "good" breath? Do you trust yourself? You're not even that good at this.*

At this point my heart rate goes back up again and my racing mind starts taking the lead on the conversation.

Thoughts: *What if something goes wrong?*

Me: *I have an instructor and three other people watching, I think I'll be ok. Besides, I can always stop and turn back when I want.*

Thoughts: *Yeah but how will you know if you've gone too far. By the way, now you're really starting to take a while, people are getting cold and impatient waiting for you. What an embarrassment.*

I watched my mind process fear in real time and was completely taken back by how mentally challenging it was. However, I was stubborn, so my approach to freediving for the first few months was about ignoring my feelings and pushing myself as hard as I possibly could. I approached the training line like I would the barbell or any other physical challenge and pushed through my discomfort.

Over time, something started to feel wrong with this mindset. I knew I loved spending time in the ocean, but I found the harder I pushed, the less I enjoyed myself. I started dreading trips and training sessions. I was anxious and every time I went to war with my mind at the surface, I became more and more disconnected from the experience.

Throughout these months there were small seeds of peace. Moments of stillness that would come out of nowhere, whenever I was fully relaxed or immersed in an interaction with some kind of creature. I so desperately wanted to grow those seeds. I just had no idea how to do it and the harder I pushed, the less of it I found. "Pushing" was clearly not the answer.

After one year I decided what I needed was a fresh perspective and had the opportunity to learn from a world champion freediver that I really looked up to.

During our first few sessions together, my heart would start racing as soon as I held my breath underwater. She explained to me that all push and no play had conditioned a stress response in my body so we needed to strip it right back down to basics.

Over time I realised freediving wasn't something I was going to be able to force or push through. The ability to push limits might help you lift heavier weights or get through a marathon, but freediving is a spiritual practise. It pulls you inward. While most other physical challenges require you to brace against tension or resistance, in freediving, you must relax your body and soften into it.

When it comes to freediving, spiritual fitness is much more important than mental resilience. It's about connecting with yourself and the underwater environment, focusing on your feelings and instincts, respecting your limits and never forcing yourself anywhere for any reason. At depth, you get physical feedback from the underwater environment which helps you figure out where you might be carrying tension so that you can release it.

I remember the breath that brought me home.

One afternoon, midway through retaking my courses, my coach noticed I was uncomfortable during an easy warm up routine. She pulled

me to the side, put a hand on my shoulder and asked if everything was OK outside of freediving. I cracked in half.

So much was happening in my life at that point that I had pushed down and in that moment, it all came bubbling up to the surface. She gave me a hug while I tried to wipe away my tears as subtly as possible, a little conscious of my dive buddy awkwardly floating near the buoy, waiting for me to take my turn.

But from that moment, everything changed. I was open, I could be with everything inside myself without struggling against it. Something shifted, and on the very next warm-up dive I nearly doubled my time. By releasing the stories I was holding in my mind, I was able to release the physical tension in my body that went along with it and relax into my dives.

Freediving calls for a different kind of mental strength that I'm not used to:

- Less holding on, more letting go.
- Patience, humility and the ability to turn your focus inward, without struggling against what's there.
- More body, less story.

That was the moment I began to let go of all the stories in my mind to arrive home into my body with my breath.

I really believe that the spiritual practice of freediving has the power to make us better humans. Imagine a life filled with more patience, focus, humility, mindfulness, self-discipline and acceptance.

I truly believe freediving helps the development of these character assets which are so valuable for all areas of our lives. Freediving is Self Mastery and Recreation combined, if you ever lose yourself in life's stories, it is my belief that one breath will always bring you back home.

You can find more info on this Nature Nerd, Ocean Addict, and founder of One Breath Travel, here: **www.onebreathtravel.com**

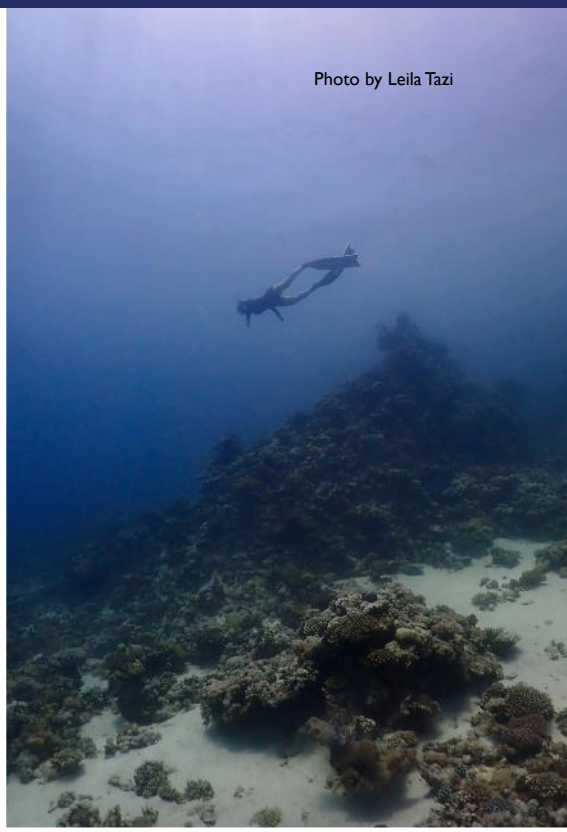


Photo by Leila Tazi

Photo by Elizabeth Morri Sides

DIVING PIONEER: LIZ JAMES

THE FIRST BRITISH FEMALE COMMERCIAL SATURATION DIVER

FEATURE **PATRICK VAN HOESERLANDE**

"It would be nice to get women to think about getting into the diving industry. I might be the first, but I do not want to be the only one. It is good to be a pioneer, but you really want a legacy. Female divers should not be this rare in the diving industry. Things have changed for the better."

Manta Ray Scientific Expedition – Liz James diving in Socorro, Mexico

At the start of the 2022 Historical Diving Society seminar in London, a representative of the company Subsea7 welcomed the participants and briefed us on the history of the company. Nothing special. But when she mentioned that she was trained and has worked as a professional diver, my interest was triggered. In and offshore diving is a virtually all-male profession, certainly so in the case of saturation diving. Here, stands the first female commercial saturation diver in the world. I take my notebook and scribble: *Need to talk to Liz!*

During one of the breaks, I approach her. During a quick introduction, I explain that I am interested in doing an interview with her to write an article about her experience as the first commercial saturation diver. To my surprise, she immediately agrees and a few weeks later, we virtually meet again.

Before the interview, I wanted to check if she was indeed the first one. Not that being second would make her career less challenging or the interview less interesting. A claim to be a historical first does stand as long as there is no proof of somebody who did it before you.

Liz James was certified as a commercial diver in 1987, and certified as a saturation diver in 1991. The first saturation dive was executed in 1962 by Robert Sténuit which makes the claim very believable.

I surfed the internet and got two major hits:

- Susan Trukken. She entered the Navy in 1978 via Officer Candidate School and attended dive school at the Naval School of Diving and Salvage in Washington, DC 1979 to 1980. She later went on to become the first woman saturation diving officer in 1983 at the Navy Experimental Diving Unit. Not a small accomplishment. Although some military divers perform the same duties, they are not commercial divers.

- Marni Zabarsky. Her name is sometimes mentioned as the first female (commercial) saturation diver, although she first started diving commercially only in 1996. Digging a little deeper and you will find the small nuance in the titles with the added precision, "in the Gulf of Mexico".

To make sure I did not miss a thing, I wrote an e-mail with the question to the Women Divers Hall of Fame, but I have still to this day, not received a reply. Unfortunately, Liz does not show up on their list of fame.

Time to set up the interview with Liz and let her tell the story.

THE INTERVIEW

Patrick Van Hoeserlande (PVH): How did you get into diving?

Liz James (LJ): Born in Antwerp (Belgium), I went to school in Belgium and France, and we used to watch a lot of Jacques Cousteau on the television. Through watching these documentaries, I had this wonderful view of diving in my mind: a wonderful colourful world of subsea ecology and diverse marine life, with brightly coloured fish and coral reefs. As a result, I tried scuba diving with my brother when I was about 16. I loved it, so I decided to make a career out of it. With this vision of tropical waters, I went to Fort William in Scotland [Editor's note: the town Fort William hosted the famous and most realistic subsea training and testing facility in the world] and enrolled in a commercial diving course.

My parents were shocked by the news because they wanted me to go to university and were not sure what the diving industry would entail. But, after the initial shock, they supported me in my decision. I went and qualified as a professional air diver, in short, the British Health and Safety Executive (HSE) Part I qualification. Though rather than diving in tropical waters, I ended up doing underwater construction type diving work in canals, sewage outlets, docks and rivers.

When I first went to Fort William, there were no female toilets or shower facilities at the school, which was challenging. We were diving in a lock all day, so at the end of the day everybody was wet and cold, and needed hot showers. Although I proposed to go last, I was always instructed to go first, which did not improve my popularity with the other all male divers on the course. They eventually built a separate female shower and toilet.

But there was also a problem in the accommodation. The training divers normally stayed in a bed and breakfast accommodation in Fort William, but none would take me, because all the rooms were for two people. I ended up staying at the instructor's house, sharing a room with his daughter.

The instructor had three daughters. I did not know it then, but there is a reoccurring theme that people who have helped me progress in my diving career, all have daughters. There are people in every walk of life and industry who try to address the imbalance of gender diversity. From my experience in the diving industry, the men who have helped me were due to wanting a change for their own daughters to have equal opportunities.

PVH: So from Cousteau to commercial diving, that's a big jump. Besides an initiation, did you engage in sports diving?

LJ: Yes, I did a bit of sports diving in parallel. At 17 I joined the British Sub-Aqua Club (BSAC).

SHE'S THE ONLY WOMAN DOING THIS TOUGH JOB

FORMER bank teller Elizabeth Cornwell spent her 19th birthday over 100 feet underwater after qualifying as Britain's only female professional diver.

Slim, attractive Elizabeth from Purley in Surrey, recently passed the tough two-month course at the Underwater Training Centre in Fort William which trains divers for the North Sea oil platforms.

Dangerous

Now the teenager, who had her first experience of underwater life three years ago while on holiday, is now fully qualified to join the ranks in one of the world's most dangerous jobs, diving at depths of up to 165 feet in the North Sea.

Earlier this year she astonished her family, colleagues in the bank and her boyfriend by announcing that she was going to leave the bank counter for the seabed.

"To put it mildly, people were surprised," said Elizabeth, who has already been offered her first diving job and hopes to start work in January.

"I had my first taste of diving only three years ago when I was on holiday in Greece.

"I just loved the feeling of being underwater, it was so relaxing, so peaceful."

Elizabeth joined her local sub-aqua club and eventually qualified as an instructress, but the lure of the deep was too strong and after raising £4000 for the course she left her job in the bank.

"It's not the sort of thing you usually do so the bank were surprised when I told them why I was leaving, but they were very good about it and wished me luck," said Elizabeth.

"My parents were more shocked. They worried about my leaving a secure job in a bank to become a diver, and they were concerned about the dangers of the job.

"But they know how much I love diving and now I think they're quite proud that I passed the course."

Elizabeth spent nine weeks training at the Fort William centre, diving every day and learning underwater drilling and welding.

Taken aback

"The hardest work was building the pipelines, and using the underwater drills, which look like road drills.

"The men on the course were quite taken aback when I first arrived but I soon became accepted.

"At the end of the course I was delighted to discover that I had passed.

"You don't think of the dangers of diving, you just have to have confidence in your equipment and your fellow divers."

I went diving in Spain, Malta and Majorca. I don't think I realised the full extent of North Sea diving. There was no internet back then to look it up. I read everything I could find in the local libraries and bought several books on diving. And of course, I watched all the documentaries.

When I was a commercial diver, my husband and I used to go to Australia during the winter months, when there was not as much North Sea offshore diving work. As a PADI diving instructor I then worked on the Great Barrier Reef from October to March which is summer in Australia.

PVH: So, you went from secondary school directly to commercial diving. Was that your first job?

LJ: I worked as a Civil engineer 'Onshore diving' for two years while I tried to break into the offshore diving industry. I was finally given an opportunity by Dave Dixon at Ocean Technical Services (OTS) – again he had four daughters, so wanted to break the mould to accept females offshore by helping them. Dave told me that if he did not give a woman like me a chance, then what hope did his daughters have?

I was told by several companies like Stena Offshore that they would never employ a female diver but none the less, I persevered. I would also be told that I needed additional qualifications to be employed, so I went on many courses, including a concrete endorsement course added to my diving inspection qualifications which helped me get my first job offshore. In 1990, my first Offshore North Sea diving job was for Total on a platform called the MCP-01, which was a concrete based platform. It was a challenge, as my accommodation on the platform was a converted broom cupboard, and many of the divers did not like me being there at all, but it was a start and I kept going.

Having a job was great, but I had to prove myself again, and there was a lot of resentment. People were sometimes quite horrible to me, but because I was young and perhaps naive, I put up with people not being nice to me offshore. Some divers accepted me when I proved that I could do the job, but most still refused to sit with me at mealtimes or engage in conversation with me; insisting that I make the tea at every opportunity. I used to get upset (behind closed doors) until I realised that people were not awful to me for being me, they were horrible because they did not want a female working offshore. I eventually realised that being upset was not productive, but quite damaging for my mental health – these men did not know me, so I shouldn't take it personally when I was just doing the same job as they were and I was never rude.

However, my goal was to continue offshore in the North Sea, so I went back to Fort William and did some further training to qualify with my HSE Part II qualification in 1991.

