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OPENING TO NATURE

THE MAP TO PARADISE • **NEW EDA MERCHANDISE** • THE CLEANUP ARABIA GUIDE FOR EDA MEMBERS • **SHARKS VERSUS HUMANS** • ENTER DIGITAL ONLINE 2021 • **TURKISH SURPRISE**

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EDA is a non-profit voluntary federal organisation and is accredited by UNEP as an International Environmental Organisation.

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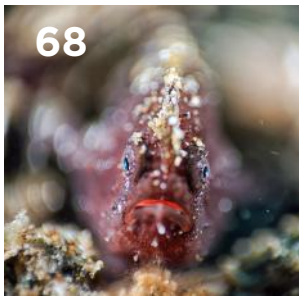

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DIVERS FOR THE ENVIRONMENT
Please note that EDA's magazine, 'Divers for the Environment' includes articles written by individuals whose opinions', whilst valid, may or may not represent that of EDA's. The magazine is a platform for individuals to voice their opinion on marine and diving related issues. You are welcome to suggest an article for the next issue released in March 2021. Send all articles, feedback or comments to: magazine@emiratesdiving.com

COVER
PHOTO BY FAINE PEARL LOUBSER
Opening to Nature: A baby shark clearly seen inside its egg case, ready to be born into its underwater world.

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76 Carolina. Copyright © Maya Almeida Araujo All rights reserved.

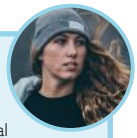
KIDS CORNER – FONT USED: **DYSLEXIE FONT**

Dyslexie font has developed a typeface especially for people with dyslexia called Dyslexie. People with dyslexia have problems distinguishing some letters. They sometimes turn, mirror and switch letters whilst reading. The Dyslexie typeface targets these problems by altering the shape of the letters so they are clearly different from any other letter. As well as this, the spaces between the letters are improved and capitals and punctuation are bolder so people with dyslexia don't read words or sentences together anymore. Representative research among many dyslexics has now shown that the font actually helps them with reading texts faster and with fewer errors.

EDITOR & GRAPHIC DESIGNER

ALLY LANDES
Ally is EDA's Project Manager, Event Planner, Graphic Designer, Writer, Editor, Photographer and Videographer. She created and introduced 'Divers for the Environment' back in December 2004 as an educational tool to share information by the dive industries professionals, conservationists, underwater photographers, scientists and environmental enthusiasts from all over the world, to better care for and protect our underwater world.

COVER STORY AUTHOR & PHOTOGRAPHER



FAINE PEARL LOUBSER
Faine is a filmmaker, storyteller and environmentalist working with the Sea Change Project, Wavescape Festival and GoPro South Africa. She has spent several years committed to learning in nature with a specific focus on the kelp forests along the Cape Peninsula of South Africa. Her focus is on telling stories that reconnect people to nature, inspire curiosity and foster compassion. IG: **@fainepearl**

THE QUARTERLY CONTRIBUTORS

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

STEFANIE BRENDL
Stefanie is an advocate for sharks, and a creative and social entrepreneur that leads campaigns and projects in all corners of this planet. As founder and executive director of Shark Allies and team member of various NGO coalitions she has dedicated her last two decades to bringing greater protection to sharks. As filmmaker and producer, she also filmed and produced a documentary called Extinction Soup about the perils of shark finning. **@SharkAllies**

MAYA DE ALMEIDA ARAUJO
Maya is an Award Winning Visual Artist working with Moving Image, Light and Sound. She lives in London but is originally from Portugal and raised by the sea. Maya's Fine Art work exists in public and private collections and has been recognised by juried international exhibitions and competitions. IG: **@mayas_waterworld** | FB: **@maya.d.araujo**

FARHAT JAH
Farhat opened his first dive centre in the Andaman Islands in 1995. In 1998 he moved it to Pemba Tanzania. In 2012, with his wife Francisca, he created the African and Oriental Travel Company, selling tailor made safaris, Antarctica tours and specialised global dive trips. He also writes stories about diving, travel, expeditions and aviation, Farhat is a NAUI IT, a PADI OWSI and a fellow of the Royal Geographical Society. **www.orientafricatravel.com**

SARAH MESSER
Sarah has been living in Dubai since 2012 and discovered her diving addiction just 3 years ago. Since then she dives whenever and wherever she can, both locally and internationally. When not working in her actual day job, Sarah organises dive trips for her UAE based diving group, Dubai Divers Team.

UAE ٢٤!

49 اليـــوم الوطـــني NATIONAL DAY روح الاتـــحـــــاد SPIRIT OF THE UNION

SPIRIT OF THE UNION 2020

IBRAHIM AL-ZU'BI
EDA Executive Director

As we celebrate the 49th UAE National Day this year, we reflect on the spirit that ties us all together, the Spirit of the Union that enables millions of people to coexist and build lives together. The Spirit of the Union is derived from the vision and leadership of the Late Sheikh Zayed Bin Sultan Al Nahyan, EDA's founder , and now lives on through His Highness Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE and his fellow leaders of the nation's Emirates who are shaping the UAE's future.

It is the spirit that binds the cosmopolitan community of the UAE, connecting us under one banner, one flag. It is the spirit of the union that celebrates our culture and heritage, and yet also shapes our future. The Spirit needs to be celebrated and shared by all citizens and residents of the UAE.

Cleanup Arabia 2020 was very different this year due to the COVID-19 pandemic; the investment we put into our members paid off and ensured that they organise their own clean-ups in order to stay safe and healthy.

The coronavirus has caused global economies to shut down and more than half of the world's population is under some form of restriction. India, China, France, Italy, New Zealand, Poland, the GCC region, and the UK have implemented the world's largest mass quarantines. Saudi Arabia put the two holy cities (Mecca and Madinah) in lockdown too for the first time in history. Schools and universities have closed, and many countries have adopted work from home and social distancing policies. Almost all global travel plans have been shelved, major events (including the Intergovernmental Panel on Climate Change) are either being cancelled or moved to virtual platforms, and large global gatherings, such as the Tokyo Olympics, have been delayed for a year. Having said that, we have witnessed a high demand in diving courses and trips here in the UAE. People do feel safe in the ocean. Let us make sure that we keep it safe and clean.

I would like to wish everyone a happy 49th UAE National Day. I also want to wish you all a Merry Christmas and a Happy New Year. I am looking forward to 2021, which I am sure will be as exciting, fun and rewarding as previous years, and hopefully will mark an end to this COVID-19 pandemic.

"We cherish our environment because it is an integral part of our country, our history and our heritage. On land and in the sea, our forefathers lived and survived in this environment. They were able to do so only because they recognised the need to conserve it, to take from it only what they needed to live, and to preserve it for succeeding generations. With God's will, we shall continue to work to protect our environment and our wildlife, as did our forefathers before us. It is a duty, and, if we fail, our children, rightly, will reproach us for squandering an essential part of their inheritance, and of our heritage"
THE LATE SHEIKH ZAYED BIN SULTAN AL NAHYAN

Happy reading and safe Diving!

Ibrahim Al-Zu'bi

Ibrahim N. Al-Zu'bi

A VIRTUAL EDA MOVIE SCREENING
THE MAP TO PARADISE

For us to be able to share our EDA Movie Screenings with all our members, we kept our November screening (12-15) an online one with the continued protocols of social distancing still an important requirement to keep everyone safe and comfortable. We have also taken our EDA members living in other Emirates into consideration who are not able to make it to Dubai to watch the films via the big screen which includes our international members. Our online screenings will make them more accessible for all our members to take part and watch these important documentaries.

Our EDA Online Movie Screenings remain accessible only to current EDA members and their families and registration to join our screenings is necessary in order to receive a special link to play the films via the online platform assigned to them.

SYNOPSIS

From Executive Producer Martin Sheen, THE MAP TO PARADISE is an adventure-filled and spectacularly gorgeous tale about the birth of the global movement to protect the sea. From underwater worlds of ice to glistening coral sanctuaries, discover what it takes to build a movement and to create positive change.

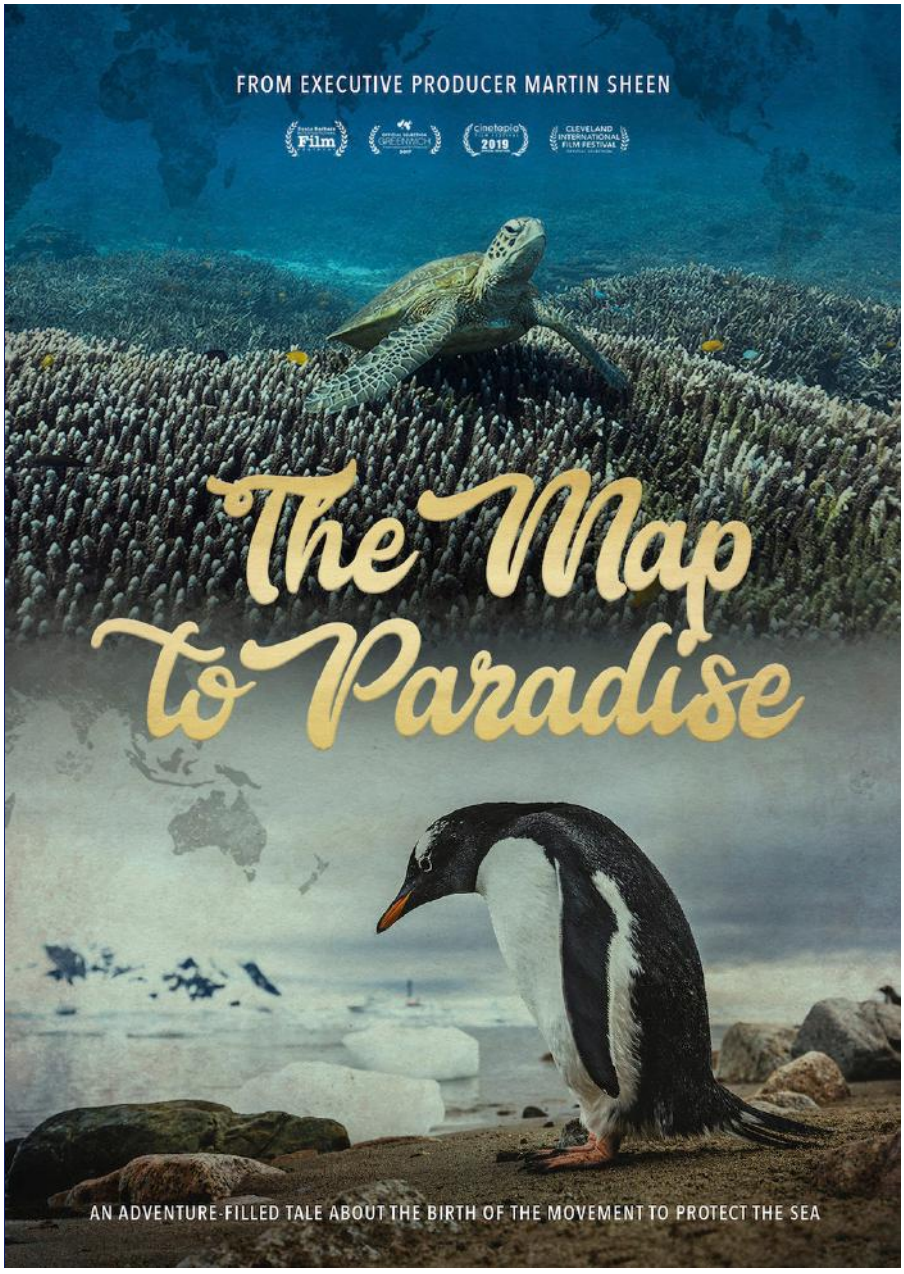
Filmed across six continents, the filmmakers have set out to challenge the mainstream narrative of hard-hitting environmental documentaries with a "doom and gloom" message, and replace it with one of hope and courage. Along the way, we meet a prince, a president, a pirate, and also an island chief – among others – who are all playing a role in the quest to save the planet.

Mixing colourful character-driven stories and hand-rendered animations, THE MAP TO PARADISE is a rare and urgent environmental wake-up call that retains a sense of awe and wonder for the kind of beauty that is still very much possible.

Featuring Prince Albert II of Monaco, President of Palau Tommy Remengesau, National Geographic Explorer Enric Sala, and Sea Shepherd's Captain Paul Watson, with original music by Emmy award-winning composer Daniel Clive McCallum.

Visit www.themaptoparadise.com/blog to learn more about the places and characters in The Map to Paradise documentary.

Instagram/Facebook: @themaptoparadise
Website: www.themaptoparadise.com



BECOMING AN EDA MEMBER & RENEWING HAS NEVER BEEN EASIER

In order to join all the EDA events, including our quarterly EDA Movie Screenings, register for EDA Membership or renew your expired one. New or renewing members will receive their one time EDA 2020 Limited Edition reusable water bottle gift. Because of its white background, you can get creative and customise yours as you like.

Did you know, you are now able to make your payments online directly through our website?