We were doing bounce diving off the back of the boat on air and Nitrox mixes. Now after my shifts, some divers would come and sit with me. If you are the 'first', you just have to keep persisting, keep going, and eventually, some of them accept you (there will always be those that don't).

PVH: I thought in commercial diving you almost always work with the same team of divers, but that does not seem to be the case.

LJ: I worked for about three years on the Dive Support Vehicle (DSV) called the DSV Aquamarine. So quite often I worked with the same people on that vessel. That is when it started to get better. Obviously, people get to know you more, but some divers still stayed in

their groups. At times when dirty films were being shown in the recreation room and posters of naked women hung on the walls, I did not mix as much as you can in modern day offshore life. Instead, of watching the TV, I'd go up to the bridge or into the control room and would start preparing and planning for the next dives and learn about the dive planning and operations.

Offshore rotations were usually for four or five weeks at a time followed by two or three weeks off. During that time, I would get asked to come into the office to write the reports and work on future project tenders. Little by little, I gained a better understanding of project management, so to enable me to work more onshore, and start a family, I decided to go to university to study Mechanical Engineering when I was 28 years old.

PVH: Was that the end of your diving career?

LJ: 1997 was the end of my offshore North Sea diving, but when I finished my degree in 2001, we moved to Australia with our two sons. I worked there as a diver from time to time, but my main occupation was an engineering position for an onshore gas company, Duke Energy based out of Brisbane. They were installing their first offshore gas pipeline between Melbourne and Tasmania so I used my previous subsea offshore experience with my engineering degree. I worked on the Tasmanian gas pipeline project for two years.

I lived in Australia for 4.5 years, adding an Australian baby to our family and becoming citizens.

PVH: The commercial diving environment was not ready for a female diver.

LJ: That was the problem. They said I could not get a job because there were no suitable facilities, toilets, showers or cabins. The cabins were often designed for a minimum of two. They could not let me share a cabin. They couldn't put me in a cabin with one or more men. I ended up sleeping in the infirmary of some DSVs on occasion.

Sometimes I got the client's cabin, which led to a lot of resentment because the men were very annoyed about that privilege. Why did she get the best cabin on the ship? The challenges were worse in the decompression chamber. You could live in a chamber for 28 days with cameras on you all the time, so this really wasn't for me in the long term.

THE CURRENT SITUATION

PVH: It is easier to have empathy with a situation when you know the situation. Did the situation improve over your career? Or is the commercial diving business still a man's world?

LJ: I think people are a lot more receptive and open to female divers, but diving is still not something that many women want to do. It is still seen as a challenge, which is a shame really. We should try and encourage more women, especially the younger generation, to join the diving industry. There is some improvement, but it is still a very male dominated industry. We need a change of mindset, a cultural shift. There are women in supporting posts like HR, engineering… but not many divers.

PVH: If you could start over, would you do it again? Differently?

LJ: That's a very good question. I think if I had known the barriers, I probably would not have

done it. However, when I was in Fort William for the first time, the men on my course said that I would never dive, never get a job, never be accepted. This was like waving a little red flag at me. My reaction was to prove them wrong. Of course I would. There are a few things that I would have done differently, but then I wouldn't have turned out to be the person that I am now.

What advice would I give to my younger self? Enjoy everything you do. Try and prepare yourself better, to be a bit more resilient and a bit more thick-skinned. Keep your family and friends close because talking helps. Find a mentor or coach who gives you another perspective on things. If you don't get another view, you can get quite overwhelmed by how difficult the challenges are.

Rejection is part of doing something new. You have to knock on a lot of doors, but if you have prepared yourself, that shouldn't be so difficult.

Knowing what I know now, I would have probably gone into marine biology, research, or engineering. The way I did it was very interesting, and all considered, it ended well. We go on citizen science expeditions where we tag manta rays. Our children dive too, so we have had a few family dive holidays. I realised my initial dream and earned money while doing it. It was certainly something special to be the first female diver on board.
PVH: What is the female representation in the diving industry today?

LJ: If you mean commercial North Sea divers, I don't think there are any. Fort William is closed. The Company I work for – Subsea7 supported them financially, but even with that, they couldn't remain open which is a shame.

It is physically hard, but there are a lot of fit men and women. It is more a thing of the mind. You need a certain mindset for diving offshore and living in a confined environment in a diving chamber. You need thick skin which I had as the youngest and only girl with older brothers. That probably helped me a lot to build the resilience I needed.

THE LEGACY

LJ: What is the angle of the article?

PVH (taken by surprise): I have not yet thought of an angle.

LJ: It would be nice to get women to think about getting into the diving industry. I might be the first, but I do not want to be the only one. It is good to be a pioneer, but you really want a legacy. Female divers should not be this rare in the diving industry. Things have changed for the better. The industry needs that kind of inclusion and diversity. It would be great if young women would think if they could do that 35 years ago, why not give it a try now? It was fun for me, but my example must not stay unique. We have to motivate younger people, especially younger girls, to think that you can do anything you want if you put your mind to it. Whether it is diving or something else. Just pursue your dream and do it.

Commercial diving is considered very difficult, very dirty, and very hard. While it is an exciting job, it should also be for women.

PVH: Thank you for taking part in this interview, Liz. I hope that some young women will follow in your footsteps and start a career as a commercial diver.

DAMSEL OF THE DEEP!

AFTER splashing out several thousand pounds 19-year-old Elizabeth Cornwell from Purley, Surrey, has become the first qualified woman diver to be trained at the Underwater Centre at Fort William.

Elizabeth, who turned 19 the day before she graduated, took the plunge and paid £4000 to train at the world renowned diving school. Her male colleagues on the intensive nine weeks course came from Norway, Brunei and the UK, and at the end of their stint they threw a party for Elizabeth to celebrate both her birthday and her diving success.

An elated Elizabeth described the course as "very tough but very enjoyable." She said, "I learned a lot. The seven blokes with me were a bit surprised when I first joined them, but they've been really fine and I was treated no differently from them."

Alec Findlay, from Inverness, the instructor under whose tuition Elizabeth has now emerged as a certificated air diver capable of operating at depths of up to 50 metres, commented, "Elizabeth is unique as she is the first woman we have put all the way through the certificate course.

"She had previously done a lot of scuba diving and is, in fact, graded very highly by the British Sub-Aqua Club, so her love of the water has certainly been an advantage."

As Alec was speaking his protegee was acting as standby diver in charge of a group of a dozen students. They had to launch themselves from the pier into Loch Linnhe and Elizabeth was already in the water to look after them after they jumped!

Protect

"She's there to protect them in the event of anything going wrong," Alec explained. "She can do that now that she is qualified."

Elizabeth, a former bank teller, reckons that her £4000 investment will be worthwile.

"I hope to use my qualifications to work in oceanography or archaeology," she states. "Survey work, civil engineering or underwater photography all have possibilities now."

OVERVIEW OF LIZ'S CAREER

Liz James started her career as the first female professional offshore diver in the North Sea. Since then, she has worked in a variety of corporate, management and leadership roles and has over 30 years of experience working in the oil and gas industry including Project Manager and Director roles.

Before joining Subsea7, she worked as a Lead Project Engineer for Saipem in London, and earlier for Duke Energy in Australia, Phillips Petroleum, Conoco, British Gas, and Maersk. She has trained in management of complex programmes, executive leadership, kidnap incident management, and women in business coaching.

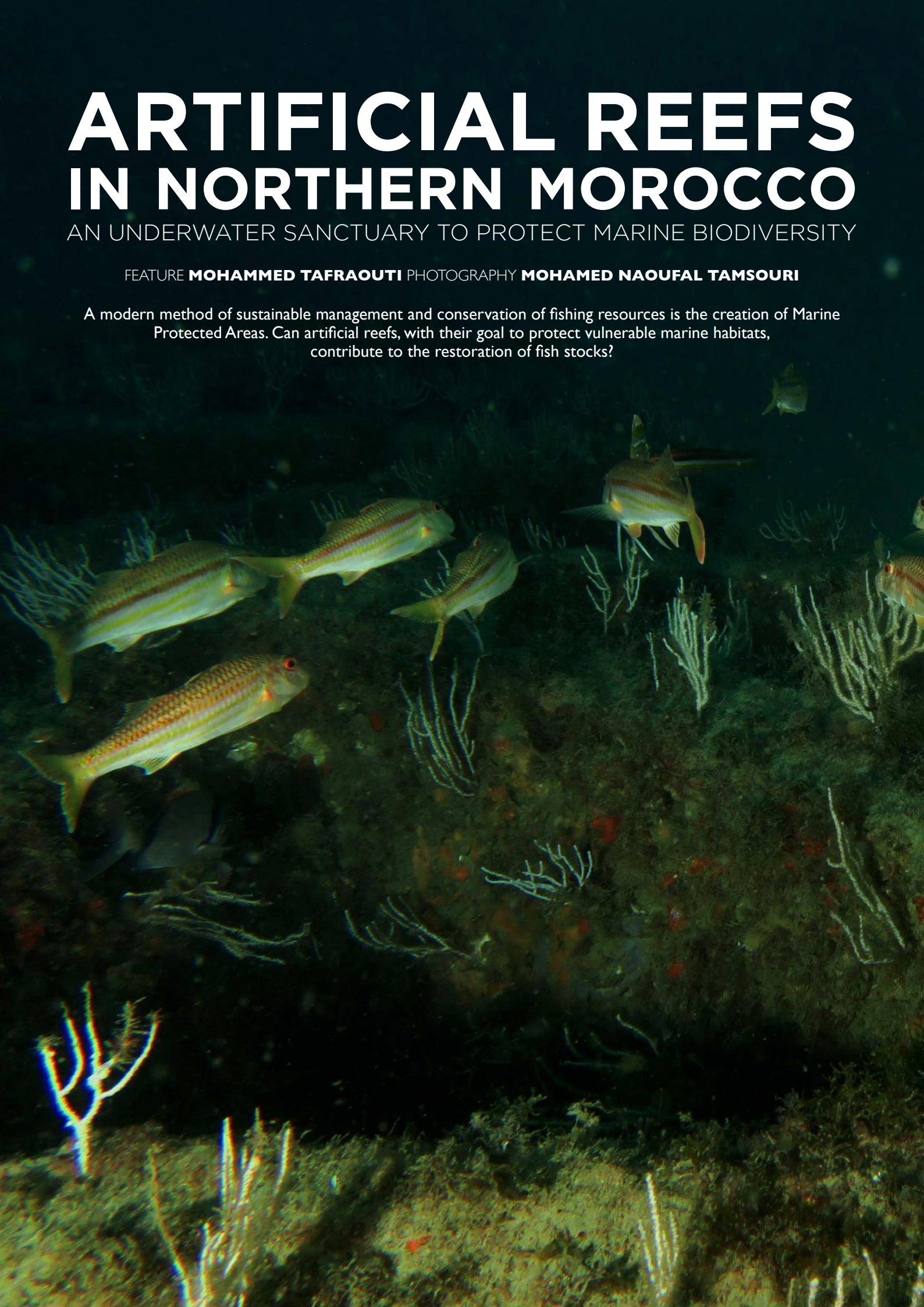
Liz James is currently the Group Environmental Director at Subsea7: **www.subsea7.com**

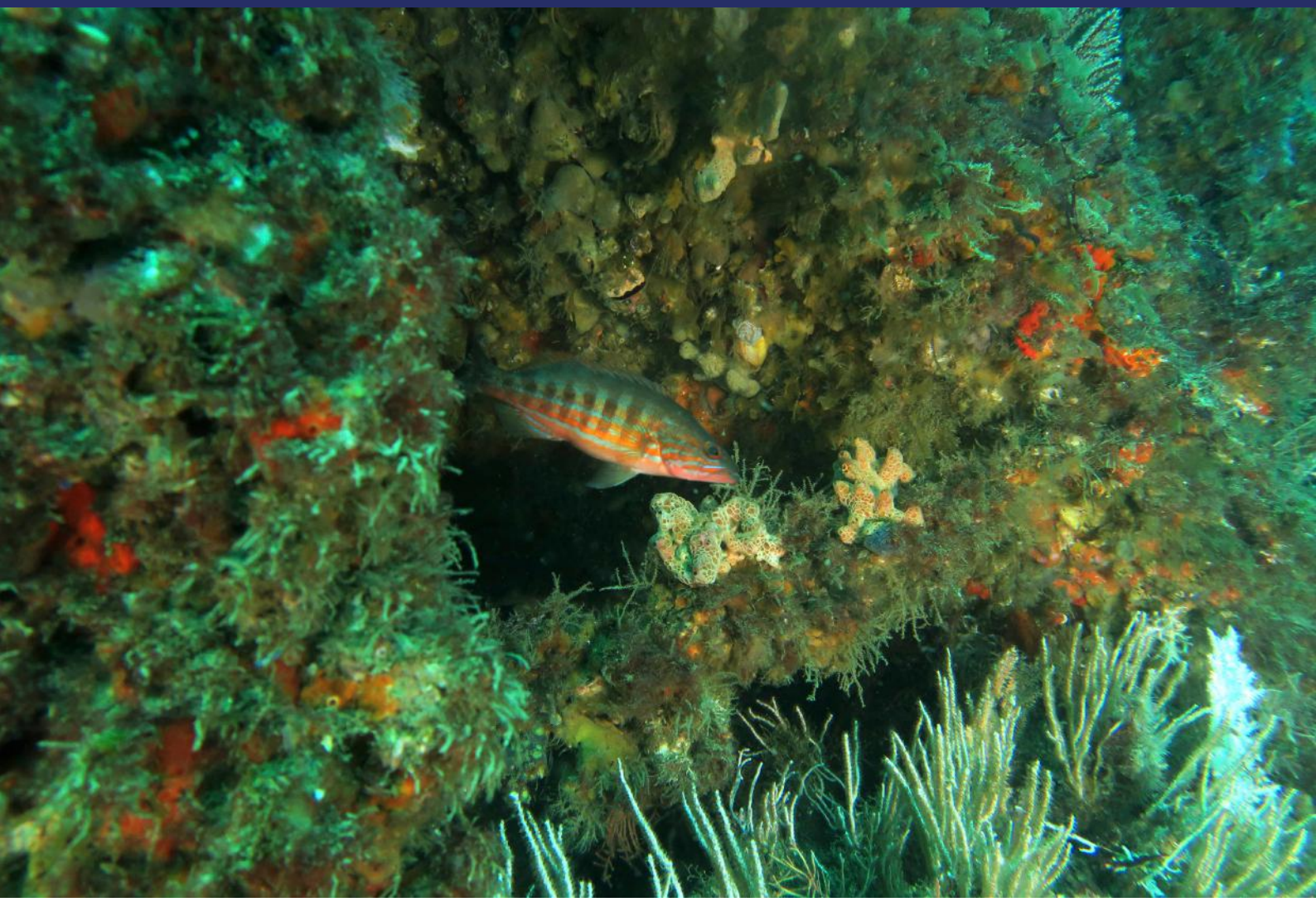
ARTIFICIAL REEFS IN NORTHERN MOROCCO

AN UNDERWATER SANCTUARY TO PROTECT MARINE BIODIVERSITY

FEATURE **MOHAMMED TAFRAOUTI** PHOTOGRAPHY **MOHAMED NAOUFAL TAMSOURI**

A modern method of sustainable management and conservation of fishing resources is the creation of Marine Protected Areas. Can artificial reefs, with their goal to protect vulnerable marine habitats, contribute to the restoration of fish stocks?





The increasing biodiversity seen on the artificial reef in Northern Morocco.

A modern method of sustainable management and conservation of fishing resources is the creation of Marine Protected Areas. Can artificial reefs, with their goal to protect vulnerable marine habitats, contribute to the restoration of fish stocks?

The idea of artificial reefs is based on the natural ability of fish and other marine organisms to rebuild the marine environment, providing them with shelter, protecting them from predators and helping in the regeneration of the marine ecosystem. The initiative to install artificial reefs in the region is one of modern means to combat illegal fishing, especially trawlers that violate maritime laws and deliberately use their nets in shallow waters, which leads to the elimination of natural fisheries and small fish.

Artificial reefs use materials that mimic natural reef systems, such as concrete. In some regions of the world, shipwrecks are used as another point of interest for divers, but concrete is usually used to increase the diversity of habitats and enrich the marine environment.

The goal of creating artificial reefs includes the establishment of suitable habitats for fish and other aquatic organisms, contributing to the preservation and increase of biodiversity. They consist of large pyramids made up of concrete blocks with cavities and holes to provide shelter and create habitats. The placement of artificial underwater reefs has several objectives in the Mediterranean region of northern Morocco, such as protection against illegal fishing, as well as providing breeding areas. They form a shelter for populations of animal and plant organisms.

They are classified into three types: productive economic reefs to create biodiversity and biomass, and raise marine wealth in order to exploit them in the field of fishing; environmental protection reefs that reduce the damage caused by trawling; and recreational reefs that allow diving. In order to cope with the constant pressure exerted by human activities on the Moroccan coast, the loss of biomass and marine biodiversity, artificial reefs have become a vital development tool, allowing the integrated management of the coastal zones.

To raise awareness of the importance and necessity of preserving coastal marine ecosystems in Morocco, the marine fisheries sector of the Ministry of Agriculture and Fisheries, and the National Institute for research in Marine Fisheries (INRH), within the framework of a partnership, prepared a project for the design and development of two artificial reefs in the Mediterranean marine area, Martil. This project was implemented within the framework of the new strategy for the development of the marine fishing sector (Plan Halieutis), as well as in accordance with the programme, Strengthening Tools and Means of Protecting National Fishery Resources. An estimated budget of 37.5 million dirhams was allocated to it, funded by the Fisheries Development Fund.

The main objective of the Martil artificial reef project is to restore and rehabilitate degraded marine habitats, preserve and enhance marine biodiversity, enable the rational exploitation of biological resources, improve access to fishing communities, and then develop recreational diving in this tourist area. The results of monitoring by the National Research Institute of Marine Fisheries showed the effectiveness of artificial reefs as a means of vital development of coastal zones. The initiative to install artificial reefs reflects positively on the economic and social dimension of the region. It is a glimmer of hope that man not only creates tools that destroy nature but with a little imagination and awareness, he can create an alternative that seeks sustainability and wisdom.

THE CREATION OF ARTIFICIAL REEFS

The creation of such artificial reefs makes

it possible to increase the fish resources of the region. It has an impact in terms of protecting and restoring a rich and diverse marine ecosystem through the production of persistent organic plants and animal organisms, feeding the links of the food chain.

In order to cope with the constant pressure exerted by human activities on the coast and the loss of biomass and marine biodiversity, artificial reefs have become one of the vital development tools, allowing the integrated management of the coastal strip and resources.

According to Dr Mohamed Naoufal Tamsouri, a researcher at the National Institute of Fisheries Research (INRH) in Tangier, the artificial reef operation has achieved good results by improving the qualitative richness of the area benefiting from the project and rehabilitating degraded habitats. Since the beginning of the project, the research institute has provided technical and scientific monitoring from all aspects, especially studies, construction and installation, where scientific monitoring by diving is carried out gradually as the situation continues to progress.

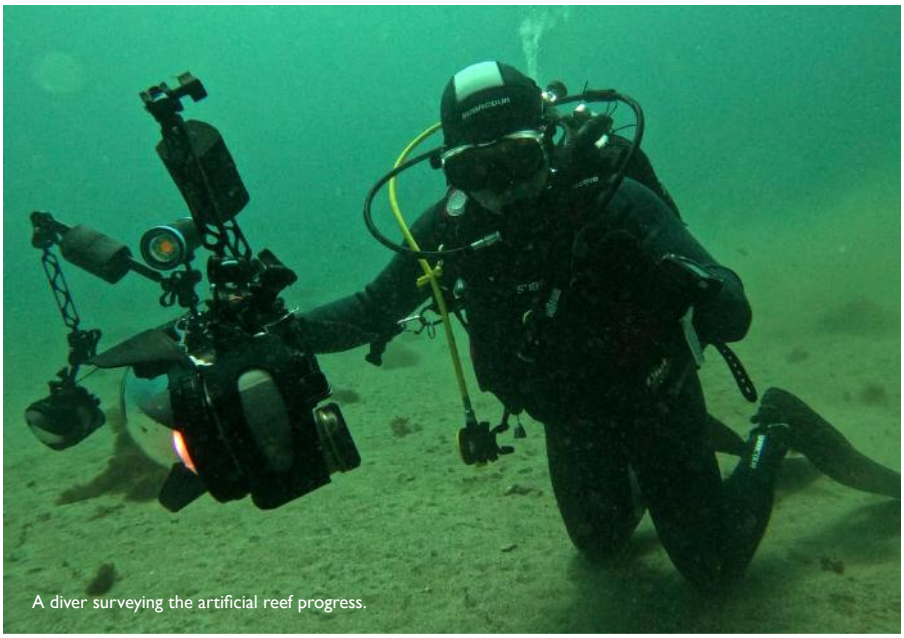
Dr Tamsouri added that once all the fragmented concrete reef were laid, physical and biological monitoring of the submerged artificial reefs was carried out every three months to monitor their behaviour and their impact on the environment. The first recorded results showed that a new settlement occurred gradually, first with pioneer species, others quickly replacing them, and then this succession slowed down with the stabilisation of species in the stages of maturity, which usually have a longer lifespan. The speed of this species community is noted, depending on the depth and location in accordance with the hydrological circulation.

Since the beginning of the immersion of concrete blocks, the continuation and increase of the qualitative richness of settlements inside the coral reefs has been recorded.

The first stage was characterised by the fixation of the biofilm, which started from the fifteenth day. Subsequently, the submerged structures were covered with algae of various species and soon there were invertebrates, sponges and larvae gathered in the plankton. It hosts thousands of species of fish, molluscs, and crustaceans.

This group of species is a coincidence, with no biological relationship between them. At the end of the fourth month, many new species manifested themselves for which artificial reefs became a shelter, a food zone, and a breeding zone for squid.

After 12 months, there has been a noticeable increase in the number of individuals and species, which confirms the attractive effect of artificial reefs.



A diver surveying the artificial reef progress.

The concrete blocks are stacked in the waters of the Martil sea.

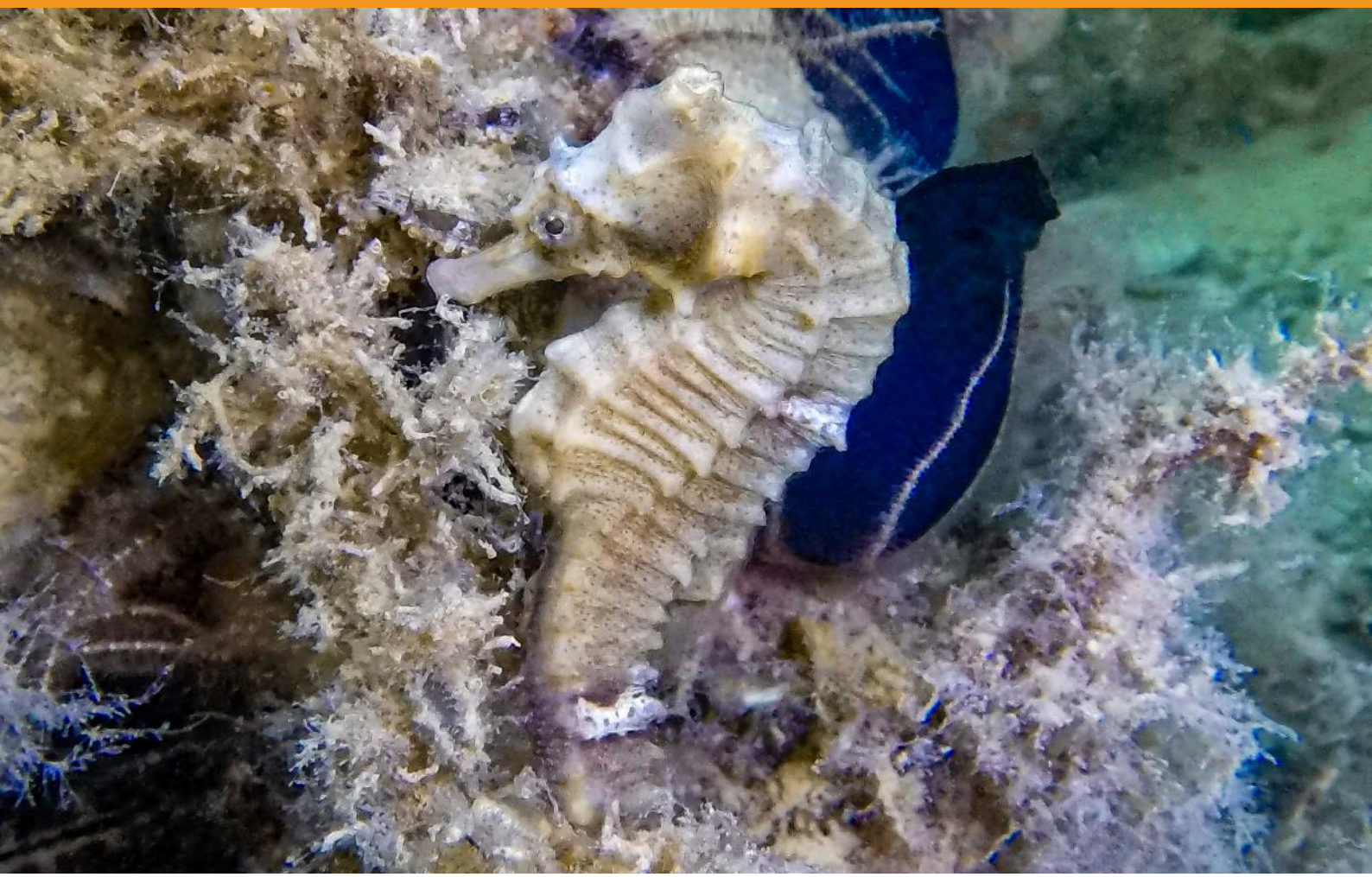
UNDERSEA MEADOWS

WHERE THE SEAHORSES GRAZE

FEATURE AND PHOTOGRAPHY **ALLY LANDES & GORDON T. SMITH**

What is important here, is to be connected with nature, to take the time to get to know your animal, and then you will be rewarded in the most fantastic way.

Photo by Ally Landes of a *Hippocampus kuda.*



Photos by Ally Landes taken in Dubai of the *Hippocampus kuda* with a GoPro Hero 5 and a Backscatter +15 MacroMate Mini Underwater Macro Lens.