MEMBERSHIP & RENEWALS:
www.emiratesdiving.com/membership-form/

INTRODUCING THE NEW EDA MERCHANDISE
EDA T-SHIRTS, HOODIE AND STICKERS

We are delighted to introduce the new EDA T-shirts, hoodie and sticker designs for 2021!

YOU CAN NOW PAY ONLINE

NEW ONLINE PAYMENT SYSTEM

We know an online payment system has been long overdue and we can't thank you enough for your patience. All our merchandise can now be purchased through our online shop on our website.

This also means that your EDA Membership and Renewals are also now a lot easier to manage. Your EDA Membership gets you access to all our events and provides you with diver benefits for only AED 100/year.

MEMBERSHIP & RENEWALS:
www.emiratesdiving.com/membership-form/

MEMBERSHIP BENEFITS:
www.emiratesdiving.com/membership-discounts/

THE EDA ONLINE SHOP:
www.emiratesdiving.com/shop/
(member and non-member rates)

THE NEW MERCHANDISE

EDA T-SHIRTS

Our T-Shirts come in Black, blue or white with our Shark or Sea Turtle designs on the back. All our T-Shirts have a small UAE tag stitched into the bottom left seam.

DIVER STICKERS

The stickers come in 2 sizes. The small Diver sticker is glossy at 12 cm wide and can be used in your home or office and the larger sticker is matt at 20 cm wide and can be stuck just about anywhere including your car, windows or boat. Where do you place your stickers?

EDA LIMITED EDITION HOODIE

The EDA hoodie comes in navy blue with our shark design in white on the back and has a small UAE tag stitched into the bottom left seam. These are a limited edition. These are going to make great Christmas gifts for the cooler months ahead.

A SUCCESSFUL CONNECTION TO THE BARAKAH PLANT & THE UAE'S TRANSMISSION GRID

ENVIRONMENT AGENCY – ABU DHABI AND THE EMIRATES NUCLEAR ENERGY CORPORATION

COLLABORATE TO CONSERVE ENVIRONMENT AND BIOLOGICAL DIVERSITY IN ABU DHABI

Abu Dhabi, 9 September 2020: After Unit 1 of the Barakah Nuclear Energy Plant has been safely and successfully connected to the UAE's transmission grid, the Environment Agency – Abu Dhabi (EAD) has confirmed its continued cooperation with the Emirates Nuclear Energy Corporation (ENEC) to ensure the preservation of the environment and biological diversity in the emirate of Abu Dhabi, United Arab Emirates (UAE).

The Barakah Nuclear Energy Plant, the first operating nuclear energy plant in the Arab World, has four units, which when fully operational will generate up to 25% of the UAE's electricity, while preventing the release of 21 million tons of carbon emissions per annum, which is equal to removing 3.2 million cars off the roads each year.

As part of the collaborative efforts between EAD and ENEC, both entities have invested significant time and resources into identifying initiatives to protect the natural coastal environment surrounding the Barakah plant. As a result, a coral reef preservation project has been successfully implemented. Coral reefs around the plant have been preserved by removing them from the Barakah site and rehabilitating them in other areas to protect the coral. Since the inception of the project both organisations have worked together on a "compensation plan" to ensure the plant supports and preserves the environment and biological diversity of Abu Dhabi.

Around 7,300 coral reef settlements were successfully rehomed, conserving marine life, while 22,300 coral reefs have been regrown in a location 17 km north of the Barakah plant. In addition, 6,000 square metres of artificial coral reef were also completed.

His Excellency Mohamed Ibrahim Al Hammadi, CEO of ENEC said, "Since construction of the Barakah Nuclear Energy Plant commenced in 2012, we have been keen to protect the environment surrounding the plant by adopting best practices for our environmental protection standards, applying international measures to preserve natural habitats, and conserve energy and water resources. These actions will help to ensure that the operation of our plant meets the highest environmental sustainability standards throughout the development and operation of the plant."

His Excellency Al Hammadi added, "This work is derived from the framework of the Environment and Sustainability Charter of the Barakah plant site, which was signed by ENEC alongside its prime contractor and Joint Venture partner, the Korea Electric Power Corporation (KEPCO). The framework promotes best practice to protect the natural environment and marine life, as well as the optimal management of construction waste."

Al Hammadi praised EAD's cooperation and its directives during the various stages of the development of the Barakah Nuclear Energy Plant, saying that the Agency's efforts have played a vital role in ensuring that the development of the project is in line with the highest environmental standards.

Her Excellency Dr. Shaikha Salem Al Dhaheri, Secretary General of EAD said, "This achievement is a culmination of twelve years of co-operation and intensive work between our organisations. It is also a result of the


Photo by Mohamad Abdulla

concerted efforts made by EAD and various Abu Dhabi-based government organisations and federal authorities to achieve the vision of the UAE Government and Leadership.

"We are keeping pace with the UAE, and in particular Abu Dhabi's urban development activities by continuously striving for environmental sustainability, especially in the utility sector."

Her Excellency added, "The agency has completed the process of strategic assessment and environmental studies required to see the project bloom and achieve the desired goal. This was done to achieve the vision of the late Sheikh Zayed in preserving our environmental heritage."

Her Excellency also said that since EAD received the request from ENEC in 2009 to issue the Nuclear Construction Environmental Permit to establish the first Arab project for electricity generation from nuclear energy, the agency undertook a comprehensive Strategic Environmental Assessment, which Her Excellency stressed on, as the extensive research conducted identified potential impacts on the environment and biological diversity. This research played a prominent role in identifying any potential impacts on the environment, in order to maintain the wildlife and rich ecological heritage in critical habitats, such as coral reefs, seaweed and marine algae.

Dr. Al Dhaheri elaborated that these habitats are the main pillars for conserving fisheries and providing homes for endangered species such as marine turtles and dugongs.

Her Excellency Eng. Shaikha Ahmed Al Hosani, Executive Director of the Environmental Quality Sector at EAD stressed on the vital role EAD played within the fruitful cooperation model between all concerned parties on a Federal and local level.

She clarified that in order to maintain the quality of the marine environment, an assessment was carried out to measure any potential environmental impact, as well as a non-nuclear assessment and environmental conditions index to evaluate the construction plans.

Her Excellency said that plans to maintain the quality of air along the paths of the 400 kV electrical transmission lines, which will be used to transmit electricity, were also evaluated. This was particularly important for the Barqa Al Suqoor and Baynounah Protected Areas.

Al Hosani also pointed out that the agency collected samples of air, soil, water, marine soil and plants in the area.

EAD has reviewed reports submitted by the Nawah Energy Company, the operating and maintenance subsidiary of ENEC, and also benefited from the expertise of similar international facilities where strict control measures are applied. There was a thorough inspection of the plant during the construction and development phase, reaching 300 hours.

A total of 36 quarterly environmental monitoring reports were also studied to analyse the quality of sea water, marine plankton, marine soil, air quality and the existing status of wildlife in the project area.

To identify mitigation measures, the bi-annual environmental audit reports were also reviewed. These audit reports are submitted periodically to EAD by an accredited third-party organisation.

After the conclusion of the review and inspection phase, EAD was assured that the project is proceeding in a transparent manner, in full compliance with local, federal and global environmental laws.

This project has been developed in line with best international practices, which reflect the UAE's capabilities in building a sustainable future and the country's drive to consistently contribute to reducing carbon emissions and greenhouse gases. The UAE has achieved its scheduled plans for the continuity of regular environmental monitoring for the generation of electrical energy, throughout the 60+ year operational lifespan of the plant, which will generate clean, abundant, safe and continuous electricity for the Nation.

ENVIRONMENT AGENCY – ABU DHABI AND ENGIE
USE DRONE TECHNOLOGY IN MANGROVE REHABILITATION PROJECT

Abu Dhabi, 16 November 2020: The Environment Agency – Abu Dhabi (EAD) is partnering with the global utility company ENGIE who is sponsoring the launch of the first phase of the "Blue Carbon" Environmental and Social Responsibility project that uses drone technology to help in rehabilitating areas of Abu Dhabi's mangrove habitats, demonstrating the benefits of government and the private sector working together to preserve our environment.

This pioneering initiative will use specialised, custom UAE-built drones and rigging to plant thousands of mangrove seeds near ENGIE's Mirfa plant in Abu Dhabi, as well as monitor their growth throughout the year.

Mangroves are abundant along the coastline of the emirate of Abu Dhabi and are vital in the storage of blue carbon – the term for carbon captured by the world's oceans and coastal ecosystems, including sea grasses, mangroves, and salt marshes. Though much smaller in size than the planet's forests, these coastal systems sequester carbon at a much faster rate and can continue to do so for thousands of years.

The UAE based Unmanned Aerial Vehicle environmental analysis company, Distant Imagery, created high accuracy mapping and site analysis tied to tidal change, and also worked with EAD's experts on a scientific review of the four different potential sites, with Mirfa lagoon being chosen which is located near ENGIE's Mirfa power plant. Distant Imagery will use its self-engineered drones and seed dispersal rigging to plant at least 4,000 mangrove seeds using scientific best practices by December. Continued site monitoring will evaluate the carbon storage of the rehabilitated area as well as the ecosystem services they provide.

The project, which showed outstanding results in its early stages, is sponsored by EAD who is responsible for hosting the site, providing scientific expertise and undertaking a comprehensive and technical review. Upon completion, the Agency will evaluate the entire project at large. ENGIE is hoping to be able to contribute to the enhancement of the UAE's coastal environment and ecosystem through this project, ensuring the protection of our natural world as well as taking further steps to reduce the amount of carbon dioxide released into the atmosphere.

Ahmed Al Hashmi – Acting Executive Director for Terrestrial and Marine Biodiversity at Environment Agency – Abu Dhabi said, "We are very pleased to be rehabilitating mangroves using drone technology in this world-first project. Using the latest technology in our environmental endeavours are core to what we do. Similarly, we are consistently propagating different species and the Blue Carbon Project is another example of that."

Al Hashmi added, "Partnerships are always a great contributor to the success of any project, and by collaborating with ENGIE we are certain that we will achieve the desired results, with the common goal of conserving the environment while being pioneers and leading by example at the same time. Rehabilitating mangroves for the sequestration of carbon is one of the methods used to combat climate change and EAD are always dedicated to that cause."

Florence Fontani, the EVP, Strategy, Communications & ESR at ENGIE Middle East, South & Central Asia and Turkey (MESCAT), said, "Providing innovative and environmental-friendly solutions to deliver Power, Water and Services is at the core of ENGIE's purpose. The Blue Carbon project is fully in line with our commitment to address environmental issues hand-in-hand with our local partners. I would really like to express my gratitude towards the Abu Dhabi Authorities who support our initiative and who play a key role for the realisation of this project. We are very proud to bring ENGIE's expertise and solutions to this groundbreaking initiative, which will contribute towards preserving the coastal ecosystem of the United Arab Emirates."

ON THE OCCASION OF WORLD FISHERIES DAY
THE ENVIRONMENT AGENCY - ABU DHABI AND THE IUCN LAUNCHES THE INTERNATIONAL GUIDELINES ON TREASURING FISHERS' KNOWLEDGE FOR POLICY DEVELOPMENT AND SAFEKEEPING

Abu Dhabi, 19 November 2020: To commemorate the World Fisheries Day which is celebrated each year on November 21st, the Environment Agency - Abu Dhabi (EAD) and the International Union for Conservation of Nature (IUCN), launched the IUCN Guidelines for the Gathering of Fishers' Knowledge for Policy Development and Applied Use. The launch is also in collaboration with the World Forum of Fisher Peoples, and the International Planning Committee Working Group on Fisheries.

The voluntary guidelines recognise the importance of both indigenous, local marine-coastal community knowledge, and experienced Fishers' Knowledge for the development of the Fisheries Policy. They are designed to provide guidance on how to utilise this rich cultural knowledge in resource management across a range of contexts, in pursuit of an ecosystem approach to fisheries management. The management of fisheries is defined across marine and freshwater systems as well as commercial, recreational, subsistence and small-scale fisheries.

They were developed by a team led by the Environment Agency - Abu Dhabi and included contributions from 50 experts and case studies from 16 countries.

The development of the guidelines followed a robust participatory process and consulted with stakeholders from subject matter experts to governments, small-scale fisher organisations, indigenous fisher organisations, civil society organisations, research and academia, and the private sector.

There was an identified need for the guidelines as a way of showing how Convention on Biological Diversity Aichi targets on Traditional Knowledge and Fisheries policy development could be achieved.

One of the important targets is Target 18 on traditional knowledge which has three key elements. Firstly, respect of traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources. Secondly, traditional knowledge is subject to national legislation and relevant international obligations. Finally, traditional knowledge is fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

The guidelines have established one of the main distinguishing characteristic of Fishers' Knowledge, which is that it is experience-based, as fishers include experienced people who have been involved in a fishery community over an extended period of time, across several generations. The information provided by the fishers can be applied to boost scientific studies on how fisheries and ecosystems have changed over time.