Prior to these dives, my knowledge of seahorses was somewhat limited. I see them twice a year in the Musandam on weekend dive trips, which are usually the Great Seahorse (*Hippocampus kellogi*), one of the largest species that can grow to 30cm in height – always found at Octopus Rock. I've also seen the same species on a few dives in Dibba, Fujairah. I've seen the gorgeous, and very tiny Bargibant's Seahorse (*Hippocampus bargibanti*) in Sabah, Malaysia that is so incredibly camouflaged, it mimics the Gorgonian Sea Fan (*Muricella plectana*) which it inhabits. Without a guide and a magnifying glass, I would never have seen one as they grow to a maximum height of 2.4cm.

I've grown to adore all of these delicate mythical looking sea ponies, all thanks to Gordon's obsession with diving in search of our local species, right off our own doorstep!

Seahorses are found worldwide, and there are 42 known species to exist. Here on the west coast in Dubai, we find in the shallow waters Common, Yellow, or Spotted Seahorse (*Hippocampus kuda*) that grow to 17cm, as opposed to our deep water larger species on the east coast, the Great Seahorse. I'm starting to question whether we are also seeing *H. kuda*'s smaller cousin here in Dubai, the Sea Pony (*Hippocampus fuscus*) which grows to 12cm and has a shorter snout than the *H. kuda*. It's incredibly difficult to tell from the books as data is still deficient on some research and they are still discovering the species.

The *H. kuda* is a confirmed species from a DNA report done locally here in the UAE by Ahmed Al Ali in a pilot study with the United Arab Emirates University to an Arabian Gulf sampling he has done. Further DNA samplings need to happen to confirm the other species which we are looking forward to hearing about. The seahorses that they breed in captivity in a scientific lab of a govermental Aquarium, are the *H. fuscus* (identified by morphological properties such as trunk and tail rings, coronet shape, head length to snout length ratio, and pectoral fin ray number which hardly overlap with the *H. kuda* thus making identification easier in the lab.

We regularly visit our seahorse colony in Dubai, keeping a count on these great masters of disguise and generally obsessing over them. The *Hippocampus kuda* males are typically black and can have white spots, and the females yellow, sometimes with brown spots. They swim upright with the use of their tiny little dorsal fins, they anchor with their tails, they dance in courtship, and it's

Ally's GoPro setup ready for Wide Angle and Macro.

the male who carries the female's eggs and hatches them (as do all seahorses). They are truly fascinating!

We must not forget though, seahorses are highly sensitive to disturbance and we need to dive and photograph them with care in order to conserve their fragility within their habitats.

The *H. kellogi* is marked as Vulnerable on the IUCN Red List, and the *H. kuda* is marked as Data Deficient. The *H. fuscus* has no record.

WELCOME TO OUR STABLES!

Gordon and I want to take you into a dive on how we photograph them with our setups. What is important here, is to be connected with nature, to take the time to get to know your animal, and then you will be rewarded in the most fantastic way.

The key is for the sea life to connect with you. If that seahorse does not want to be photographed and pulls away, then you are clearly stressing its space, your lights could be far too bright and unbearable for them, and that's your cue to move away. Your subject will show YOU if they are comfortable to be photographed.

PHOTOGRAPHY WITH A GOPRO

I have only ever used GoPros for my underwater photography and films as I have plenty of other camera gear to haul on my travels, and adding more weight to my equipment with a housing and strobes for my DSLR is not something I want to do.

On a positive note, I have found my underwater setup works really well for me, and I love the results I am able to get post edit.

I have taken a lot of time testing the Backscatter +15 MacroMate Mini Underwater Macro Lens. I originally used it with my GoPro 7 Black, but the field of view (FOV) only drops to linear which doesn't get me close enough, and it can obscure the background. I wanted to get it to drop to narrow to get the sharpest edges, but this option is not available on my 7 or my 8, so I switched to my older GoPro, the Hero 5. Now there is less cropping to do for the composition I want.

The trick is to be 3 inches (8cm) from your subject, or your shot will be out of focus if you are closer than, or further away. Whether you are in focus is not always clearly visible from the tiny monitor on the back of the GoPro, which can be frustrating – but this is down to whether you have perfect vision – which I sadly, no longer have.




LEFT TOP AND BOTTOM: Photos by Ally Landes taken in Dubai of the *Hippocampus kuda*. **RIGHT TOP AND BOTTOM:** Photos by Gordon T. Smith taken in Dubai of the *Hippocampus kuda*. Bottom photo taken with a snoot. **OPPOSITE PAGE:** The *Hippocampus kellogi* taken in Fujairah by Gordon T. Smith.

Taking photos in macro is intrusive, so we take care to see how our subjects react to us being up close and personal. I make sure my video lights are set to the dimmest setting possible for macro, and then I'll know if I'm invited to take those shots. Even with the lights at their dimmest however, you want to get the shots you need and then get those lights off the subject ASAP.

With the GoPro 5, I am limited to the photo quality at 12MP, but I make it work in post-production. I wish GoPro extended their RAW option from Wide Angle to all the FOVs. It's not always about the camera type and technical aspects. There is nothing technical about taking photos with a GoPro, they are a video tool above all, but if you are passionate, you can take a photo with any camera and get outstanding results. You must absolutely have lights though. Light is key if you want anything worth showcasing. How you use those lights, will determine the results.

Remember, "The best camera, is the one that you have with you!" – Chase Jarvis. And most importantly, knowing how to use the tool you have.

My setup allows me to mount two GoPros side by side. My 8 is set to Wide Angle with RAW as my priority. If one of my GoPros fails to operate (as has happened on several occasions), I always have a backup to get shots no matter what, but it also means I have two FOV options.

I use the Black Molly V: 2600 Lumens Video Lights by BigBlue which I reviewed back in the September 2022 issue where you can clearly see examples of what images look like with, and without lights. These lights also come with built-in red LEDs for enhanced focusing and night video work, and a yellow removable filter. They have been a fantastic investment. The lowest light setting for macro provides the colour temperature I need with the wide angle 120-degree beam, and they have been accepted by the seahorses so far. I have been rejected when I had the settings any higher. This is so important and must be respected.

PHOTOGRAPHY WITH A DSLR: NIKON (With Gordon T. Smith)

Ah seahorses! One of my favourite creatures to photograph (after nudibranchs) and observe. You can get very close to them and watch their eyes move around looking back at you.

I rarely ever came across one when I lived in Saudi, their camouflage was so perfect and I probably didn't even notice them. However, after many years of diving, I am now more aware of how to find these creatures which are living in the waters of almost every country that has a marine coastline.

Unlike Ally, I shoot underwater with a DSLR in a waterproof housing. My current cameras are Nikons and the two housings I use are made by Sea&Sea. Lighting is done using Sea&Sea YS-D3 strobes, and I have used various Sea&Sea strobes for over 30 years and very happy with the results obtained using them. These strobes are connected to my camera through the housing using an electronic cable, not fibre optic. This means I'm not using the camera flash to trigger the strobes and the

Photos by Gordon T. Smith taken in both Dubai of the *Hippocampus kuda,* and Fujairah of the *H. kellogi* with a DSLR Nikon. Snoot examples in the last two images of the opposite page.

camera battery will easily last 500+ shots before recharging.

I also use focus lights made by Light and Motion, the Sola 1200 and Sola 800. The reason I use these lights is that they have a red-light function as well as white light, and this is very useful when illuminating creatures that are easily disturbed by white light. Seahorses are a perfect example, and I get rather upset at times when I see people attempting to film or photograph seahorses with what looks like a couple of car headlights on full beam pushing into the soft corals when I dive off the east coast of the UAE, no wonder the poor creatures get stressed out. Usually back on the boat, I will mention to anyone taking photos of seahorses to be mindful of using their lights on them. The best method of lighting is to use strobes.

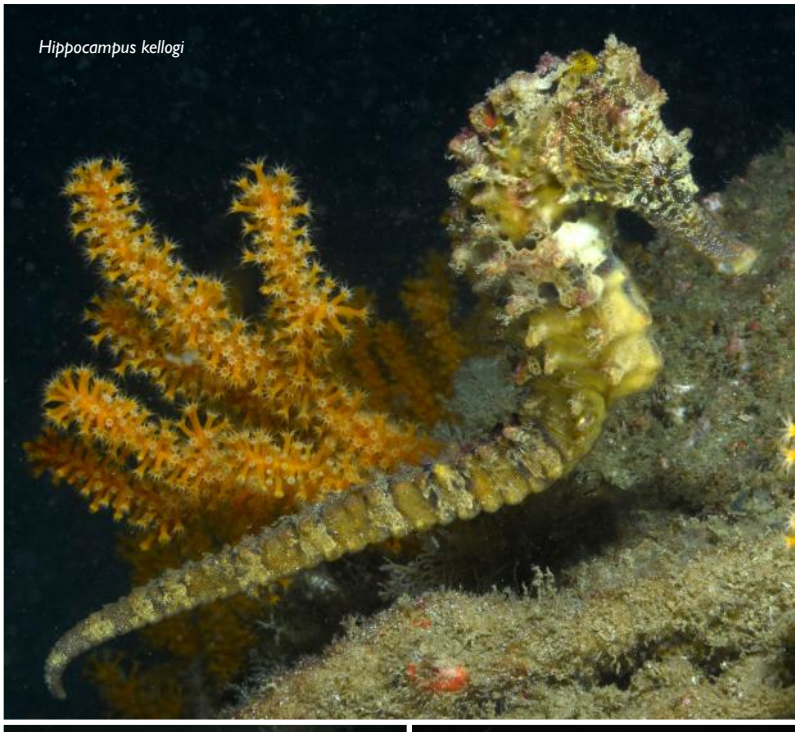
Prior to the COVID lockdown, I also started using an Olympus TG5 and subsequently a TG6 primarily for video, but I have used it for still photography also. The sensor size on this camera is small, I believe similar to the GoPro, but with more versatility and depending on which housing you put it in, additional lenses can be attached for macro or wide angle, but the Olympus built-in macro system is very powerful, and so far, I've found that an additional lens has been unnecessary.

For my DSLRs I use specific prime macro lenses manufactured by Nikon and have four in my collection. All of them will go down to 1:1 so I get exact life size imaging. The magnification can be increased by adding a wet dioptre such as a +5 or +10 on an adaptor that can easily be moved in front of the camera port for any creature that is less than 20mm in size. My general "go to" lens is the 60mm and depending on what I plan to shoot, I will also use the 105mm lens if the water is clear enough or if I want to get in really close with a +10 for creatures the size of a grain of rice.

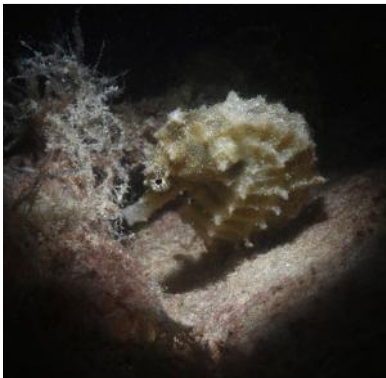
My preference for shooting the *H. kellogi*, is to use the 40mm lens, as, due to its large size, this seahorse is really challenging to shoot with a longer focal lens in UAE waters where the visibility is variable and generally not that great. Fortunately, the port on my DSLR housing can accommodate the 40mm, 60mm and 85mm lenses, and I only have to change ports when using the 105mm lens which requires a longer port.

Recently I have tried shooting with a snoot, which is a device added to the front end of a strobe that focuses the light on the subject and not the background. This system has proved quite challenging at times as I now have to use autofocus on my camera, something that I have had to resort to as I don't have three hands.

The snoot is connected to a BackScatter MiniStrobe Mk1 (at present) and that strobe is slaved off one of my Sea&Sea YS-D3s using a fibre optic cable.



Hippocampus kellogi

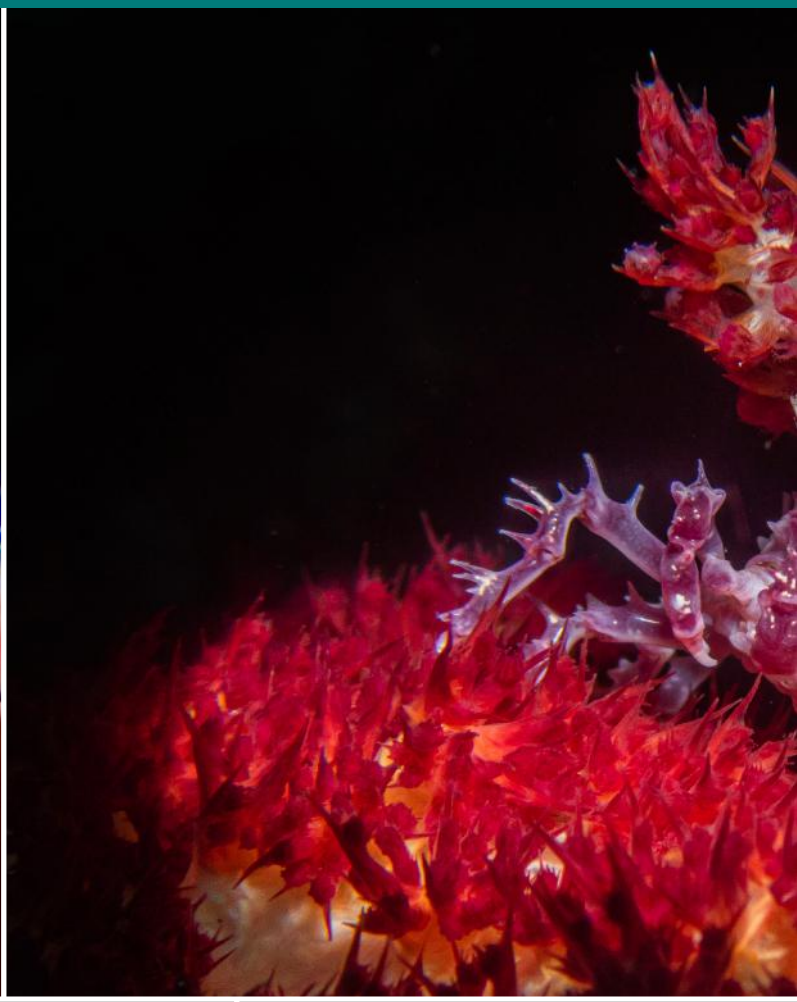


ROMBLON

THE MACRO PHOTOGRAPHY UNDERDOG

FEATURE AND PHOTOGRAPHY **FAKHRUDDIN DABHOIWALA**

Romblon has been an amazing adventure, and it has something for everyone, be it for macro photographers, to wide-angle shooters, or someone who just wants to take in the view. I will always want to come back to Romblon as it's smaller than Anilao, and much less commercial, hence, it's less touristy, giving you a private feel to your dives.



If you ask an underwater photographer where should one go for the best Macro Photography, the first thing they say is Anilao, Philippines. So, I thought that should be my next dive holiday. I'll admit that it was a bit lazy on my part not to research other places I could go to, but hey, I've heard so much about Anilao, why bother, right?

But then when I heard that Kate Jonker, an award winning and acclaimed underwater photographer based in South Africa was organising an Underwater Photography trip to the Philippines, I jumped right onboard. We were going off the beaten path, and we would be travelling to Romblon.

Romblon is an island located south of Batangas, and relatively unheard of for macro photography, so I had my doubts, but I was in nonetheless.

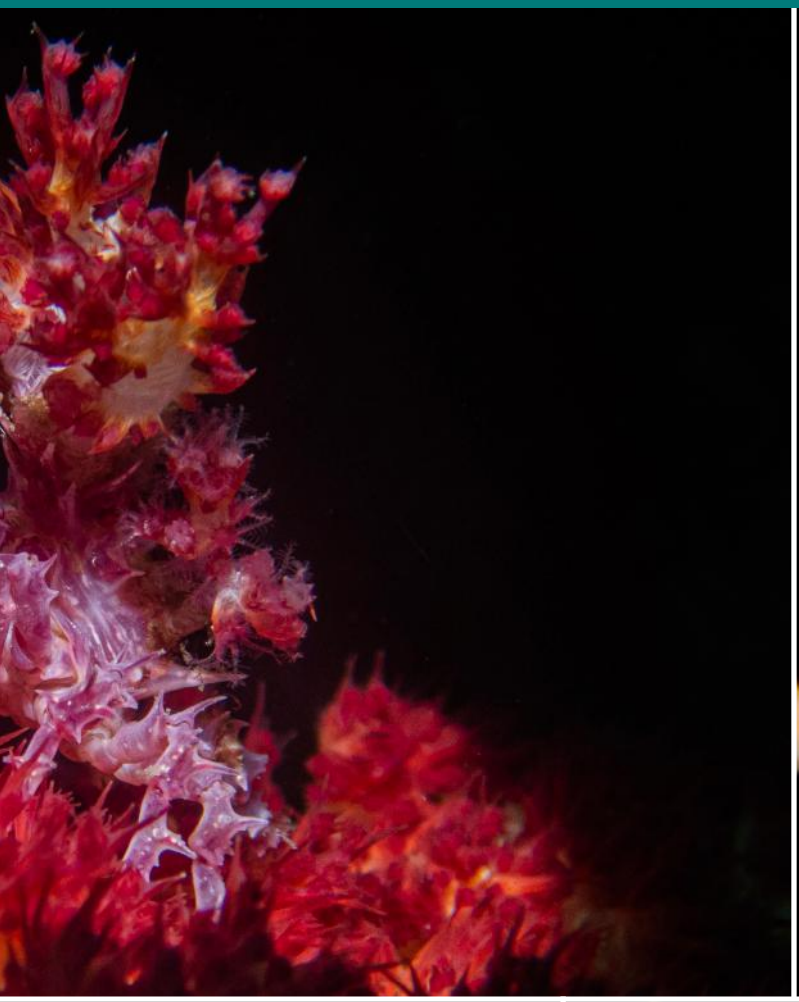
Our trip was scheduled in May/June and was planned more than 6 months ahead, including 26 dives, and a stay of 10 days at The Three P Beach Resort.

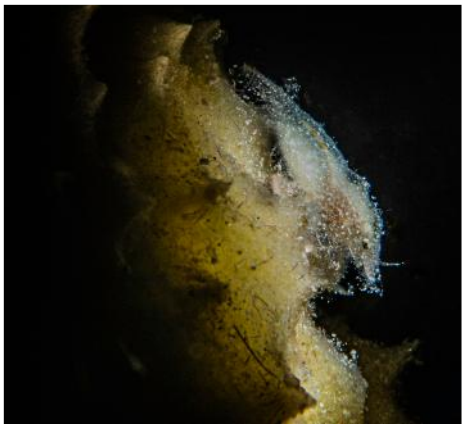
Romblon is a small island (small being a relative term here), and it is quite an adventure to get to. Once we landed in Manila, we took a 2-3 hour bus ride to reach the Batangas Ferry Terminal. From there, depending on the day you arrive, you can take a ferry to either Romblon directly, or to Tablas Island. For our travel date, we took a ferry to Tablas Island with the ferry departing at 9:30pm to arrive at 7am the next morning. We had shared State Rooms between 4 of us which are just comfortable enough to pass the night. From Tablas Island, we took a bus ride to the other side of the island, and took a short ferry ride to Romblon Island. This took us around 2 hours altogether.

The resort is hidden along the shore by a mangrove plantation and the roads throughout the island are narrow. It took around 30 mins to reach the resort from the Romblon Port.

The resort's rooms are large, with a massive table and working space to spread out your camera gear. You can also get a bungalow with a balcony facing the sea. The resort is a family run business and the owners are always around to help out with anything you might need. Since the island is so remote, the only place to "shop" is in the town, which is about 30 mins away.

Having never dived in the Philippines before, I did not know what to expect. However, since we were there to do macro photography dives, I started looking for macro critters and nudibranchs from the get-go, and boy, was I sorely wrong to think I could find them myself.





The resort's divemasters are expert Macro Hunters. Rolly and Bobby were able to find all the tiny critters that I often struggled to see even when they were pointed out to me.

There are over 40 dive sites in and around Romblon, with some sites practically next to each other, and yet so varied in what you can find. From muck dives and sandy slopes, to coral gardens and caves, it's all here and there's a lot more.

We found some of the most beautiful nudibranchs here, from Butterfly Sea Slugs (*Cyerce nigra*, *Cyerce bourbonica*, *Cyerce elegans*, *Cyerce sp.*), and the Ghost Nudibranch (*Melibe engeli*). There is a wide variety of the elusive Pygmy Seahorses, Ornate Pipefish, Pughead Pipefish, and my favourite, the Sashimi Shrimp – which can only be found on night dives using a UV light.

The resort also offers Blackwater Diving – which we were unfortunately unable to do due to the bad weather conditions. However, we did have a few good night dives, during which I dabbled in a magical photography experience – Fluorescence Photography. This is basically done when you shine a UV light on coral, and they glow due to their natural fluorescence. This is simply magical to experience even without photography.

Our spotters were very knowledgeable, and we had a guide between 2/3 divers depending on the boat capacity. We all had a great time without rushing our dives, and everyone had a different story to tell with their photos.

Our trip came to an end with a bang! Our last dives being some of the best ones, especially since the storm had died down – so much so, that we got to repeat some dive sites.

Romblon has been an amazing adventure, and it has something for everyone, be it for macro photographers, to wide-angle shooters, or someone who just wants to take in the view. I will always want to come back to Romblon as it's smaller than Anilao, and much less commercial, hence, it's less touristy, giving you a private feel to your dives.

Until next time, Romblon. See you soon!

THE THREE P BEACH RESORT & DUCKS DIVING ROMBLON

Romblon Province is not only at the geographical centre of the Philippines, but also at the "centre of marine biodiversity".

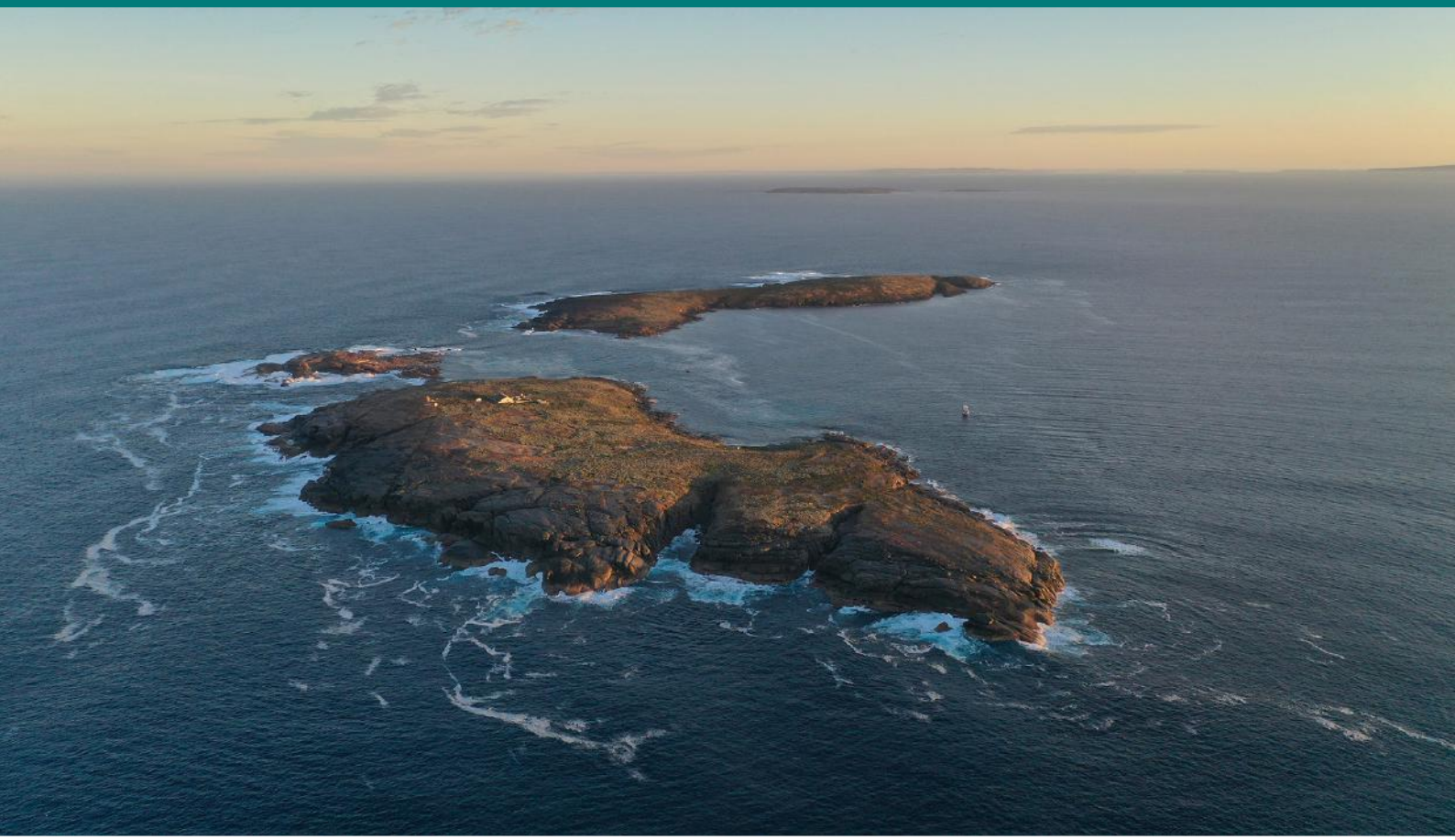
info@the-three-p.com
www.the-three-p.com
www.instagram.com/divingromblon

GREAT WHITES

A 2024 PHOTOGRAPHY EXPEDITION

FEATURE **AMOS NACHOUM** PHOTOGRAPHY **ANDREW FOX**

Imagine yourself encircled by the serene, yet intense dance of majestic Great White Sharks, gracefully patrolling the clear blue waters. This is not just a fantasy; this is a very real, very attainable experience that Big Animals Expeditions offers.



TOP: An aerial view of Neptune Island. **BOTTOM L-R:** A look at shark diving from the surface and bottom cages.

Imagine yourself encircled by the serene, yet intense dance of majestic Great White Sharks, gracefully patrolling the clear blue waters. This is not just a fantasy; this is a very real, very attainable experience that Big Animals Expeditions offers.

Four decades ago, I took my first dive with the Great White Sharks in Australia. The company? None other than the legend himself, Rodney Fox, whose awe-inspiring interactions with these magnificent creatures turned my fear into a quest for understanding and protecting these misunderstood predators.

That life-changing encounter lit a spark in me, a deep emotional connection with the Great Whites that has fuelled my passion for exploration and conservation over the years. Since then, I've experienced the mesmerising beauty of the Great Whites off Farallon Island, South Africa, and Guadalupe, Mexico.

But now, the call of the Australian waters beckons me back. This time, with Rodney's son, Andrew, and an innovative diving method that draws not just one, but up to four sharks around the cages.