These guidelines are applicable in small-scale freshwater, riverine, lacustrine and near-shore coastal fisheries, where there is a community associated with, as well as relying on fishing for sustenance, recreation, or a source of income.

Fishers' Knowledge can be used by fisheries resource managers at community, local, regional, and national levels in countries where there are coastal, marine and freshwater fisheries. They can also be utilised by communities, Non-Governmental Organisations, (NGOs) and researchers who wish to study and recognise traditional fishing knowledge in coastal, marine, and freshwater systems.

Her Excellency Dr. Shaikha Salem Al Dhaheri, Secretary General of EAD and the IUCN Councilor for West Asia on the occasion said, "In the past, the sea and its fisheries were a source of sustenance and survival. Today, globally fishing accounts for about 17% of the global population's intake of animal protein and provides around 3.2 billion people on the planet with nearly 20% of their animal protein. As a result, almost 90% of global fish stocks are either fully exploited or in decline. Achieving sustainable fisheries and seeking to maintain traditional links in society today is a significant topic, and one that the International Union for Conservation of Nature (IUCN) and we at EAD are proud to be working with the international community."

Her Excellency added, "Fisheries provide food security, livelihoods and income to millions of people, however in some cases, their management still presents a challenge to managers and other stakeholders due to problems in gathering suitable information and incorporating this accumulated knowledge in the fisheries policy. With these new IUCN Guidelines, we will be able to resolve this challenge and move forward to better manage fisheries and develop policies based on the experiential knowledge of the fishers, who have generations of information that is extremely beneficial."

She stated, "Fishers have often been excluded from processes of data collection, analysis, interpretation and management. Currently, there is now increasing recognition of the value of incorporating traditional fishing knowledge in freshwater, riverine, lacustrine, and coastal and marine fisheries management. This is becoming evident in international conventions and published literature. As such, we know that the main purpose of these guidelines is to make it easier for users to recognise and include fishers' knowledge as an important data stream in resource management."

"Fishers' Knowledge also includes women's knowledge. Women participate heavily in the pre and post fishing activities of small-scale fishing and they gather important information

concerning the management of resources and ecosystems. They are also adept and well informed when it comes to the harvesting of fish and are definitely a repository of knowledge and technologies."

Lead author of the guideline, EAD's Marine Policy Manager Winston Cowie, added, "The guidelines were developed by a multidisciplinary team of experts led by the IUCN Sustainable Use and Livelihoods Group, with support from EAD in the United Arab Emirates, and specialists from the IUCN Species Survival Commission, the IUCN Commission on Environmental, Economic and Social Policy, IUCN Snapper, Seabream and Grunt Specialist Group, and the World Forum of Fisher Peoples. It is a real international effort and we are pleased to showcase the UAE's traditional knowledge survey in these guidelines, as an example of how to incorporate this important basket of knowledge in fisheries policy development. We thank all of the experts from all over the world who gave their time, energy and knowledge in the development of these guidelines."

In 2016, EAD, in collaboration with the Ministry of Climate Change and Environment, launched the UAE Sustainable Fisheries Programme in recognition of the severely overexploited state of fisheries resources in the UAE, which aimed to ensure that the UAE fisheries are utilised sustainably.

As part of that programme, EAD completed a survey of over 300 fishers across the Emirates. It was revealed that 80% of the experienced fishers surveyed considered at that time that the fishery was severely overexploited, independent of the scientific information.

The EAD team also produced a film about this traditional fishing knowledge survey and the state of the UAE fisheries entitled 'Our Sea Our Heritage' which premiered at the Abu Dhabi International Boat Show last year. It is available on EAD's YouTube channel in English and Arabic and was one of the key drivers behind the development of this best practice guideline.

Earlier this year EAD also recorded a positive increase in the stocks of some of the main commercial fish species in the waters of Abu Dhabi. This rise is attributed to the policies, procedures and administrative measures of a comprehensive protection plan undertaken by EAD to improve the deteriorating status of depleting fish stock types, which was created with the goal of sustainability for future generations.

To download the Guidelines please visit:
https://bit.ly/3pIWVoX

FREESTYLE DIVERS BECOMES THE FIRST OFFICIAL GUE DIVE CENTRE IN THE MIDDLE EAST

Following a long period of informal collaboration between the GUE instructors and the HQ staff based in the UAE, Freestyle Divers became an official GUE Dive Centre in September this year.

We had already set up an environmental monitoring programme at Dibba Rock under the GUE Project Baseline programme and had been working with several local GUE instructors to provide the infrastructure and logistics for their courses, including GUE Fundamentals, GUE Documentation Diver, GUE DPV Diver, GUE Doubles Primer and others. Freestyle Divers and GUE members are already working on other projects, including a scientific blackwater photography project, the creation of a new wreck site for DPV, and technical diver training, as well as the extension of our existing Project Baseline programme.

GUE Dive Centres promote GUE's broad global mission in support of aquatic education, conservation, and exploration. These facilities are selected for the high quality they deliver to customers and ensure support for local GUE diving activities. Visiting a GUE Dive Centre provides assurance that GUE's high standards are met while also making it easy to receive support with a variety of important standard practices.

The high level of standardisation found within GUE diving is particularly useful when working with GUE Dive Centres. These facilities are selected for the high quality they deliver to customers and ensure support for all GUE diving needs.

GUE Dive Centres are also a critical link in the development and maintenance of local communities. These communities are the engine that powers GUE's founding principles and are also entirely unique to being part of GUE. No other aquatic organisation offers such a vast and supportive global network or the resulting opportunities to be part of wide-ranging international projects. Whether joining conservation initiatives like GUE's Project Baseline, partaking in one of the many exploration projects run by GUE divers, or just enjoying a range of social experiences, the GUE community offers purpose, challenge and personal enrichment.

Freestyle Divers is committed to delivering the infrastructure that GUE divers need as well as hosting community gatherings and offering goal-oriented projects that contribute to the core values of GUE: Education, Conservation and Exploration.

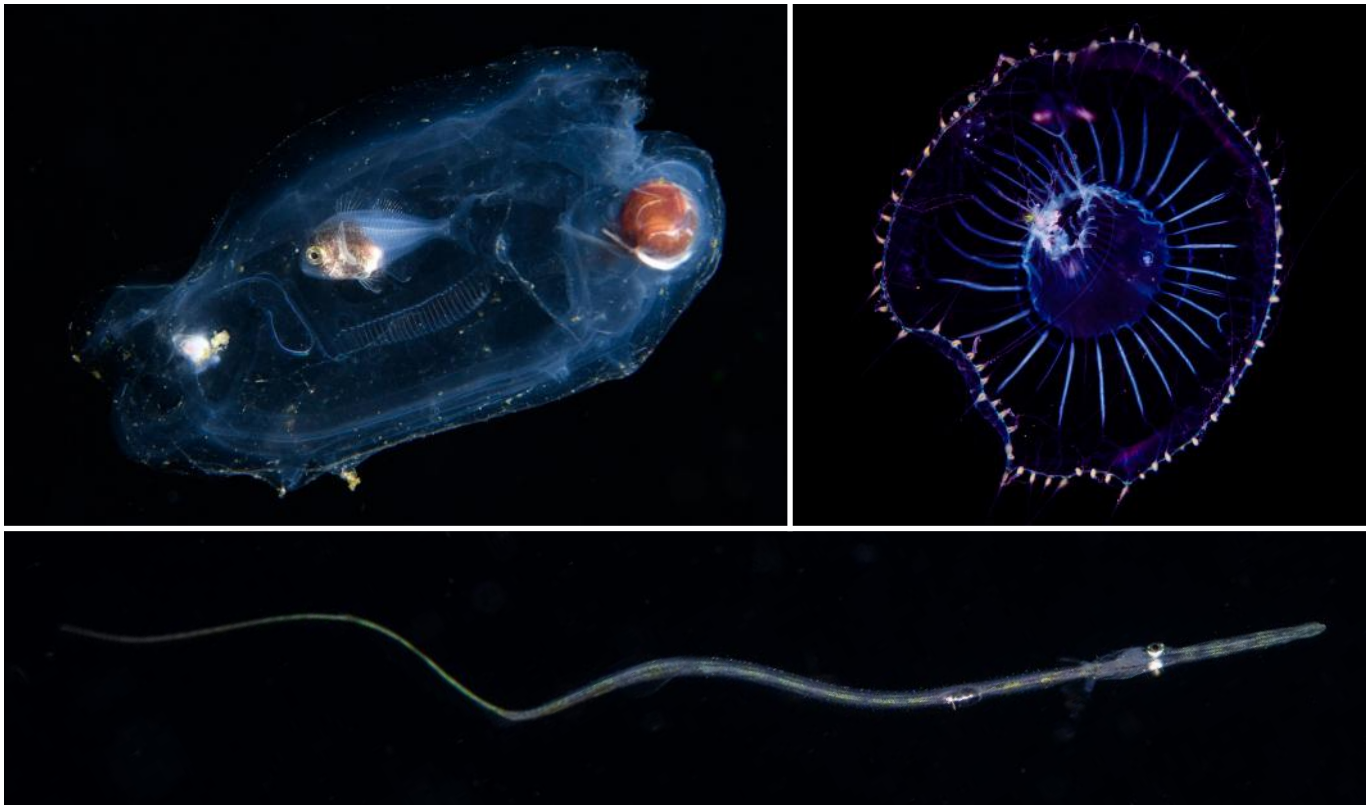
Learn more about our projects and GUE education programmes at:
www.freestyledivers.me

ABOUT FREESTYLE DIVERS
Freestyle Divers was among the first dive centres in the UAE and has grown into an organisation focused on high quality education, exploration, science, photography and videography. The education and scientific activities offer access to a variety of training programmes including GUE, RAID, PADI and UTD, as well as the Human Factors in Diving programmes and extensive marine biology and marine conservation programmes. Freestyle Divers operates in the UAE and Oman. More information is available at **www.freestyledivers.me**

ABOUT GLOBAL UNDERWATER EXPLORERS
Global Underwater Explorers (GUE) is a non-profit organisation dedicated to the exploration and conservation of the underwater world. Over the past 15 years they have trained and organised some of the world's most capable and accomplished divers into a global network of teams that are regularly exploring all manner of underwater environments, including deep reefs, caves, mountain lakes, and lost ship wrecks. In 2009, GUE established Project Baseline, focusing their global teams upon the task of documenting baseline environmental conditions around the world. More information is available at **www.globalunderwaterexplorers.org** and **www.projectbaseline.org**

WHEN BLACKWATER PHOTOGRAPHY MEETS MARINE SCIENCE!

BY **DARRYL OWEN – FREESTYLE DIVERS**



Top left photo by Michael Rall. Top right photo by Christophe Chellapermal and bottom photo by Jesper Kjøller.

On September 8th 2020, Freestyle Divers ran the first ever blackwater photo shoot in the UAE. Blackwater photography involves taking photos of the creatures that rise from the deep each night as part of their feeding cycle in shallower waters. To get the shots, we needed to set up some specialised lighting equipment and then drift dive in deep water spots while searching for interesting subjects in the dark ocean.

Our small test team included well known UAE based underwater photographers Jesper Kjøller, Christophe Chellapermal and Michael Rall, who joined the Freestyle Divers owners Darryl and Marine Owen for a night of adventure.

After some careful map study before the dive, we decided on a dive site which was as deep as we could reasonably reach before hitting international waters. After gaining special permission from the Coastguard authority for a night-time trip into deep waters, we then set to work to create the lighting system we would use as a focal column during our drift dive.

Once we had attached our powerful video lights to the mobile downline, it was time to set off in the twilight just before sunset. By the time we had reached our selected dive site using GPS coordinates, we were in full darkness and ready to dive!

The team lowered the lighting system into the water, got themselves set up to dive, checked their cameras and rolled into the water. The first 20 metres were already boiling with jellyfish and other creatures, their neon lights strobing down their bodies as they swam.

After two dives in the black of night, we hauled up our lights and returned to port, full of ideas on how we could turn this into an ongoing scientific project to measure and document the nightly feeding migrations to the surface of our UAE coastline. This is when the artistry of capturing beautiful shots of tiny creatures in the dead of night met the scientific curiosity to determine how the nightly Diurnal migration works in our local waters!

The Diurnal vertical migration, also known as the Diel vertical migration, is the greatest migration on the planet with regards to biomass and it happens on a daily basis. The migration, involves predominantly zooplankton as well as other organisms ascending to the upper layers of the ocean at night to feed on phytoplankton and other organisms.

This allows the zooplankton to feed with minimised risk of predation while hidden in the dark night-time waters. The upper 200 m of the oceans are known as the photic zone in that this is the depth that is exposed to sunlight on a daily basis. Light can reach to 1000 m in crystal clear water, although particulate matter in the oceans restricts this to the upper 200 m. Areas with limited visibility and increased particulates can further limit this to 50 m. Primary producers (the base of the food chain) in the open ocean are Phytoplankton. These are microorganisms with chlorophyll enabling photosynthesis that are limited in where they can live as they require sunlight for energy, so therefore remain in the photic zone.