Picture it, three or four graceful Great Whites, peacefully circling your cage, allowing a unique opportunity to observe their complex hierarchy and behaviour.

This encounter is as intimate as it is exhilarating. With only eight guests and two cages, I envision hours of pure immersion, oscillating between the surface cage and the lower cage nestled 60 to 80 feet below.

Imagine, the cage door opens, revealing an unobstructed view of the majestic shark in its natural habitat – no bait, just the true essence of this peaceful predator on display.

And then, back on deck, over a cold brew, we'll exchange stories of our dives, each one different, each one thrilling. After dinner, we'll review your captures of the day, delighting in the images well caught, echoing with the joyful chorus of a day well-lived.

Join us in this once-in-a-lifetime opportunity to truly understand and appreciate the existence of these magnificent creatures. Come, dive deep into an adventure that promises to move you, just as it moved me 40 years ago.

TOP: MV Rodney Fox at Neptune Island. **BOTTOM L-R:** Main dive deck on the MV Rodney Fox; Rodney Fox and Amos Nachoum.

AMOS NACHOUM
EXPEDITION LEADER

Amos Nachoum is both a master of photographing big animal behaviour while guiding the small groups of adventurers who accompany him on his expeditions.

He free dives with blue whales off the Eastern Pacific, scuba dives in the Okavango Delta with crocodiles, and goes face to face with the great white shark. He's one of only five people to swim and photograph polar bears underwater… More people have been on the moon (12). Since 1980, he has taken over 5,000 people to explore every significant body of water (and land too) from the North Pole to Antarctica.

Amos's photographic vision is to raise awareness of ocean giants in their habitats. His images reflect respect and compassion for animals and wilderness. His photographs strive to dispel the myth of "dangerous" wildlife and show harmonious interactions between man and animal.

Amos is also an explorer. He leads wildlife photography expeditions with his company, **www.BigAnimals.com**.

His photos and articles have appeared in publications including National Geographic, Time, Life, The New York Times, Condé Nast Traveller, Le Figaro, Terra Sauvage, Airone, Der Spiegel, Unterwasser, Fifty Fathoms, and on the cover of the Explorers Club Journal, February 2020.

Amos' photography won the Nikon contest, and he's a two-time winner in the animal behavioural category of the BBC Wildlife Photographer of the Year Award. In 2012, he took first place in the American Photography Artist competition. In 2014, he shared his vision, 'There are no demons in the sea' at the prestigious Ted Talk to standing ovation. Amos won first place at the 2018 SIPA awards for animal behaviour, and was nominated to be the SeaKeepers man of the year in 2019.

The documentary film, 'Picture of his Life' about his career and the ultimate adventure of diving with polar bears, is out after ten years in the making to great reviews in Europe and the USA.

The film was screened for EDA members in May of this year at Deep Dive Dubai after


RODNEY FOX
PORT LINCOLN
CREW

Amos Nachoum made a personal appearance and presentation the month before in April to share his life long journey into underwater photography and conservation in search of his great adventures. Members were able to ask their questions during the Q&A and had a great evening meeting Amos in person.

RODNEY FOX

WORLD LEADER & PIONEER IN SHARK DIVING

Rodney Fox, born in Adelaide, Australia in 1940, developed a love for the sea from an early age through fishing and spearfishing.

In 1963, he survived a shocking attack by a Great White Shark in which he had to have a total of 462 stitches in his chest, right hand and arm. His survival inspired him to study and learn everything about great whites and educate as many people as possible to eliminate the concept of fear. He built the world's first shark cage and began cage diving expeditions to make these observations and study these elasmobranch fish.

He filmed the first-ever underwater footage of Great White Sharks which gained international recognition and contributed to the industry of shark cage diving.

Rodney continued to run these tours and make films until 1999, and his son, Andrew, now carries on the family legacy as a world-renowned underwater photographer and advocate of Great White Sharks.

Rodney is a prominent speaker at international conservation and diving events. He has authored a book about his life with details of his unbelievable attack titled, 'Sharks, the Sea and Me'.

ANDREW FOX

EXPEDITION LEADER

Andrew Fox grew up surrounded by sharks as his father Rodney was a pioneer in filming documentaries about great whites.

Andrew inherited his father's fascination with sharks and spent as much time as possible observing and studying them. He has identified individual sharks by name, and became an expert on their behaviour and ecology.

Andrew has also developed keen photography skills and has catalogued over 1,000 individual sharks. He established the Fox Shark Research Foundation in 2001, and began running the Rodney Fox Shark Expeditions offering tourists a thrilling liveaboard experience with sharks whilst also conducting research.

Andrew is now a globally recognised authority on great white sharks and is often approached by the media for his balanced opinion on environmental issues, shark attacks, and shark culling.

EXPEDITION DETAILS

13/10: Depart from your hometown to Melbourne, Australia with a connection to Adelaide.
14/10: Arrive in Adelaide with an overnight to all meet for dinner.
15/10: Flight to Port Lincoln with a few hours layover to see the town, and transfer to the vessel in the afternoon.
16-21/10: 6 days of cage diving with the Australian Great Whites.
22/10: Return to Port Lincoln, fly up to Adelaide with an overnight. Dinner planned – if possible – with Rodney and Andrew Fox.
23/10: Departure to your next destination

THE MV RODNEY FOX

The MV Rodney Fox is 32 metres in length and 7.2m wide, with room for 8 guests, each with private cabin.

CAGE DIVING

The Rodney Fox is equipped with two cages: lower and surface. Each cage holds 4 divers which allows our 8 guests to alternate between the lower and surface cages for the ultimate Great White encounters of the Neptune Islands.

Divers in the lower cage will be sent down to a depth between 40 to 80 feet depending on the location of the sharks. When the divers are comfortable in the lower cage at depth, the two masters will open the cage door for a clear view of these incredible sharks swimming just above the beds of sea grass.

The 4 divers will share equal time in pairs of two filming and photographing by the open doors of the cage.

EXPEDITION SUMMARY LED BY AMOS NACHOUM

13-23 OCTOBER 2024
PRICE: $8,950 per person
(Accommodates 8 divers only)

INCLUDED:

- 7 nights on board the MV Rodney Fox with private cabin (single occupancy, all meals included).
- 6 days of diving (alternating equal time between bottom cage, and surface cage).
- 2 nights stay in a hotel in Adelaide (single occupancy).
- Dive gear rental (BCD, regulator, fins).
- All taxes, fuel, park fee and port fee.
- Photo coaching by Amos.

DIVE INFO

Water Temperature: 15-17°C (59-62°F)
Visibility: 15-20 metres (45-80 feet)
Wetsuit: 7mm with a hood, or drysuit.

EPIC BLUE EXPEDITIONS WITH PADI

FEATURE **PADI – WWW.PADI.COM/EXPLORATION**

Every continent has incredible diving destinations with options for every level of diver. Whatever your speed or experience level – from gliding in crystal clear waters with schooling manta rays and whale sharks, to diving in the underwater forests off the coast of Cape Town with cape fur seals and seven-gill sharks – there are incredible far-flung destinations to explore.

Photo by Julie Andersen and Neil Andrea in Galapagos.

Photo by Gregory Lecoeur in Tahiti.

Every continent has incredible diving destinations with options for every level of diver. Whatever your speed or experience level – from gliding in crystal clear waters with schooling manta rays and whale sharks, to diving in the underwater forests off the coast of Cape Town with cape fur seals and seven-gill sharks – there are incredible far-flung destinations to explore.

From Egypt, the Bahamas, and Bonaire to the Maldives, Mozambique, Mexico and Tahiti – all have incredible visibility, warm water, low currents, easy surface conditions and epic coral and marine life making them top destinations for new divers and advanced divers alike.

Once you've got your PADI Advanced Open Water certification, more adventurous diving destinations are on the table including Galapagos, South Africa, Tonga, Iceland, California, Costa Rica, Yap, and even the Antarctic.

One of the most amazing things about diving is the incredible places the sport can take you to. It's not just about the time underwater, but also the time spent in these incredible destinations meeting the local community, learning about the culture and adventuring far beyond what you thought imaginable! Diving will forever change you.

For inspiration, we recommend checking out the PADI Dive Guides as well as the PADI Blog. Because PADI is on a mission to create a billion Torchbearers to create ocean change, many of our recommendations also include sustainability and travelling with a purpose. Whether you pick a PADI resort with a zero-carbon footprint, or you choose a PADI dive centre replanting coral, you'll be able to both seek adventure and save the ocean.

If you book a trip with PADI Travel, you can even offset the carbon from travel by planting seagrass.

"With the world now much more accessible to scuba divers once again, we are seeing an increase of interest in a range of destinations – from the photographer's haven of the Philippines to the diverse underwater landscape of New Zealand. We are also seeing a shift in scuba diving tourism, like in Egypt – where scuba divers are taking part in regenerative experiences and citizen science projects that benefit both local communities and our collective shared blue planet." – Julie Andersen, Global Director of Brand for PADI Worldwide.

TAHITI

From August to October each year, humpbacks travel to Tahiti to birth their calves in the calm, warm waters off the island nation. Today, French Polynesia is a designated shark sanctuary and exclusive economic zone (EEZ) in order to protect its incredible marine life. Tahiti and Moorea are the main spots to swim with whales, offering both daily swim experiences that also includes the extra options of swimming in waterfalls and swimming with rays.

If you are looking for a unique dive or creature, Tahiti can provide an experience that offers both. If you find yourself brave enough to do so, in Tahiti you have the ability to do Blackwater Diving. This type of diving includes being tied to the bottom of the boat in extremely dark water. While performing this dive, you could find bioluminescent creatures, like Siphonophores or Comb jellies that rise from the depths to feed at night. These creatures emit their own glow, in turn creating an amazing sight for the divers.

Tahiti also boasts an extremely healthy coral ecosystem. At the beginning of 2022, PADI Divers and scientists discovered one of the largest healthy reefs now on record, with two miles of rose-shaped coral spanning the ocean floor as deep as 100ft! The discovery has reminded us all of the importance of exploration and the role it plays in scientific discoveries that can help create ocean change.

Further supporting a healthy coral reef ecosystem in Tahiti are the Coral Gardeners, a programme designed to plant one million corals and restore life back into the ocean. Scuba divers can even adopt or gift ten different species of coral and receive growth updates.

PADI LOVES TAHITI:

- For their pristine lagoons teeming with sharks and rays, low lying coral atolls and steep green mountains – reminding us that beauty still exists in this world.
- For their 118 islands that offer once-in-a-lifetime adventure, both above and beneath the surface.
- For their visionary leadership protecting marine mammals.
- For the grassroots conservation programmes that are being championed by locals to save our blue planet.

EGYPT

The Red Sea is known for its good visibility and conditions that are calm and clear any time of the year. March through May, and September to November are considered the peak seasons so if you'd prefer a quieter dive


Photo by Jay Clue in Egypt.

then plan to go off-season. It is also known as the "Underwater Garden of Eden" and home to 1,200 species of fish, 250 species of coral, and 6 marine protected areas.

But what really sets the Red Sea apart in terms of a scuba diving destination, is its regenerative tourism efforts and offerings – showing the destination's commitment to changing the way we all travel. Marsa Alam is perhaps the best example of this in Egypt, with the region developed specifically with scuba divers in mind. They not only have extensive protection for the coastlines, but an innovative recycling programme and regenerative tourism operators. The best examples of this are the boutique eco-lodge of Wadi Sabarah and PADI 5 Star Dive Resort Red Sea Diving Safaris.

WHY WE LOVE EGYPT & MARSA ALAM:

- Because the Red Sea is known as the "Underwater Garden of Eden" home to over 1,200 species of fish and 250 species of coral. Of these, 17% of the fish species and 8% of the coral species are endemic.
- So much of the Red Sea is within a diver's recreational limits. 40% of the Red Sea is shallower than 100 metres/330 feet. And 25% of the Red Sea is less than 50 metres/164 feet deep.
- Egypt is a leader in marine conservation – not just in Africa, but the world. And much legislation has been put in place to ensure the sustainability of marine resources and protection from pollution – including plastic.
- As the host of the UN annual climate summit this year, Egypt called for the enhancement of international efforts aiming to protect our seas and oceans from pollution in order to preserve its sustainability and the diversity of its nature.
- For protecting its underwater paradise with 6 marine protected areas.
- Marsa Alam was developed with scuba divers in mind – with protection for local marine life and coral reefs, innovative recycling programmes and numerous regenerative tourism programmes with the goal of creating a healthier blue planet.
- Marsa Alam is one of the world's best destinations to dive with dugongs, dolphins and sharks.
- Marsa Alam is home to the Elphinstone Reef, which is a great spot to see Hammerheads, Oceanic White Tips and beautiful soft coral.
- Dive tourism in Marsa Alam directly supports local communities, offering employment opportunities for Egyptians and creates a more hopeful future for their youth.

FIJI

While tropical paradise is a good idea any time of the year, those looking for great visibility and exciting marine animal action should head to the warmer waters of Fiji

Of the 333 islands to choose from, Beqa Lagoon off the coast of Vitu Levu in Fiji offers a shark haven where in just one dive you can see bull sharks, whitetip reef sharks, blacktip reef sharks, nurse sharks and even tiger sharks! And making this event even more magical is that the massive shark gatherings will take place amongst the vibrant hues of healthy coral.

Fiji is known for its massive amount of marine species as well as being the "soft coral" capital of the world. From pristine reefs first explored by Jacques Cousteau to areas still remaining to be discovered, you'll be delighted by the incredible colours of the swaying coral and visits from blue ribbon eels, manta rays, school of bumphead parrotfish, and even pilot whales.

Did you know that Fiji is home to 42% of the world's coral species that span over 10,000 square kilometres throughout the country? There is a reason why the destination is known as the "Soft Coral Capital of the World", and there are numerous coral restoration projects dedicated to preserving it.

In partnership with Fiji's Ministry of Fisheries, the non-profit Aquaculture Development for the Environment has launched the One Million Coral Planting Programme throughout the 333 islands of Fiji. Teaming up with over 20 different coastal villages, each community has a target of collectively planting 1,000 corals per week.

Those looking for great visibility and exciting marine animal action should head to the warmer waters of Fiji any time of the year!

MAKING A POSITIVE IMPACT:

Fiji offers the chance to witness one of the world's prime examples of the soft-coral ecosystem, known as Rainbow Reef. But it is not just colourful reefs that make Fiji such a special place to explore this spring. A recent study in Fiji found that bull sharks form friendships with each other! Researchers studied data collected over 3,000 shark dives in Fiji's Shark Reef Marine Reserve (SRMR), one of the world's most sought-after diving destinations. SRMR is located in the Beqa Channel, off the southern coast of Viti Levu, and is a striking example of collaboration for conservation.

Photo by Jay Clue in Revillagigedo Islands, Mexico.

The shark is revered by local Fijians and legend has it that Dakuwaqa, the ancient shark god, provides protection for the people when at sea. So not only will you be exploring Fiji's underwater world with your dive buddy, but you will likely encounter a pair of bull shark BFFs on your dive too!

NEW ZEALAND

This group of islands off the eastern coast of New Zealand's North Island are known as quite possibly Cousteau's number one dive destination in the world thanks to their superior visibility and bountiful marine life. They are the remains of volcanoes that were part of the Pacific Ring of Fire, and are abundant with breathtaking grottoes, chimneys, tunnels, and archways.

Goat Island Marine Reserve is another rad spot. The reserve is only 100 metres/300 feet away from the beach making it a prime spot for beginners. This island is host to many different kinds of marine life, including (but definitely not limited to) kingfish, leatherjackets, red mock, orcas, dolphins and fur seals.

These clear tropical waters are home to the world's largest sea cave with no end of dazzling marine life to explore. Marvel at the pink and blue maomao that tuck away in volcanic arches or look out for some bigger friends in the blue, from dolphins and orcas to bull rays and stingrays.

Winter in New Zealand (from May to October) is mild and known to have better visibility for diving. A semi-dry wetsuit should be fine but if you'd like to be nice and warm, we recommend a drysuit for a winter dive. Summer months last from November to April and are generally warmer and a 5mm wetsuit would suffice.

REVILLAGIGEDO ISLANDS, MEXICO (SOCORROS ISLANDS)

If you dream of magical manta encounters and being surrounded by schools of hammerheads while being buzzed by an orca, then the Revillagigedo Islands are perfect for you. Affectionately known as the Galapagos of Mexico, it is a diver's paradise - and a UNESCO World Heritage site. Drop-in on Roca Partida and often you'll have to choose between swimming with a school of giant tuna, being surrounded by Galapagos and Silky sharks, or meeting a whale shark. You can literally choose your own adventure.

Sail to the most well-known of the island chain, Socorro, on a PADI Liveaboard this spring for a chance to witness the pelagic lover's paradise. As the seasons transition from winter to spring, lucky explorers get the chance to have intimate encounters with manta rays, bottlenose dolphins who seek out divers for some playful interactions and games they've created entirely unique to the pod, and even the occasional humpback whale off the coast of Mexico. Getting to the remote Socorro Island is easier than you may think. Simply hop on a direct flight to Cabo, Mexico and then board your PADI Liveaboard.

If you are looking for a colder-water thrill, Socorro provides it! During the winter months (January to March), although the water may be colder, you would get the opportunity to see the migration of humpback whales.

When you are in Cabo before or after your trip, don't miss Baja California Sur's magical waters that offer an incredible array of opportunities to swim with all sorts of marine life, including orcas. Extend your trip a few days so you can easily hop on an exploratory trip with PADI Dive Centre Dive Ninja Expeditions with the goal of finding seasonal resident pods of orcas that live and hunt off the coastline. There are on average, three core pods of orcas that swim through these waters, making an encounter with them highly likely! You'll also be able to swim with massive schools of devil rays (a favourite food of the Orcas.) They are brought into the bays by the nutrient rich currents which also bring in several species of whales!

MAKING A POSITIVE IMPACT:

Scientists have discovered through tagging – many of the same animals found in these waters migrate between Galapagos and Coco Island as well – moving from seamount to seamount. This in part helped drive protection

Photo by Julie Andersen in South Africa.

for the threatened pelagic species. In 2017, 148,087 square kilometres (57,177 square miles) was declared a marine park – Mexico's largest fully protected marine reserve, free from fishing and other extractive activities. Diving fees are a considerable source of income for the protection of the park.

SOUTH AFRICA

Hundreds of humpback whales travel up the coast from Durban to Mozambique each July through October to mate and calf in the Indian Ocean. The coastal town of Tofo, which is also known for its population of whale sharks, is a great home base, where you can both snorkel and dive with the whales, as well as the countless other marine creatures that call the area home.

Searching for a place that serves amazing natural phenomena, South Africa along with the Aliwal Dive Centre delivers. One example of this would be what is called the Sardine Run. Go diving off the Transkei Wild Coast and you will run into billions of sardines in mile long shoals.

If you are looking for the ultimate land and sea safari, then South Africa is the perfect location for you. March is an incredible time to encounter all of the most amazing creatures South Africa has to offer with great weather as well as sea conditions in both Cape Town and Durban.

Head south to Cape Town to snorkel or dive with the playful fur seals of Hout Bay hiding amid the kelp or head out on a cage diving expedition to meet their arch enemy… the Great White Shark. From sunrise breaches to sunset spy hops, you'll never forget your encounter with the "white pointers" in the shark capital of the world. And while the Great Whites get all the attention, you'll be absolutely enthralled with the over 100 other species – many of which can only be found in South African waters. We especially love the antics of the Pajama Shy Sharks in the gorgeous bull kelp forests.

Start putting on your wetsuit during sunset and you are in for a real treat! Once the sun sets in Cape Town, the unique opportunity to see nocturnal sea creatures emerges. From different types of bioluminescent creatures to cuttlefish, there is a wide array of animals that only come out to play after it gets dark.

The south coast of Durban offers incredible diving that is a tad bit more tropical (by at least 25 degrees!) than the cold waters of Cape Town. Visit Aliwal Shoal to swim with their resident Tiger, Bull, Oceanic Black Tip and Dusky sharks in some of the most epic shark diving in the world. Not a diver? No problem! You can snorkel with these sharks as well. The Shoal offers amazing diving and a cast of characters from friendly leatherback turtles to massive brindle bass. Further north is Sodwana, a largely untouched divers paradise where beach launches (and landings!) are as exciting as the residents. Pods of dolphins, whale sharks, large schools of fish, manta rays and even the occasional white shark can be found on the many dive sites in the area. Both are marine reserves (part of South Africa's 42 reserves) ensuring you are supporting the local protection of these amazing spots.

MAKING A POSITIVE IMPACT:

South Africa was the first country to protect Great White Sharks – and cage diving contributes more than 74 million rand to the economy – truly making sharks more valuable alive, than dead. Terrestrially, though not as well known as Kruger, KwaZulu Natal offers some fantastic safari adventures – and can easily be part of a trip to Aliwal Shoal or Sodwana. We particularly love Manyoni Private Game Reserve also known as Zululand's Rhino Reserve, a leader in rhino species conservation. Not only do you have the chance to encounter black and white rhinos, you can also participate in and support rhino conservation. Your South Africa spring diving experience can be booked with 36 PADI Dive Centres.

GALAPAGOS ISLANDS

Bring the whole family when travelling to this diving destination because it offers sites for all, with sites ranging from beginner to advanced. Dive sites in the Galapagos tend to be volcanic in nature with a few corals scattered

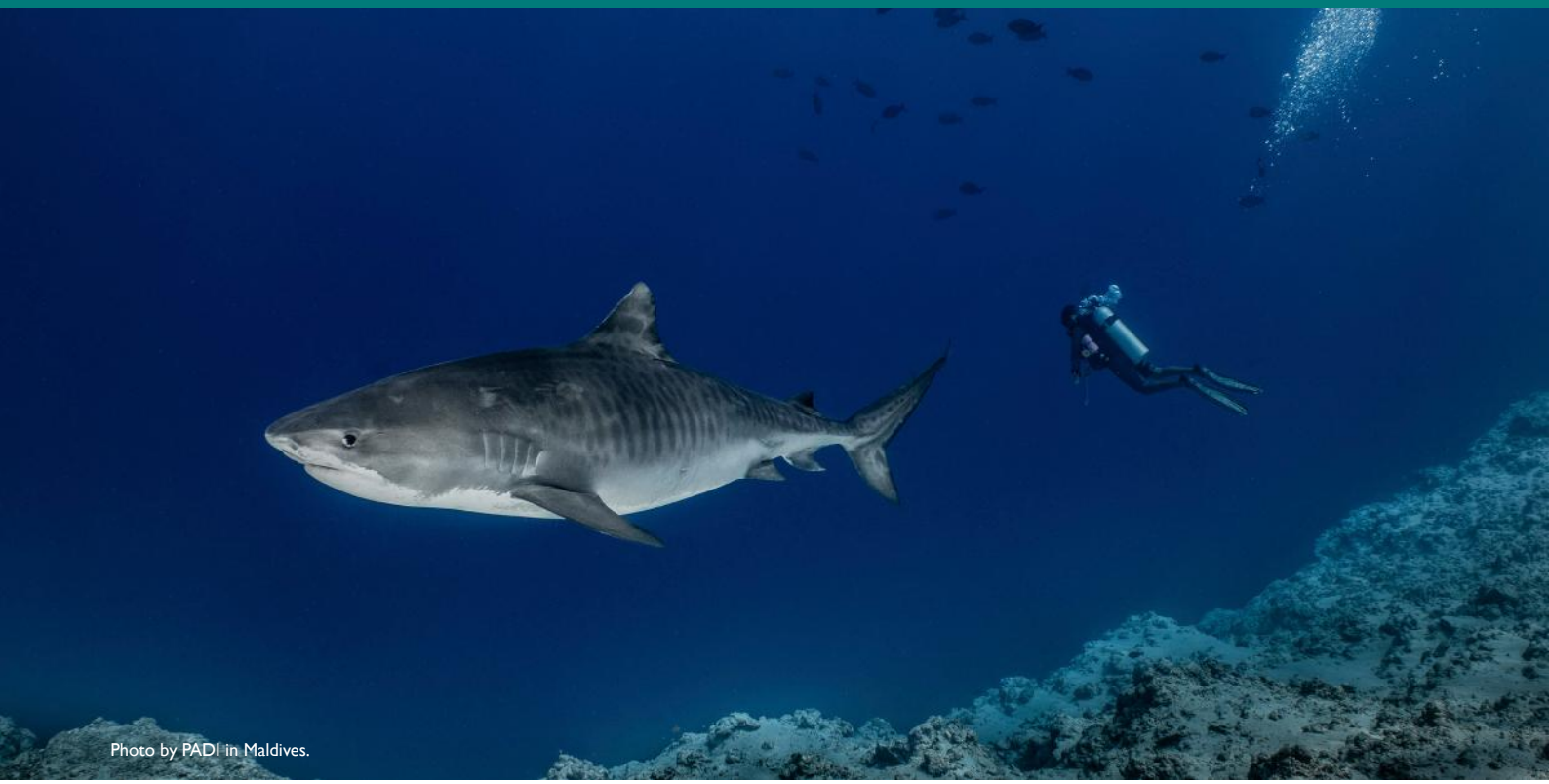


Photo by PADI in Maldives.

here and there. Channels around the islands boast heavy currents which work like pelagic highways. These heavy currents attract over 3,000 different marine species. Because the best dive sites in the Galapagos are distant (as is the case of Wolf and Darwin Islands) or spread out, joining a liveaboard is the best way to fully experience the archipelago.

Depending on when you chose to go, there will be a different array of marine life. If you choose to brave the colder waters during July through December, you are likely to see whale sharks, mola mola and penguins. If you choose to go during the warmer months during December through May you have a high chance of seeing different types of sharks (including schooling hammerheads) and a variety of rays (including manta rays).

There is literally no place more spectacular underwater than remote Darwin and Wolf islands in the Galapagos. And you can only reach them by boat. On the far outer reaches of the archipelago, Darwin Island and its famous dive site, Darwin's Arch, are the highlight of any liveaboard tour in the Galapagos. Manta rays, sea turtles, dolphins, eagle rays and the occasional whale shark wow divers with their presence. The real showstoppers are the huge number of sharks brought in by the strong current. You're likely to see schools of hammerheads, silky sharks, blacktip sharks and Galapagos sharks.

MAKING A POSITIVE IMPACT:
The Ecuadorian government has just established over 60,000+ kilometres of new marine reserves in the Galapagos. Plus, four Latin American countries have come together to ban all industrial fishing between Mapelo, Galapagos and Cocos – providing an additional 500,000 square kilometres of protected waters for the hammerhead sharks, turtles, tuna and manta rays that frequent these waters. A trip here in 2022 not only supports the country's eco-tourism efforts, but further supports expanding the protection of this world heritage site. Your Galapagos diving experience can be booked with 5 PADI Dive Centres.