Our investigation aims to document the different organisms that undergo this migration within the Gulf of Oman. We will be recording the migration using photography, videography and scientific analysis of plankton trawls. This is an exciting opportunity for photographers to get involved in a scientific study and to experience exciting new photographic opportunities. We would also welcome scientists who would like to contribute.

We expect the programme to run for a prolonged period as we will need to evaluate the results against many environmental factors, including the lunar cycle. Our scientific team will use the research work to publish conclusions based on different hypotheses.

If you would like to participate in this project but are unsure of whether you have all the skills you need, we can offer a tailored training programme to fill any gaps you may have.

Keep an eye on our website for more information and let us know if you would like to join the team!

www.freestyledivers.me

WE TEACH THE SAME WAY WE DIVE
WHY FREESTYLE DIVERS MOVED TO RAID

BY **DARRYL OWEN – FREESTYLE DIVERS**

We are just reaching our first-year anniversary as a RAID Instructor Development Centre and we thought we'd write about why we changed over and what our experience has been over the last year.

Well, it was 2020, need I say more?

Interestingly though, 2020 brought out some of the best and worst behaviour across the world.

The RAID management were absolute rock stars!

They made all their courses free to read on **www.diveraid.com** so that people could broaden their knowledge. For the RAID dive centres it meant that we had customers interested in the in-water training as soon as lockdown eased up. The courses are still available for free and you can do all the quizzes too; you only pay for the education when you want to get the certification.

RAID then made another bold move and extended the deadline for their membership renewals by three months. So many divers and instructors were struggling financially across the world, RAID stepped up and gave them three months free to help them out.

But who exactly is RAID? The Rebreather Association of International Divers was founded in 2007 in Sweden to support the training required to launch the Poseidon Mk IV Discovery rebreather. It all started with training that was more for technical divers. Then, over the last seven years, a full recreational diving training system was created.

Because RAID has created its whole training system in the last seven years, everything is modern. All the courses are on-line, in fact RAID is a 100% online agency – there are no out-of-date training manuals gathering dust at the dive centre, no long delays for corrections or updates to be made, and all the standards reflect the latest in scientific research on diving.

RAID is a member of the WRSTC, along with PADI, SSI, NAUI, IANTD, SNI, PDIC International, SNSI and NASE. The WRSTC is the central international body that defines core global standards for scuba diving. The Training Agencies that are members enjoy international recognition of their certifications anywhere in the world.

So, now that we are all caught up on who RAID are, what have we achieved with them so far? Darryl is a RAID Instructor Trainer and Marine is a RAID Regional Examiner. All of our staff instructors are RAID qualified and a number of our regular freelance instructors have crossed over to RAID, with more in process as we speak. We have the ability to run complete professional development programmes in-house.

RAID also has very strong marine ecology education. We are using the Ecological Diver programme as the base for our own marine conservation programme and James, our resident marine biologist, has built additional materials to support online Zoom classes as well as a full internship programme for marine biologists interested in conservation.

Darryl has written the new RAID Basic and Advanced Diver Propulsion Vehicle course, which will be released very shortly. If you have always dreamed about whizzing around underwater like in the old James Bond movies, this is a chance for you to learn how to drive a DPV from the author of the course.

We had Gary Dallas visit us for ten days. Gary is a RAID Examiner based out of the UK and has a global reputation for being one of the top sidemount instructors in the industry. He spent some time working with our staff and running a sidemount instructor class, he thoroughly enjoyed his time in the UAE and will be back in 2021!

Our whole staff has embraced the RAID approach to teaching. We teach everything in neutral buoyancy from the Open Water 20 course onwards. If you would prefer to learn using a backplate and wing with a long hose configuration, that is also supported by RAID across all courses. We firmly believe in producing great divers, not just selling certification cards – RAID provides us with a very robust platform to do just that. RAID has given us the ability to teach the same way we like to dive.

Our customers are loving the detailed course materials as well as the RAID pricing – the Open Water 20 course is only USD 65.00, which is a third of the price of other training agencies' e-learning materials!

All in all, after the first year, we feel we have made the right decision to move to RAID. Check out our website for more info on our RAID courses and activities at **www.freestyledivers.me**, we have a lot of interesting projects in the pipeline!

JOIN THE UAE REFILL REVOLUTION

COME ON BOARD AND MAKE A DIFFERENCE TO OCEAN PLASTIC

BY **CAROLIN HUSSEIN** PHOTOS **GOUMBOOK**

We are on a mission to make living with less plastic easier and are beyond excited to finally be able to reveal that the Refill campaign is now being brought to the UAE! From now on, you can use the free Refill app to find out where to refill your water bottle with filtered tap water instead of having to buy bottled water on the go. Become part of a global movement using the world's first dedicated app to help people find locations to reuse and refill.

REFILL UAE: REVOLUTION AGAINST SINGLE-USE PLASTICS

Goumbook has partnered with UK-based NGO City to Sea to bring a grassroots campaign aimed at reducing marine plastic pollution to the UAE. Refill is run worldwide with the mission of disrupting the current social norm that we need to buy bottled water when 'drinking on the go', thus making it easier and more widely accepted to reuse and refill your bottle with tap water than buy a plastic one. Since its launch, Refill has grown into an international presence with over 30,000 Refill Points at the start of 2020. By rolling out Refill in the UAE, Goumbook builds on the overwhelming success with both its Drop It and Drop It Youth campaigns, which led to 62 companies and over 30,000 individuals in the country to rethink their single-use plastic consumption, saving over 110,000 kg of CO_2 emissions through the plastic bottles avoided.

The central tool for the Refill campaign is the free, location-based Refill App that connects people looking for drinking water to filtered water fountains nearby. A large part of the urban population in the UAE is young, tech-savvy, and constantly on the move, so using a mobile app to find access to water refills is the perfect way for them to avoid having to buy unnecessary plastic bottles. Given the local circumstances, it is important to have filtration systems installed prior to drinking from the tap. Refill UAE wants to mainstream filter installation in public spaces like transport hubs, shopping and hospitality outlets, and civic venues all over the country. Using the Refill app initially for drinking water will simultaneously grow awareness and acceptance around other Refill options, such as take-out food and grocery shopping.

GET READY TO REDUCE, REUSE, REFILL… AND REPEAT!

We need everyone on board to make the UAE's Refill Revolution a success! Being a grassroots initiative, the movement relies heavily on proactive community engagement. Our 'Refill Champions' play a crucial role. Youths are invited to participate in our ambassador programme and become effective drivers of change, inspiring their schoolmates, families, and favourite leisure spots to kick plastic bottles. Members of Goumbook's corporate community continue to receive tailored support with switching to tap water filters and are encouraged to put their outlets on the map. The public can engage through a variety of virtual campaigns, events, pop-ups, and talks – Make sure to follow Goumbook on social media for updates!

CONSERVING THE OCEANS

Since the ocean not only drives global systems that make our planet habitable but its health is in fact linked to our health and livelihoods, it is not surprising that protecting the oceans is one of the UN Global Goals for 2030. Unfortunately, the Sustainable Development Goal 14 labelled "Life under Water", which aims at conserving and sustainably using the oceans, seas, and marine resources by 2030, is far from being achieved, both locally and internationally. Mitigating maritime pollution is one of the five tipping points crucial for the achievement of the targets under SDG 14 as identified by the Action Platform 'Sustainable Ocean Business'.

Increasing levels of debris in the world's oceans have a devastating environmental and economic impact. Every year, an estimated 8 to 12 million metric tonnes of plastic enter the ocean, killing over 100,000 marine mammals and turtles as well as 1 million sea birds, littering beaches and ocean floors, and costing billions in clean-up costs and financial losses for fisheries, tourism and other industries. Even more shockingly, the plastic is making its way into our bodies through the food chain, with microplastics now being present in everything from sea salt to seafood.

THE POWER TO REDUCE PLASTIC IS IN OUR HANDS

True to the motto "individual actions – global difference", we need to look at ways we can reduce everyday plastic consumption, even during COVID-19. It is by now widely known that the UAE has one of the highest per capita consumption rates of bottled water in the world. With the relatively small population of 9 million residents using a shocking 4 billion plastic water bottles a year, a lot of waste ends up in the country's oceans and deserts where it poses a significant threat to wildlife. The source of most bottled water brands is desalinated seawater – exactly the same as tap water, and highly energy-intensive to produce. Yet, there is a stigma around tap water being unhealthy, unhygienic, and unsafe for human consumption. Challenging this widespread yet unfounded perception is crucial to cut out unnecessary plastic waste. Choose to reuse and join the UAE Refill Revolution today!

ABOUT GOUMBOOK:

Goumbook CHANGING MINDSETS

Goumbook is a social enterprise with over a decade of presence in the UAE. It runs verious campaigns for the benefit of people and planet and is regularly invited by companies and educational institutions to carry out awareness sessions about plastic pollution and the local environment. Since its inception in 2009, Goumbook has played a significant role in establishing the sustainability-oriented community in this young country and puts changing mindsets at the core of its activities.

www.goumbook.com

MARINE SUSTAINABILITY

THE BEST OF TWO WORLDS: ECOCOAST x BOLINA

Ecocoast, a Dubai-based leader in engineered solutions for sustainable coastal and marine development founded by two Australian entrepreneurs, has completed another acquisition as it continues its growth strategy to offer customers an unmatched range of marine solutions globally.

Bolina, headquartered in the United Kingdom, is the European leader in marine safety, security and environment booms. The Bolina acquisition brings together the best of two worlds. Both Ecocoast and Bolina are dominating in their respective core markets. Ecocoast with coastal and marine protection, demarcation and navigation; Bolina in the marine safety and security space.

The inclusion of Bolina's brand will allow Ecocoast to offer safety and security solutions globally for inland waterways, dams and critical infrastructure. Similarly, the acquisition will give Bolina, with its headquarters remaining in the United Kingdom, a platform to grow on a global scale.

"I am excited that Bolina is joining the Ecocoast family," said Lachlan Jackson, CEO at Ecocoast. "The current team at Bolina has done an amazing job building Bolina to the brand it is today. We believe our values and our vision for the future are highly aligned."

Jackson added, "The synergies are substantial and will help strengthen our market position as the leading provider of marine products globally. The combined strength of our marine engineering expertise together with a broader product offering enables us to provide a more comprehensive solution for our clients, to keep the world's waterways healthy, safe and secure."

CLEANING MARINE ENVIRONMENTS WORLDWIDE WITH THE OCEAN CLEANUP

The Bolina acquisition not only allows Ecocoast to offer its customers and partners with a range of marine solutions for environmental, safety and security applications, but also strengthens its commitment to The Ocean Cleanup project.

Both Ecocoast and Bolina have worked with The Ocean Cleanup, a non-profit organisation that is developing advanced technologies to rid the world's oceans of plastic. Ecocoast partnered with The Ocean Cleanup in 2017 to design and manufacture the screen for its first marine barrier system, System 001, to clean-up the Great Pacific Garbage Patch.

The marine barrier was a complex engineered design consisting of a 600-metre-long floating element made of High-Density Polyethylene

Mountsorrel, United Kingdom, Bolina Canoe Safety Booms CAB400, 2020.

Norland, Canada, Bolina Permanent Debris Booms PDB600, 2020.

(HDPE), to which a screen was attached that reached 3 metres down underwater. The screen was made from a tightly constructed, geotextile-inspired material.

The Great Pacific Garbage Patch is an area in the Pacific Ocean, located between San Francisco and Hawaii where currents converge and collect floating debris, mainly different types of plastic.

Bolina has worked with the non-profit since 2016, developing a boom to clear rivers of floating plastics at the source. Using an autonomous, environmentally-friendly floating device, floating plastic pollution is scooped out of rivers before it reaches the sea.

100% solar-powered, the device extracts plastic autonomously and can operate in the majority of the world's most polluting rivers. It uses the Bolina Litter Fence Booms LFB600, because of its robust construction and unique flush-sided design, which helps to deflect and guide debris into the collection system.

MARINE PROTECTION: INCREASE IN GLOBAL ACTION

As of 2020, an estimated 24 to 35 million metric tons of plastic waste enter the aquatic environment on a yearly basis. This is more than double the rate of previous estimations of plastic inputs. However, marine pollution is not just caused by plastic, but also by a range of activities as a result of development and infrastructure works, such as construction and industrial activities.

The road to cleaner oceans is a long one. The good news is that more and more companies are focusing on the end spectrum of pollution mitigation strategies, by developing products and utilising technology to help clean up the world's oceans and waterbodies.

Now in over 50 countries, Ecocoast is continuing its expansion internationally and bringing new solutions for a better marine environment to market, to achieve its mission of solving the world's most pressing marine problems.

ABOUT ECOCOAST

Ecocoast, founded by two Australian entrepreneurs with offices now in the United Arab Emirates and United Kingdom, is a global leader in engineered solutions for sustainable coastal and marine development.

The business is built around offering products and services at every stage of the coastal and marine development lifecycle, from development, infrastructure and coastal protection, to operation and maintenance, focusing on sustainable solutions to protect and support our coastline, marine environment and people.

Ecocoast is at the forefront of designing, manufacturing and distributing globally a range of marine products for coastal and marine protection, demarcation and navigation. Early 2020, Ecocoast acquired Bolina, the European leader in marine safety, security and environment booms for inland waterways, dams and critical infrastructure.

Through developing engineered solutions for a better marine environment, Ecocoast will achieve its mission of solving the world's most pressing marine problems and creating a more pioneering marine industry.

www.ecocoast.com

2021 COVID RELIEF FOR PADI MEMBERS

To support PADI® Members worldwide during these challenging times, PADI is offering unprecedented and much needed relief. The organisation's 2021 COVID RELIEF membership renewal plan provides flexibility and options to best help PADI Members overcome the unique hardships they are currently facing as they move into the year ahead.

"In these unprecedented times when diving activity is down, providing needed relief and unsurpassed support to loyal PADI Members is job one," says Drew Richardson, President and CEO of PADI Worldwide. "The PADI staff and I understand that every member's story differs across 182 countries, and we are listening and adapting to demonstrate solidarity and togetherness as we go forward into recovery."

PADI is extending the following COVID RELIEF options for 2021 PADI Membership renewal:

- **Option 1:** 20% off auto renewal – PADI's lowest renewal rate – when enrolled by 15 November 2020
- **Option 2:** 20% off one-time renewal when renewed online by 31 December 2020
- **Option 3:** Defer 75% of the membership fee to March 2021 by enrolling in the auto renewal payment plan on or before 15 November 2020
  - 25% due in 2020 and the balance deferred until March 2021
  - 2021 renewal fee is based on last year's auto renewal price – with no price increase, no additional fees or interest

Other benefits included in the 2021 membership renewal plan are:

- 21 FREE digital learning products for PADI Instructors, and 19 FREE digital learning products for PADI Assistant Instructors and Divemasters to update their professional library
- No price increase on PADI training materials or merchandise through at least 1 April 2021
- All 2020 buying levels honoured for 2021
- A PADI Gear™ gift voucher for all PADI Professional members renewed by 31 December 2020
- All existing benefits, services and support PADI Members have come to expect as part of the world's best diver membership organisation are in place and upheld.

"We are also providing an option for any current PADI Member to temporarily pause membership, if needed, and easily reactivate it in the future," says Richardson. "Our members mean everything to us and we know that together we are stronger and will lead the world to seek adventure and save the ocean."

As PADI continues to support the membership, both through COVID RELIEF and by driving industry recovery and demand for PADI training and services, PADI Members around the globe are sharing what being part of the PADI family means to them and their business. See what they have to say here: **https://bit.ly/2Ub8qap**

PADI Members, connect with your PADI Regional Support Team (**https://bit.ly/35dI8dG**) to take full advantage of the great tools and benefits your membership offers. Visit the PADI Pros' Site (**https://bit.ly/35ex1Bz**) to complete your 2021 membership renewal.

PADI is far and away the world's best, largest and most popular diver organisation. If you are not currently a PADI Member, discover why 8,250 dive professionals and 218 dive shops have joined the PADI Family since the pandemic began in March. Contact your local PADI Regional Headquarters for more information about how partnering with PADI can help you reach greater success.

www.padi.com

FEMALE SAUDI TEC DIVER
INSPIRES WOMEN ON PADI® PODCAST

PADI's® monthly Dive Stories podcast series immerses audiences in the underwater world and keeps them connected to the dive community by sharing diving's most inspirational characters and their stories with the world.

One of the episodes from the popular series, which is available to download free now, features an inspirational interview with female PADI Master Scuba Diver Trainer, Nouf Alosaimi who was born and raised in Taif, Saudi Arabia and organised the first PADI Women's Dive Day event in Saudi.

The podcast features an in-depth, dynamic conservation with Nouf who shares how scuba diving has had a positive influence in changing her life and her passion for helping other Saudi women discover the underwater world through her company Pink Bubbles Divers. She also talks about her relationship with the Red Sea.

Nouf's company, Pink Bubbles, is a female diving community which aims to empower and encourage Saudi women to scuba dive and to spread awareness of sharks and marine life among the community.

PADI's host, Allison Albritton, aka Ocean Allison, begins with five rapid-fire questions about Nouf's experiences as a diver and ocean ambassador, then dives deeper, discussing topics fundamental to her work, adventures and her passions connected to diving and the ocean.

Allison discusses further topics such as scuba, conservation, freediving, underwater exploration, travel and all things in and around the ocean in future episodes of the monthly podcasts.

Listen now via your favourite podcast app: Apple Podcasts, Google Podcasts, Spotify, and Stitcher. Subscribe to join monthly conversations with the robust lineup of future guests.

Follow Nouf's conservation and diving journey on Instagram @redeacitizen and @pinkbubblesdivers

CREATING A DIVE SYSTEM FOR THE 21st CENTURY SCUBA DIVER

BY **JIMMY REUTERWALL**

Last year, Oceans entered a new thrilling adventure after closing a successful crowd funding campaign with a goal to develop the next generation of dive computers: Oceans S1 Supersonic.

THE S1 SUPERSONIC

With our first dive into hardware – accompanied by lots of new learnings, and in the middle of a global pandemic – we have now shipped hundreds of S1s to divers all around the world.

BUDDY-TO-BUDDY COMMS SYSTEM

And S1 comes with a number of industry firsts. It's the only wearable that allows divers to communicate underwater using Oceans' innovative buddy-to-buddy ultrasonic comms system. It's fully wireless, charges using a standard Qi charger and features a 3D digital compass for navigation.

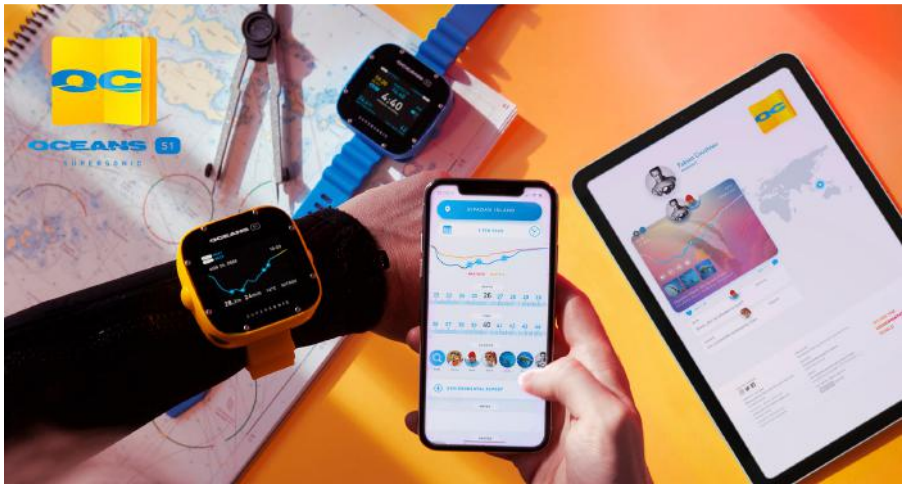
Applying Oceans' user experience and design focus to S1, combined with the advantage in controlling both hardware and software, makes way for us to design a new disruptive dive system for the 21st century scuba diver. And we just got started…

Oceans S1 Supersonic is now available at Oceans' online store, and with retailers starting next year.

TEAM OCEANS

Oceans (oceans.io) was founded in 2014 with a mission to make the underwater world universally accessible to anyone, everywhere. Together with our ambassadors and tens of thousands of ocean champions, we are co-creating the number one global community and discovery platform for divers and ocean explorers all around the world.

Learn more about Oceans and Oceans S1 Supersonic at **www.oceans.io**.



DIVEHEART MALAYSIA 2020
IN PERHENTIAN ISLAND, TERENGGANU MALAYSIA

Malaysia is home to some of the most spectacular beaches and island getaways in Southeast Asia. Think of azure crystal clear blue waters, powder white sandy beaches, and the best part, fewer crowds. Many of them are located in Terengganu, on the east coast of Peninsular Malaysia overlooking the South China Sea.

With that said, Perhentian Island is known as one of the finest and lesser-known islands off the coast of Terengganu. Pulau Perhentian, which means "stopover island" in Malay, has excellent underwater seascapes for snorkelling and scuba diving. Made up of two islands, Perhentian Besar (Big Island) is where the bigger resorts are and more suitable for fun, family activities, while Perhentian Kecil (Small Island) is geared towards backpackers with more budget options for both food and board.

As scuba diving slowly opens up again amidst the COVID-19 pandemic, divers from all around the world cautiously return again to our beloved waters, and were greeted by new and familiar wonders of the deep blue.

Not to be left out of the excitement, the group of qualified adaptive divers from Diveheart Malaysia organised a scaled-down trip for Persons with Disabilities (PWD) to Mimpi Perhentian Resort at Perhentian Island, Malaysia from 22-24 September 2020.

"If all us abled divers can enjoy our beautiful oceans, why can't the special community?" asked Syed Abdul Rahman, Malaysia's Diveheart Ambassador, and Founder of Kids Scuba Malaysia.

The Diveheart objectives are to build confidence, independence and self-esteem in the lives of children, adults and veterans with disabilities through scuba diving, scuba therapy and related activities. The vision is to instil the "can do" spirit in participants, inspiring them to take on challenges that they may not have considered before. Using zero gravity and the adventure paradigm, we help participants believe that if they can scuba dive, they can do anything. Imagine the possibilities.

Among the participants of this year's event was Riza Faizal Mohd Kandar who became a wheelchair user after a motor accident left him paralysed in both legs in 2001 which was the turning point in his life.

"When I realised that I had sustained a spinal injury which meant that I could no longer use my legs, I went through a period of depression where I felt life was not worth living. It was a really low period for me," said Riza.

Fortunately, Riza was referred to a rehabilitation programme and he underwent intensive spinal cord injury (SCIR) rehabilitation followed by regular outpatient therapy, and a 5 year follow-up of physiotherapy at the University Malaya Medical Centre (UMMC).

Through rehabilitation, Riza became independent and has since been able to care for himself in all aspects of mobility. However, he felt that there was something missing in his life. He was missing the element of a meaningful recreational activity.

"When we first met Riza soon after his accident, he was nervous and down. However, over the years he has made great progress and has become confident and he is able to participate as a peer counsellor for others with spinal injuries", said Sister Yuslina, the lead

nurse in the Department of Rehabilitation Medicine at the University Malaya Medical Centre (UMMC). She has been involved and overseen Riza's rehabilitation progress and therapies over the years.

Riza discovered Diveheart Malaysia through the UMMC's special collaboration with Kids Scuba Malaysia, a PADI 5 Star Dive Centre near Kuala Lumpur. The collaboration involved a complete scuba diving package of training and certification for PWDs and Riza was among four of the selected patients. Riza and his friends successfully obtained their PADI Scuba Diver certification in 2016 at Tioman Island with Diveheart volunteers, including the President of Diveheart, Jim Elliot.

One of the founding members of the collaboration between Kids Scuba and the Department of Rehabilitation Medicine, UMMC; Prof Nazirah Hasnan is elated with the continued success of the programme. She is also very proud with the commitment showed by the members of the department in becoming volunteers both on land and at sea. Prof Nazirah herself was inspired to take up scuba diving when she discovered that some of her spinal cord injured patients were keen to learn to scuba dive and she had to certify them fit to dive.

Being a certified PADI Open Water diver herself, she was able to understand the underwater physiology, zero gravity and the needs of disabled divers whom we call special ability divers. As a rehabilitation physician, she recognises the importance of sports and recreation in the successful rehabilitation of PWDs. Scuba diving can be a great source of self-discovery and a means of building confidence and independence.

For many, scuba diving is seen as an enriching experience potentially helping to improve self-image and quality of life. The unique opportunity for three-dimensional movement through a gravity free environment underwater gives them a sense of freedom from whatever restraints they face on land. They become equal underwater.

According to Dr Yew Chung Khian, a rehab specialist doctor in attendance, "The Diveheart programme in Malaysia is doing outstanding work that enables and empowers persons with disabilities to participate in sports and community." Dr Yew was among UMMC's medical personnel who became a PADI Open Water certified diver so he could see for himself how the ocean transforms a person with disability in zero gravity. "It's rewarding to see the enthusiasm when the patients realise they can challenge their limitations," said Dr Yew.

Another participant from the programme was Ms Noor Aishah Arshad, a right leg amputee as a result of bone cancer. Aishah is a certified PADI Open Water diver since 2019 when she took part in a Diveheart event. In 2020, this small energetic lady is back again to complete her Advanced Open Water certification. "I want to show everyone that there are no limits when it comes to disabilities. If I can do it, so can you," said Aishah who also represents Malaysia in the National Paralympic Team.

The PADI Regional Manager, Mark Hedger, who personally supervised Aishah through her PADI Underwater Navigation dive said, "I am impressed by how confident she was. She has shown her capabilities with good buoyancy and streamline while underwater." A total of 30 qualified adaptive diver volunteers stepped up to work on the event this year.