MALDIVES

Crystal clear warm waters, white sandy beaches and manta rays – PADI 5 Star Dive Resort Six Senses Laamu offers the ultimate luxurious manta ray holiday. As the only dive resort in the Laamu Atoll, divers of all levels will have extremely personable encounters with manta rays every month of the year in this world-class diving area. There are also more than 180 PADI Dive Centres and Resorts in the Maldives that can take divers out to have a manta ray encounter.

The Maldives are more than just dreamy white sand beaches and overwater bungalows. The low-lying nation also offers excellent reefs and an abundance of marine life – including whale sharks! Sightings of these friendly giants are common year-round, with one of the best sighting spots being the South Ari Atoll, where the warm waters, abundance of food and minimal predators make it a great home spot. In fact, the researchers of the Maldives Whale Shark Research Programme identified over 527 whale sharks and 8,000 encounters in the area over the last decade. There are more than 180 PADI Dive Centres and Resorts throughout the Maldives that can take divers out for a chance to have a whale shark encounter.

Looking for a dive where the water does all of the work for you? Head over to the dive spot, Kuredu Express. Named appropriately, this dive spot is home to a fast moving current that will propel you through the Lhaviyani Atoll. All you have to do is go with the flow and let the current sweep you past all of the sharks, tuna, rays and other marine life to be seen!

Head on over to Fuvahmulah, a UNESCO Biosphere Reserve, for a multitude of rare sharks and so many other amazing sights. This island is home to some of the healthiest coral reefs within the Maldives. Fuvahmulah is a pelagic pit stop and cleaning station where divers can see seven types of rare sharks in one dive! Marine life encounters include tiger sharks, thresher sharks, black oceanic mantas, scalloped hammerheads, whale sharks and mola mola – the only place on the planet where you can see all these majestic pelagic fish together year-round in their natural environment. Experience all of this through a PADI dive centre like the Pelagic Divers Fuvahmulah.

MAKING A POSITIVE IMPACT:
After their official Launch in April 2019, the Junior Marine Biologist Programme has made many strides in educating the youth in ways they can take part in ocean conservation. This programme is a part of the Maldives Underwater Initiative who not only host this programme, but do a lot of other work to help make the ocean a better place for the marine life that live in it. The Junior Marine Biologist Programme resides at the Six Senses Laamu, where they encourage those who enroll in the programme to take all that they learned and apply it when they go back home.

AZORES

Offering one of the most diverse diving destinations in Europe, the Portuguese islands known as the Azores offer a chance to dive with

Photo by Julie Andersen and Neil Andrea in Raja Ampat, Indonesia.

whale sharks. Most commonly sighted in the island of St. Maria between June and October, PADI 5 Star Dive Centre, Season Challenge Azores will also offer the opportunity to dive through arches and through shipwrecks.

The Azores is the place to be when looking for Sperm Whales and other cetaceans. A reformed hunting ground for Sperm Whales is now known for their abundance. After 1987, the locals stopped hunting Sperm Whales and since then it has become somewhat of a sanctuary for them. Be sure to look out for their pods on your next trip!

The islands that make up the Azores off the coast of Portugal are one of the most diverse for marine life. One specific type of manta rays known as the *Mobula birostris* is known to hang out in large groups around the island of St. Maria between June and October, with PADI 5 Star Haliotis Dive Centre offering guided boat trips to the island.

The islands also offer the unique opportunity for a natural underwater sea jacuzzi! Since the islands of the Azores are categorized as volcanic, there are certain spots that you can dive in that have hydrothermal vents. These vents emit volcanic gasses that come from deep inside the Earth and consequently make the water warm. Be careful though, the bubbles are very hot!

RAJA AMPAT, INDONESIA

Talk about a tropical paradise! Raja Ampat is a destination where not only is the water temperature high, but so is the marine life diversity. Raja Ampat is host to the largest marine diversity on the entire planet. From mantas and pygmy seahorses to over 100 different varieties of coral, it is an eco haven that words or photos simply can not do justice. Offering an off the grid accommodation is Meridian Adventures, whose modest rooms provide luxury amenities while still being in the heart of the local community. Best of all, you can customise your package with no set arrival date or minimum nights for your stay.

Coral triangle: Raja Ampat is located at the intersection of the Indian and Pacific Oceans, right in the heart of the prestigious Coral Triangle. The powerful deep sea currents funnel nutrients into the coral reefs, making Raja Ampat a "species factory." Home to over 600 species of hard coral, about 75% of the total in the entire world, Raja Ampat contains the richest coral reefs on the earth and, thus, welcomes in everything from sharks to manta rays and whales.

As much as there is to talk about in Raja Ampat, the best way to learn about all of the beautiful diversity that this area maintains is to see it for yourself. So if you are looking to book your trip to Raja Ampat, a PADI Liveaboard is one of your best options, with many different types of accommodations based on your standard for travel and diving.

Best time to dive in Indonesia: October - April

BIMINI, BAHAMAS

Looking for crystal clear warm waters full of action? The Bahamas plays hosts to some of the most spectacular mega-fauna in the world.

Plan a trip to Bimini to catch up with bull sharks, hammerhead sharks, friendly dolphin pods, and graceful schools of eagle rays. You'll feel like you stepped back in time to an island still not heavily commercially developed and traversed by golf carts. Bimini can be explored by divers and snorkellers alike – and is absolutely stunning above and below the surface. Head to nearby Honeymoon Beach to swim with the local group of rays and don't miss some of the wrecks sunk as artificial reefs which are always hosts to large schools of colourful fish.

From Bimini, you can also head to the most spectacular tiger shark gatherings in the world. Tiger Beach offers the chance to take part in some of the greatest shark diving in the world. You'll get up-close encounters with not only tiger sharks but lemon sharks, the occasional hammerhead and plenty of whitetip reef sharks in the crystal-clear azure waters that only an aquarium can top in terms of visibility.

The Bahamas is a model in shark conservation, with incredible research coming out of the home of "shark week". Like the fact that scientists discovered this summer at the Shark Lab that sharks form lifelong bonds and have complex social structures – they are literally the opposite of mindless predators!

In addition, the Bahamas have created the first shark sanctuary in the Atlantic Ocean in 2011, with over 40 shark species now residing in the 630,000km of protected area. This has ultimately helped shark tourism in the Bahamas contribute to $100 million in the economy every year – and has also kept their conch and lobster industries flourishing thanks to a healthy ecosystem full of apex predators. Why not meet some toothy new friends in the shark diving capital of the world while contributing your tourism dollars to a country that is a leader in marine conservation? Your Bahamas diving experience can be booked with 19 PADI Dive Centres.

BOAT LADDER SAFETY

FEATURE **GUY THOMAS**

Most divers who have dived from boats know that before they enter the water, they need to check that nobody is below them. Also, while using a ladder to climb back on-board after the dive, they make sure that nobody is below them if they should fall.

Divers are reminded frequently about these two safety precautions as part of the dive briefing. During the briefing, you should be told which pieces of equipment to remove prior climbing back on-board; this can differ from dive boat to dive boat, and location to location. Not all ladders, nor dive conditions are the same everywhere. You may find for example that H-ladders require you to remove your fins, while T-ladders, which are much more common and user friendly, allow you to keep your fins on.

What is less known amongst divers and rarely mentioned during briefings is how to avoid hands/finger injuries when climbing up the boat ladder. Sea conditions may make climbing up ladders more difficult, and although some boats have fixed boat ladders, most of the time divers will have to deal with moving, foldable ladders.

This type of ladder need not be a problem, if you are aware of how they work. First, be aware that these ladders are usually attached to the boat by a hinge. This allows the ladder to move up and down with the swell. Many of these hinges cannot be locked, so the ladder will move with or without a diver on the ladder. Think of the ladder as a 'nutcracker'. Imagine one handle of the nutcracker being fixed, while you push on the other handle. The nut will crack open without having to apply much force. The boat ladder works in the same way.

One "handle" is the boat, the other is the ladder. When the ladder goes upwards (your legs go backwards when standing on the ladder) – in effect opening the nutcracker. But when the ladder goes downwards again, you really don't want to get your hands or fingers caught between the two moving parts. Should this happen, you will not be able to release the pressure as all your weight is on the ladder and consequently you will end up with crushed or lacerated hands or fingers – perhaps even an amputation!

The same applies to any other moving parts of ladders. These injuries can be avoided: carefully look where you place your hands. Sometimes it is easier said than done as the swell might make climbing on-board challenging and you might not pay much attention to where your hands are placed. Ladder design can mitigate the risk of hand and finger injuries and dive centres are encouraged to do a thorough risk assessment and make sure their ladders are as safe as possible.

Finally, a word on head injuries. It rarely happens, but just be aware that when there is a large swell, the ladder will rise up pretty far, and will then crash into the water on the down swell. Make sure you are not under the ladder at that moment. This can also be challenging where strong undercurrents push you towards the ladder. Though you might think it will make it easier to grab onto, never surface too close to the ladder – it could ruin your whole day.

ABOUT THE AUTHOR

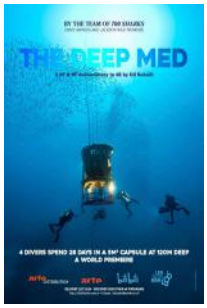
Guy Thomas is an expert Diving and First Aid Instructor Trainer and works full-time as Director of Safety Programmes at DAN Europe where he is responsible for the development and implementation of the DAN Europe Safety Initiatives. He is also a member of the Special Rescue Team of the Italian Red Cross and operates as a Helicopter Rescue Swimmer/Diver Medic on-board a SAR helicopter of the Italian State Police.

UPCOMING EVENTS

AN EDA MOVIE SCREENING

THE DEEP MED

Thursday 2nd November 2023 | 96 mins | Deep Dive Dubai



Marine biologist explorer, and award-winning underwater photographer Laurent Ballesta embarks on a diving mission to document the fascinating and little-explored ecosystem at the bottom of the Mediterranean Sea. Because he wants to avoid the time-consuming decompression process associated with diving to great depths, he and three other researchers move into a pressurized capsule measuring just under five square metres for 28 days. During the course of the expedition, the capsule is submerged at various locations off the French Mediterranean coast. The divers can only exit the capsule when its underwater, but what they discover there makes up for the effort.

CLEANUP ARABIA ANNUAL CAMPAIGN 2023

DIVE & BEACH CLEAN-UPS | EAST COAST | LUNCH BUFFET

Saturday 11th November 2023 | EDA Members & Partners Only

The campaign is made up of EDA members and stakeholders that participate in a beach and dive site clean-ups which help shape their consciousness concerning marine litter and saying no to single-use plastics. Inspiring change to make a difference together!

REEF CHECK ECODIVER TRAINING

BECOME A CERTIFIED REEF CHECK DIVER

EMAIL: reefcheck@emiratesdiving.com if you would like to receive the next available training dates. Places are limited and on a first come, first served basis.

When you join a Reef Check EcoDiver training, 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. This 4-day course includes both classroom, fieldwork, and an exam.

Upon completion of this course, you will be able to join the EDA Reef Check team and assist in our regular underwater surveys in the UAE, as well as other underwater surveys in the Indo-Pacific region.

DO YOU KNOW?

THE OCEAN CONSERVATION TRUST

To protect nature, you need to start with people. The Ocean Conservation Trust is a global Ocean conservation charity working towards the vision of a healthy ocean. Connecting as many people with Ocean as possible, creating accessible and inclusive experiences, and showcasing the sea and all it has to offer.

"Conservation is for people and it starts with people, so if conservation organisations don't bring a community of people along with them on their journey, they will fail in their conservation objectives, since the community will be the biggest advocate for driving change in policy. It is the job of conservation organisations to build connections, to build community, to build dialogue, and eventually to build consensus that our natural world is something that we rely upon and that we need to live sustainably within it. If we don't, it will be the individual that experiences the consequences of that." **MARK PARRY – Seagrass Ecologist and Project Manager at the Ocean Conservation Trust (OCT)**

www.oceanconservationtrust.org

EDA
جمعية الإمارات للغوص
Emirates Diving Association

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MISSION STATEMENT

Our mission is to conserve, protect and restore the UAE's marine resources by emphasising and promoting the underwater environment and environmental diving.

LEGISLATION

EDA is a non-profit NGO registered with the Ministry of Community Development as per the Ministerial Decree No. 149.

The Decree stipulates the following responsibilities for EDA:
- Ensure environmentally respectful diving practices in all EDA members.
- Support the diving industry within the UAE by coordinating the efforts of the diving community.
- Promote safety in the commercial and recreational diving fields through standardisation of practices.
- Preserve historical aspects of diving within the gulf region and enhance environmental education to diving and non-diving communities through EDA projects and events.

PUBLISHED BY

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CLEANUP ARABIA 2023 | THE UAE'S ANNUAL CLEAN-UP CAMPAIGN!

REGISTER FOR THE 11th OF NOVEMBER EAST COAST DIVES & BEACH CLEAN-UP

IN PARTNERSHIP WITH:

هيئة الفجيرة للبيئة
FUJAIRAH ENVIRONMENT AUTHORITY

GOLD PARTNER:

DOXA 1889

CLEAN-UP PARTNERS:

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Goumbook CHANGING MINDSETS

INSPIRING CHANGE TO MAKE A DIFFERENCE TOGETHER

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EDA is a registered non-profit NGO accredited by UNEP as an International Environmental Organisation.

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