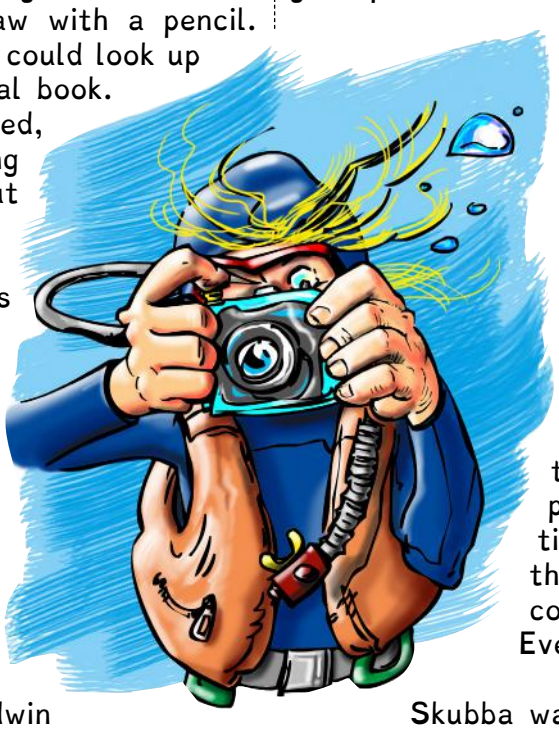
According to Syed, "It is important that we show the world that diving is a truly inclusive sport. If you are willing to work hard, anything is possible. This event is proof that you only need to 'imagine the possibilities' to make it happen."

As Riza Faizal has said repeatedly, when he is in the water scuba diving, he is free from impairments and can move freely like everyone else. Prof Nazirah is very impressed with Riza Faizal's and Noor Aishah's achievements and she wishes them every success and hopes that other PWDs are inspired by them. Through the success of these activities over the past 5 years, Prof Nazirah is confident that her vision to make the University of Malaya Medical Centre a scuba diving hub for all Persons with Disabilities with Diveheart will come to fruition. Diveheart – Imagine The Possibilities.

AN UNDERWATER PHOTOGRAPH

STORY BY PATRICK VAN HOESERLANDE ILLUSTRATION PETER BOSTEELS

In addition to diving, Skubba and Fred learned about other things you could do underwater. They learned to search for and recognise fish, other underwater animals, and plants. Skubba sometimes had a waterproof identification card with him while diving. The pictures on that card enabled him to quickly recognise what he saw underwater. Sometimes, he carried a waterproof writing tablet where he could sketch fish he saw with a pencil. After the dive, he and Fred could look up the plant or fish in a special book. However, the more he dived, the better he was becoming at recognising things without those tools.



Nella told them there was still another technique they could use to make identifications, and that they would get to try it out today. Someone new was stood with the other dive instructors. During the briefing, Nella introduced him to the whole group.

"Good afternoon everyone, this is Edwin. Today, Edwin is going to talk to us about underwater photography," Nella said. She gave Fred a camera in a large plastic box. He looked at it for a moment and quickly turned his attention to the device that lay at Edwin's feet. It was much larger than the camera he was passing around, and it had two long, movable arms with large lights on it. That thing was much more interesting.

Edwin explained how to take photographs underwater and what they should pay attention to, to take good pictures. It turned out to be much more difficult than above water. You could not move, not only would you chase the fish away, but you would also stir up silt. When you pressed the button, you had to make sure that you did not exhale, otherwise, you would get bubbles in front of your lens. You also had to ensure good lighting because colours change underwater. For example, red slowly turns into brown the deeper you get when you dive. That is why Edwin brought those two big lights. They listened to everything he explained very attentively. Fred wanted to know everything about the camera's buttons and dials.

Today Edwin would dive with this large piece of equipment and show everyone how to take good pictures underwater.

"From today, you will be allowed to dive one by one with the small camera and take photographs yourselves. You will get to take up to a dozen pictures and in doing so, you will earn your Underwater Photographer qualification."

Edwin also told them that if they sent him their photos, he would take the time to look at each of them and tell them how they could take better pictures. Everyone loved that idea.

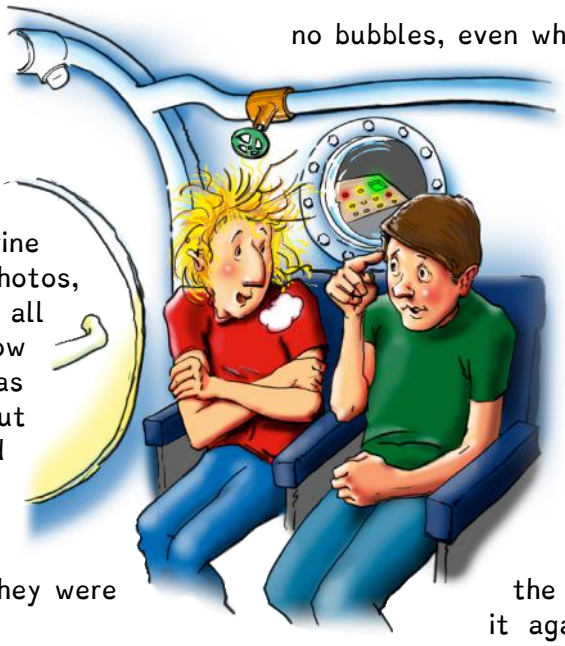
Skubba was the second to dive with the small camera. He managed to find fish, and with great patience he took his first photographs. They came across an animal he did not recognise which was not on his waterproof ID card. His dive leader signalled to take a photo of it so they could find out what it was when they got back up to the surface. What a clever idea!

When they surfaced again, Skubba saw Fred talking to a lady with an even bigger device with even bigger lights attached to it. The woman, Alexandra, would be filming underwater. She was busy making a real underwater movie. Wow, just like the old dive films of Cousteau that Skubba used to watch a lot.

While Fred asked hundreds of questions, Skubba realised that he did not find talking about filming very interesting. You could not stick a movie in your logbook. You could with a photograph though!

DECOMPRESSION

STORY BY PATRICK VAN HOESERLANDE ILLUSTRATION PETER BOSTEELS



After months of Skubba being in and out of the water, he and Fred thought they knew everything there was to know about diving. With Fred's help, Skubba recognised all the marine animals, was able to take photos, and search for objects, all underwater. They did not know everything though, this was not true. The nice thing about diving was that a new world always opened up to you, and that world was very, very big. There is always something new to learn about. Today, they were going to dive dry.

Skubba thought that meant that they would learn how to dive with a dry suit. He had read that such a suit existed, but Fred said that this was not possible because as youth divers, they were not yet old enough to dive with such a suit. It had to be something else.

They were taken through a large gate and walked over to a big building. The building was filled with pictures of divers and doctors. They were given a drink and they were then given an explanation of what happens in this place. The building contained large metal rooms that could be pressurised. That way people could 'dive' without having to get into water. However, the intention was not to put pressure on divers, but rather to 'de-stress' them gradually. These special rooms were called decompression chambers.

Skubba and Fred did not understand what this meant. The doctor in the front took a bottle of water and asked if anyone saw bubbles. There was no reply from anyone in the group. He took the bottle to a machine for making fizzy water and put gas in it. Everyone saw the bubbles go in and he closed the bottle.

"What will happen if I open this bottle?" he asked.

"Bubbles," they all said together.

"Right! But if I slowly open the bottle, nothing happens. Look," he said. And indeed, there were no bubbles, even when he took the cap off.

"Well, if a diver dives deep, much deeper than you, and stays there for a long time, he becomes a bit like this bottle of sparkling water. If he wants to surface without bubbles appearing in his body, he has to rise very slowly and stop from time to time. But sometimes things go wrong, and that is when we help the diver. It is as if we close the bottle and then slowly open it again so that no bubbles are formed." Fred nodded, but Skubba was looking through the window at the rooms. Would it be scary in there?

After the explanation, they were all allowed in a decompression chamber. The doctor closed the heavy door and then spoke into an odd-looking phone.

"Everybody ready? They are going to pressurise us. Start clearing your ears," he advised them. Suddenly it got warm in the room. The doctor said that this was because the air was being compressed. After a while, he told them that they were now 5 metres deep. This was Fred's very first dive ever. How strange.

They looked through the windows at the people sitting in front of the large displays and operating the various levers. The doctor explained that they could also put a hospital bed in this room to make their patients more comfortable while they went through their decompression treatment. Diving is safe if you do it safely and correctly.

"And now we are going back up." Suddenly fog appeared in the room and it started to feel a bit cooler, and they were soon back on the 'surface'. The door of the dry submarine opened and the first person stepped out. Skubba liked it, but diving in water was much more fun. Fred found everything inside the room interesting and this kind of dry diving was something he could really get into. Could he learn how to dive in this?

AMIDST THE GLOOM, A CONSERVATION SUCCESS STORY
THREE YEARS OF REEF CHECK OMAN

BY **BIOSPHERE EXPEDITIONS**

It has been three years since Reef Check Oman was founded by graduates of Biosphere Expeditions' placement programme. Run by Omanis for Omanis, the chapter's goal is to preserve the country's coral reefs, which are not only beautiful, but also the foundation of local livelihoods, sustainable tourism and traditional ways of life. And it has been doing just that.

In the past three years, Reef Check Oman has achieved several historic milestones: it conducted the first-ever community-based reef survey near the capital Muscat in early 2017. Later that year, Oman's first two Reef Check EcoDiver Trainers took on a leading role as citizen scientists in the country's reef conservation efforts. Since then the organisation has delivered presentations at Sultan Qaboos University in Muscat and trained more Omani divers to survey reefs.

Jenan Al Asfoor, the organisation's founder, says: "In Oman, we are blessed to have a beautiful coastline of over 3,000 km. With this comes a big responsibility of protecting our coral reefs, which sustain the livelihoods of many coastal communities and also brings tourism to our shores. It is up to us as Omanis to do this and Reef Check Oman is there to play its role by empowering divers to help survey and protect our reefs. The more people we have, the better, so I encourage everyone in Oman to join us, whether they are divers or not. If you are a diver, we will teach you how to survey and protect reefs. If you are not, there are many other ways you can help. Just get in touch via our website **www.reefcheckoman.org**".

Dr. Matthias Hammer, Executive Director of Biosphere Expeditions, says that he is "delighted to see Reef Check Oman thrive like this. This is exactly what our placement programme seeks to achieve: empowering local people and communities to survey and protect nature in their own backyard. Because intact nature is very often the bedrock for people's prosperity, well-being and way of life, local people are best placed to do what is needed. I congratulate Jenan Al Asfoor and her compatriots for this very impressive effort."

For more information, Reef Check Oman is on www.reefcheckoman.org, Facebook and Instagram.

REEF CHECK'S NEW LOOK!

Today, we are proud to present Reef Check's new logo and website! Our new logo features the key elements of a diver, fish, coral reef and kelp forest and we feel that it is a cohesive representation of what Reef Check stands for: leading citizen scientists to promote stewardship of sustainable reef communities worldwide. Go to: **www.reefcheck.org**

Since the launch of our California programme in 2005, Reef Check has been dedicated to the conservation of both tropical coral reefs and temperate kelp forests. We are training and leading citizen scientists to study reefs around the globe and develop conservation and restoration solutions to improve the health of reefs and the human communities that depend on them.

We also invite you to check out our online store to pick up some new logo swag!

Reef Check
WORLDWIDE

THE REEF CHECK KOMODO PROJECT IS BORN

BY **DIVINE DIVING**

Nestled within the heart of the Coral Triangle is Komodo National Park, a UNESCO World Heritage Site in Indonesia of over 1,700 km^2 encompassing 28 islands and some of the most diverse, densely populated marine life on the planet. The area however does not come without its challenges. From the threats of fish stock depletion, tourism impacts and climate change – like so many other coral reefs across the globe – the park and its reefs has been in need of a long-term monitoring programme for many years.

Recently, the management team of the Reef Check EcoDiver Training Facility, Divine Diving in Komodo began piloting a project that has since made history in the country by being the first organisation to have ever been permitted to carry out scientific survey work inside an Indonesian National Park and World Heritage site. Wholly funded by the forward-thinking tourism authority Bandan Otorita Pariwasata (BOP) for Labuan Bajo, this project is allowing the team to facilitate the training of 10 local Indonesians as citizen scientists and Reef Check EcoDivers, present a knowledge-based workshop for locals, and conduct no less than 56 full Reef Check Surveys over 33 unique sites from March to December.

Marij Aben, Director of Divine Diving and Programme Leader for Reef Check Komodo said, "We are incredibly proud to be working alongside both the BOP and National Park Officers, allowing Reef Check to touch the hearts and minds of our local people and to pay-it-forward to Mother Earth."

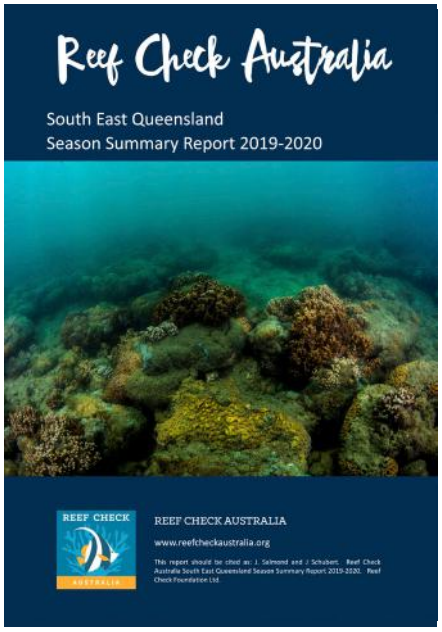
REEF CHECK AUSTRALIA'S 2019-2020

SOUTH EAST QUEENSLAND SEASON SUMMARY REPORT IS OUT

BY **REEF CHECK AUSTRALIA**

Despite delays caused by unfavourable weather conditions and the pandemic, Reef Check Australia's (RCA) awesome volunteers still managed to wrap up the 2019-2020 South East Queensland survey season on time. Over the season, RCA monitored 40 different locations on 20 different reefs, stretching from Mudjimba to Palm Beach, covering 16,800 m^2 of reef habitat and collecting over 7,000 pieces of data. Not surprisingly, given that the area has rocky reefs, the most recorded substrate type was rock, but hard coral came in at 13%. Hard and soft coral cover remained relatively stable across the survey area and coral bleaching was observed on fewer sites this season, but was slightly higher on average than last season.

This project is supported by Reef Check Australia, through funding from the City of Gold Coast, Queensland Government Community Sustainability Action Grant, Port of Brisbane, and the Sunshine Coast Council.



To find out more about what was recorded, check out the full 2019-2020 SEQ Season Summary Report on the left at this link: https://bit.ly/3eHnrtZ or the infographic on the right that gives you an overview of the findings.

FROM ALASKA TO BAJA:
COOPERATIVE RESEARCH EFFORT DOCUMENTS KELP MIGRATION

In a sweeping display of the power of community-based science to show the ocean-wide changes caused by warming waters, researchers from universities and organisations around the globe teamed up to demonstrate northward migration in kelp forests. Their latest paper was recently published in Global Change Biology.

Participating partners spanned from Mexico to Alaska, and included University of Alaska, Reef Check California, Stanford University, University of California – Santa Cruz, San Diego State University, Monterey Bay Aquarium Research Institute, NOAA, and Moss Landing Marine Laboratories in the United States, and Comunidad y Biodiversidad A.C., Universidad Autónoma de Baja California and fisher communities in Mexico.

One of the senior authors of this work, Dr. C. Brock Woodson (University of Georgia), described the project as a unique approach to monitoring some of the broad-scale changes happening to ecosystems around the globe.

"Thanks to a standard monitoring programme that spans oceans, years, and many collaborative efforts, we could look at an entire system and gain unique insights," Woodson said. "If we had studied just individual areas, we never would've been able to draw the same conclusions about how kelp forests are changing."

The partners hope that this project can serve as a model to researchers for how to harness the power of cooperation and volunteer-driven data.

They owe much of their success to PISCO, the Partnership for the Interdisciplinary Studies of Coastal Oceans, the organisation that developed the initial monitoring programme in California and Oregon in 1999, as well as Reef Check of California, Comunidad y Biodiversidad and MexCal that expanded this monitoring protocol through citizen science programmes. By using similar monitoring guidelines across different programmes and groups, the project was able to combine their results to develop a picture of what was happening to kelp forests in different regions.

Each region had a different type of volunteer diver collecting the information from undergraduate students and recreational divers in California, to women from fisher communities called "Las Sirenas del Mar" at Isla Natividad in Mexico. Las Sirenas del Mar were trained as divers and have been active participants in the underwater community-based monitoring programme.

"The involvement of Las Sirenas del Mar is a relevant example of the power of community-based monitoring, and a small step forward for gender equality in the sea," said lead author, Dr. Rodrigo Beas, from Universidad de Autonoma de Baja California.

Reef Check California citizen scientist divers contributed data collected from many sites for over a decade of monitoring. Dr. Jan Freiwald, co-author and Executive Director of the Reef Check Foundation, thanked the volunteers. "Including the data collected by our citizen scientists in publications like this that evaluate ecosystem changes over large spatial and temporal scales demonstrates the value of their work in understanding the impacts of climate change on our oceans," he stated.

The changes described in this paper could wreak ecological and economic havoc on the communities – both marine and human – that depend on the kelp to survive.

"Think about what would happen if you took the trees out of a forest: it'd be a meadow. There might still be life there, but it wouldn't look anything like the ecosystem that lived in the forest. Kelp are the trees of the oceanic forest," Woodson explained.

Dr. Rodrigo Beas also likened the kelp to trees within a forest. "This underwater forest is as complex and productive as a tropical rain forest" Beas stated.

"It's an incredible world down there. Like being in a forest, except that you're able to fly up into the canopy to see all the life happening at different levels among the trees. Sometimes it can get very dark and moody. It's beautiful," Beas said.

By analysing the data from each separate group and area as a whole, the researchers were able to clearly see an ocean-wide trend: kelp is migrating northward. The researchers also noticed that as the kelp migrates, only the species that eat it directly appear to migrate with it. This leaves a broken food web behind.

Senior author Dr. Fiorenza Micheli, from Stanford University, stressed the need to ramp up action, "we documented major, region-wide changes in these productive coastal ecosystems in response to recent heat waves. Impacts are greatest in the northern and southern portions of this region, highlighting the urgency of protecting these vital ecosystems, sustaining livelihoods and ensuring food security for coastal communities."

"This may not sound like good news," said Beas, "But there are hopeful elements to this story. We successfully enacted a project that spanned years and oceans with multiple partners, and used it to gain insight into an ocean-wide trend. That is very hopeful. And we hope that others will be able to use our project as a model for how to measure broad-scale change in the world."

"This is an excellent example of collaboration between researchers, communities and civil society organisations in the USA and Mexico to understand how climate change will impact the kelp forest and therefore fisheries and coastal communities in the next 30 years. This can help us to start making the needed changes so the coastal communities can adapt and maintain the ecosystem resilience," concluded Jorge Torre from COBI.

REEF CHECK CALIFORNIA'S NORTH COAST KELP FOREST RESTORATION PROJECT BEGINS

BY **TRISTIN MCHUGH, REEF CHECK CALIFORNIA NORTH COAST MANAGER**

Reef Check California's North Coast Kelp Forest Restoration project has begun! Since 2014, bull kelp in northern California, primarily along the Sonoma and Mendocino county coastline, has declined more than 90% due to a combination of extreme warm water events and multiple ecological stressors, including significant increases in purple sea urchin populations, which feed upon the kelp. This has led to a large-scale shift from bull kelp forests to urchin barrens across most of the region. This shift has caused significant losses of kelp forest biodiversity and ecosystem services, resulting in the collapse of the North Coast commercial red urchin fishery ($3 Million ex-vessel value) beginning in 2015 and the closure of the recreational red abalone fishery (estimated at $44 Million non-market value) in 2018.

Earlier this month, Reef Check and partners began to remove purple urchins (*Strongylocentrotus purpuratus*) from a restoration area in North Noyo Harbor, Fort Bragg (Caspar Cove is the next site this effort will target). The goal of this collaborative project is to ultimately catalyse a phase shift from urchin barren to kelp forest on targeted reefs. Furthermore, we are assessing if purple urchin densities can be reduced and maintained over time to allow kelp to grow and serve as a kelp oasis, providing spores (kelp seeds) to surrounding areas. This project will play a vital role in determining how resource managers choose to move forward with kelp restoration strategies statewide, thus helping to evaluate the costs and benefits of human intervention in a dynamic oceanic environment.

Prior to urchin removal efforts, Reef Check divers collected ecosystem information (such as fish, invertebrate and algae densities) to get a picture of what reefs looked like at the time at which restoration began in areas to be restored and in other areas that will not be touched. Following the removal of urchin, Reef Check divers will conduct quality control surveys to assess the effectiveness of the effort and ecosystem surveys to compare reefs before and after restoration with reefs that will not be restored. Making these comparisons will allow us to evaluate the outcome of the restoration efforts. This provides Reef Check and managers with the information necessary to help guide where resources and urchin removal efforts are most needed and effective.

After urchins are removed from the restoration area, they are taken back to Noyo Harbor where Reef Check staff and volunteers further process the urchins and measure a number things such as weight and size of urchins and bycatch to better understand the methods used to remove urchin and also investigate the biology of the urchin occupying the reef. Stay tuned in the coming year as we further develop this programme (Funding Source: Ocean Protection Council).

MANTANANI – SUSTAINABLE ISLANDS IN THE SUN

BY **REEF CHECK MALAYSIA**

For years now, mass tourism has been impacting the environmental health of coral islands off Sabah's west coast. Among them is the Mantanani three-island group, located off the northwestern tip of Borneo. There are far fewer tourists now as the pandemic stifles travel. Some islanders are using the lull to try new businesses and better manage their environment.

BAD PRACTICES

Mantanani is set in shallow azure waters fringed by coral reefs. It is home to a 1,000-strong Bajau Ubian community who are traditionally fishermen, but as far back as a decade ago, overfishing and fish-bombing has degraded the islands' marine ecosystem, according to Adzmin Fatta, the island-based programme manager of Reef Check Malaysia.

As a result, "fishing was no longer providing sufficient income for the island's households," he said. A 2013 survey showed that nearly two thirds (of households) were earning below RM 500 per month.

"At around the same time, tourists started visiting Mantanani. The islands became so popular that visitor numbers rose from 50 day-trippers in 2011 to 3,000 day-trippers last year", said Adzmin. The majority are day-trippers from China, followed by South Koreans.

At the peak of the tourist season, the blue waters, especially around the 3 km^2 main island, were covered with bobbing bodies of snorkellers overlooked by rows of speedboats. The tourist boom prompted the islands' fisherfolk to switch to running boats for holiday-makers, operating homestays and selling handicrafts. By last year, around 80% of the islanders were earning incomes from tourism. About half of this group developed their tourism skills with the help of Reef Check's Cintai Mantanani conservation programme, whose objective is sustainable tourism.

BUILDING BUSINESSES

Mainah binti Maulana is one of the eight local women who approached Reef Check to build their homestay programmes. Last year, after 12 months of training in tourism skills, they earned RM 50,000 – their first homestay income in five years.

"After we got help, our earnings rose straight away," said Mainah with pride. She is now the homestay coordinator for the group. In fact, this year, despite the Movement Control Order (MCO), shuffling tourist arrivals over three months, has already raked in RM 19,000. Things were bad when the pandemic first shut tourism down in March though.

"During the MCO, all my bookings were cancelled," said Mainah. "We were fully booked for March and April. I was really sad. My children lost their jobs in the resorts. So we fished in the nearby waters. We only ate rice and fish every day."

Worried that fishing would become "unsustainable if the entire community returned to it," Adzmin said Reef Check organised food aid, for which Mainah, for one, was grateful. In fact, this continued support from Reef Check has also prompted her to sign up for the NGO's post-MCO pilot project to diversify incomes.

The so-called economic recovery project aims to overcome the heavy dependency on either tourism or fishing by developing community agricultural, virgin coconut oil production and abalone farming. Mainah is participating in the coconut component. "I really want to learn how to make the oil, where to market it… It will help generate income."

BUILDING RESILIENCE

Funded by Yayasan Hasanah, the 18-month-long project also has buy-ins from another 17 villagers, including several who have never participated in the Reef Check programmes before. Adzmin admitted that it was a difficult project to implement, but they are getting help from experienced partners such as a commercial coconut virgin oil producer.

With an eye on the impact of these introduced livelihoods, Adzmin said, "we're keeping it small-scale, tapping into existing resources like the many coconut trees that are already growing on the island, and wild abalone with which we will be doing in-situ farming in the sea. The community farming is for food security.

"Tourism has not been sidelined", said Adzmin. "We are improving the facilities of homestays, training more guides and putting together activities and packages – all to encourage tourists to stay longer. By the time tourism recovers, say in two years, all services and facilities will be in place."

TOURISM AND CONSERVATION

Where the marine ecosystem is concerned, tourism has had both positive and negative impacts, according to Reef Check surveys.

"On one hand, the devastating activity of fish bombing has reduced (around 2,000 incidents in 2015 to 200 in 2018) and the population of fish and other sea life has started replenishing", said Adzmin. "On the other hand, with so many tourists (pre-MCO), waste is directly discarded to the sea and polluting reefs. Unsustainable practices in diving and snorkelling activities also contribute to the destruction of reefs, such as divers kicking and breaking corals, animal harassment and fish feeding."

OVER-EXPLOITATION

In addition, the locals had been prompted to return to less sustainable fishing practises to feed the growing number of tourists' appetites for live seafood. This causes over-exploitation of some commercial reef fish such as groupers and invertebrates such as lobsters and abalone. Now, as international borders remain closed, the smaller number of domestic tourists has relieved the stress on the environment.

SUSTAINABLE MANAGEMENT

However, better tourist management is needed, and is indeed in the offing, with the announcement of Mantanani becoming a state park by 2023.

Adzmin said Reef Check and the community are working with Sabah Parks towards a long-term sustainable management of the area. The goal is for Mantanani to be jointly managed by the community and the government so that the locals are empowered, tourism can be run responsibly and the environment is cared for. Where the bigger picture of ecotourism is concerned, Sabah is already a frontrunner in Malaysia, stated tourism academic-practitioner Prof Dr Amran Hamzah from Universiti Teknologi Malaysia.

"I would say that Sabah is deserving of its status as premier ecotourism destination in the country, not only in terms of price, but service quality, interpretation, and story-telling." However, he is disappointed that the state's industry are going for what he calls "a high volume/low yield business model".

ALREADY A LEADER

As the lead consultant of Malaysia's National Ecotourism Plan 2016-2025, Amran has had numerous engagements with the Sabah tourism agencies and industry players, "which were always enlightening". He said Sabah was in a prime position to capitalise on its premier label. Besides enhancing interpretation, story-telling and service quality, the state could also build on innovative product developments, embrace IT and provide certifications.

"Discerning tourists would not mind paying a premium for a unique and memorable tourist experience," he said. "But price undercutting, 'zero cost tours', illegal guides etc. have impeded Sabah's tourism industry from moving up the value chain." On the whole, mass tourism does not work in protected areas, agreed Surin Suksuwan, a member of the IUCN World Commission on Protected Areas.

"There is conflict between having a lot of people present and maintaining the ecology of the area. But mass tourism might work if it were planned properly to be confined to a very tiny part of a park. You could for example, allocate a very specific spot like a lookout where you could draw people and keep them there to take their selfies. Only a small percentage would actually venture to explore an area in depth. But it might not work in all contexts."

ECONOMIC INCENTIVE

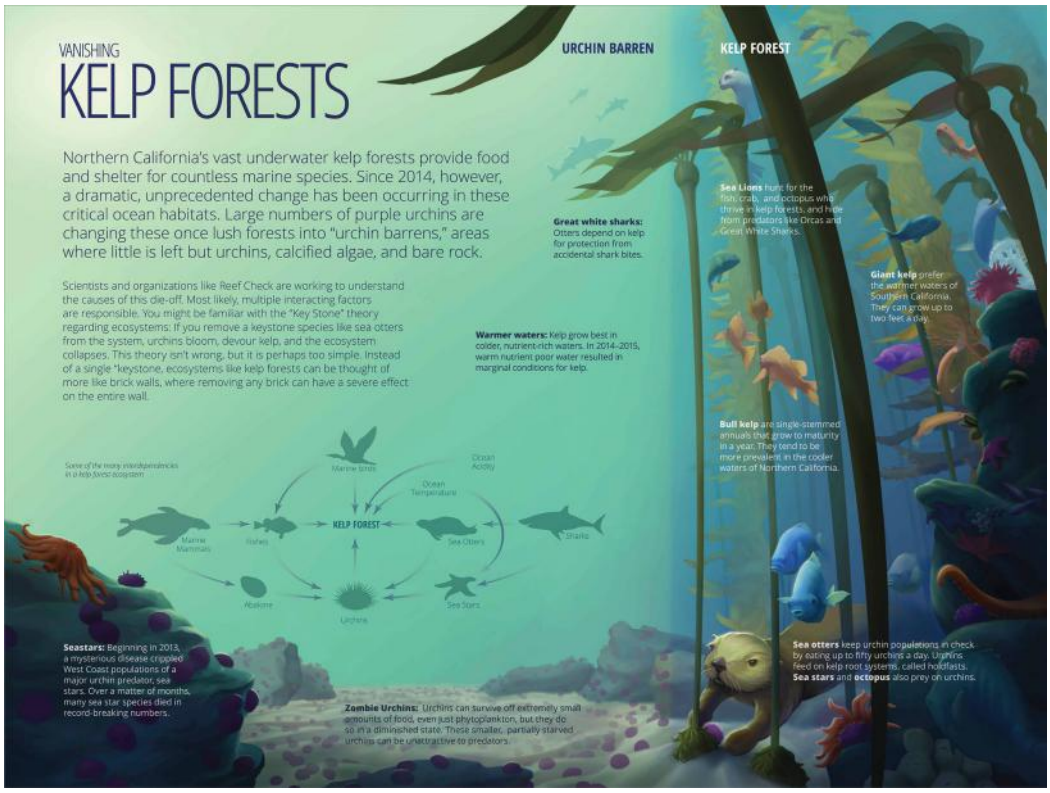
However, it is undeniable that "without tourism, many state governments would have been less interested in gazetting a protected area," he said. "Chances are, the size of the areas that end up being protected might also have been smaller. Or another site might have been gazetted instead. The reason is the loss of income, for example from timber revenue. If they are not allowed to touch timber, they need alternatives. Tourism is it."

NEW "VANISHING KELP FORESTS" INFOGRAPHIC AVAILABLE TO DOWNLOAD

A new infographic shares the story of California's vanishing kelp forests, depicting its shift from lush forests into urchin barrens.

Northern California's vast underwater kelp forests provide food and shelter for countless marine species. Since 2014, however, a dramatic, unprecedented change has been occurring in these critical ocean habitats. Large numbers of purple urchins are changing these once lush forests into "urchin barrens," areas where little is left but urchins, calcified algae, and bare rock.

The full-sized file can be viewed and saved here: **https://bit.ly/32rolFW**



FEATURE CREATURE

GREY REEF SHARK (*CARCHARHINUS AMBLYRHYNCHOS*)

FEATURE **IUCN RED LIST 2009** PHOTOGRAPHY **SIMONE CAPRODOSSI**

RED LIST CATEGORY & CRITERIA: NEAR THREATENED
Scientific Name: *Carcharhinus amblyrhynchos*
Synonym(s): *Carcharhinus wheeleri* Garrick, 1982
Carcharias nesiotes Snyder, 1904
Carcharias amblyrhynchos Bleeker, 1856
Galeolamna coongoola Whitley, 1964
Galeolamna fowleri Whitley, 1944
Galeolamna tufiensis Whitley, 1949
Authority: (Bleeker, 1856)
Common Names: Grey Reef Shark, Gray Reef Shark

JUSTIFICATION

This assessment is based on the information published in the 2005 shark status survey (Fowler et al. 2005).

The Grey Reef Shark (*Carcharhinus amblyrhynchos*) is a widespread, social species that formerly was common in clear, tropical, coastal waters and oceanic atolls. Its restricted habitat, site fidelity, inshore distribution, small litter size, and relatively late age at maturity, along with increasing fishing pressure suggests that this species may be under threat. Although caught in tropical multi-species fisheries, it has considerably greater value in dive tourism if protected. With time and additional data, this Near Threatened assessment may need to be revised.

GEOGRAPHIC RANGE

NATIVE: Extant (resident)
Australia; British Indian Ocean Territory (Chagos Archipelago); French Polynesia (Tuamotu); Indonesia; Madagascar; Réunion; Seychelles; United States (Hawaiian Is.)

The Grey Reef Shark is a widespread species occurring in the central Pacific and westwards to the eastern Indian Ocean. Garrick (1982) notes his most eastern records of this species from Tuamoto Archipelago in the south and the Hawaiian Islands in the north, west through the Pacific, northern coast of Australia, Indonesia, Sumatra and west to Madagascar in the Indian Ocean, including the Seychelles and Reunion (see Compagno 1984 and Last and Stevens 1994 for maps).

POPULATION

This shark has been recorded as locally highly abundant at some sites. Some local populations have been severely depleted.

HABITAT AND ECOLOGY

The species is found in clear tropical waters often from 10 m to more than 50 m around coral reefs, particularly near drop-offs and passes of fringing reefs. It is more common at ancient atolls, and less common at high profile islands with extensive human habitation, or in turbid continental waters (Randall 1986, Wetherbee et al. 1997). At unexploited sites Grey Reef Sharks are one of the most common tropical reef sharks that may be found in groups or individually. Potentially dangerous when harassed, they have been shown to display stereotypical threats (Johnson and Nelson 1973, Nelson 1981, Randall 1986). Divers are advised to keep their distance and not take strobe photographs when sharks display erratic swimming.

Males mature at 120-140 cm total length (TL) and attain a size of 185 cm; females mature at about 125 cm TL and attain 190 cm (Wetherbee et al. 1997) at about seven years. Litters are small, up to six embryos (Compagno 1984b, Last and Stevens 1994, Wetherbee et al. 1997). Seasonality is uncertain because of limited data. Parturition may be in August with a nine month gestation possible in the southern hemisphere (Stevens and McLoughlin 1991). Mating and fertilisation take place in March-May (or July). Pupping appears to occur from March to July off Hawaii, suggesting a 12 month gestation, but females reproduce every other year (Wetherbee et al. 1997). Fish form the bulk of the prey while squids, octopuses and crustaceans are less important food items (Salini et al. 1992, Wetherbee et al. 1997).

THREATS

This shark shows high site fidelity and some local populations have been severely depleted by modest fishing pressure, as has been shown off Hawaii (Wetherbee et al. 1997). Very marked declines of sharks, including Grey Reef Sharks, have been reported in the Chagos Archipelago (Indian Ocean) between the 1970s and 1996. Shark numbers here were reduced to only 14% of the numbers found in the 1970s (Anderson et al. 1998). The quality of its coral reef habitat is threatened in many parts of the world.

CONSERVATION ACTIONS

Smith et al. (1998) found this species to have moderate rebound potential, so it should respond positively to effective management measures. Because Grey Reef Sharks are found in clear tropical waters over coral reefs, they are ideal for non-consumptive (but much more lucrative) use in the form of tourism diving, as has been shown by Anderson and Ahmed (1993). For this reason, shark populations at some of the most important reef diving sites in the Maldives are now protected.

CITATION

Smale, M.J. 2009. *Carcharhinus amblyrhynchos*. The IUCN Red List of Threatened Species 2009. **www.iucnredlist.org**

EDA
جمعية الإمارات للغوص
Emirates Diving Association

COVID-19 MEASURES

THE CUA GUIDE FOR EDA MEMBERS

Inspiring People to Care About our Oceans Since 1995

INSPIRING CHANGE TO MAKE A DIFFERENCE TOGETHER

CLEANUP ARABIA

The United Arab Emirates' Annual Clean-up Campaign

Al Hudaiba Awards Buildings
Block B, Jumeirah 1, #214

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CHIPS

CLEANUP ARABIA
INSPIRING CHANGE TO MAKE A DIFFERENCE TOGETHER

CLEANUP ARABIA

Emirates Diving Association (EDA) has been running Cleanup Arabia since its inception in 1995, a voluntary campaign that annually cleans-up the UAE's dive sites and beaches with up to 1,000 volunteers working together, side by side. Cleanup Arabia is part of the Clean Up The World programme that is promoted and managed by the United Nations Environment Programme (UNEP), and the International Coastal Cleanup by the Ocean Conservancy is our data submission platform.

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

www.cleanuptheworld.org and **www.oceanconservancy.org**

THE HASHTAGS

#CleanupArabia #NoExcuseForSingleUse #WarOnPlastic #CleanOn

FACTS

- Marine litter is a problem for everyone! It affects us all, not just the coastal communities. We need to all take part and fix the problem together.
- Marine litter poses threats not only to the marine environment, but to human health, to the appearance of the coast and to tourism.
- Plastic typically constitutes around 75% of all marine litter, and it is regarded as one of the most problematic materials because of its abundance, longevity, and the fact that larger plastics break down into ever smaller parts termed 'microplastics'.
- Our ultimate goal as a people, is to prevent more litter from reaching the marine environment in the first place. We need to reduce, reuse and recycle, and ban "Biodegradable" products.
- Biodegradable plastic, as defined in most of the world, requires specific conditions such as heat and soil-dwelling microbes and bacteria to fully biodegrade. Such conditions do not exist in many ocean environments, and therefore plastic that might otherwise be biodegradable in industrial composters, does not biodegrade once it enters the marine environment.
- **Since 1995, EDA has reported-to-date, 54,044.5 kg of marine litter collected by EDA Members through Cleanup Arabia to the Ocean Conservancy.**

THE CAMPAIGN'S OBJECTIVES

- Engage the community and involve people from all walks of life to make a difference.
- Rid the marine environment of pollution.
- Direct people toward positive attitudes in maintaining a clean and sound environment by practice and participation.
- To record the quantities and types of debris collected throughout the year and make comparisons with the previous data collections.
- Data collected is reported to the Ocean Conservancy's International Coastal Cleanup (ICC) and used in educating the public, businesses, industries and government officials about the marine debris problem we face in the UAE and neighbouring GCC.

ABOUT EDA

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

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

LEGISLATION

Emirates Diving Association (EDA) was established by Federal Decree No. 23 Under Article No. 21 on 23/02/1995 and chose Dubai as its base.

The Decree stipulates the following responsibilities for EDA:

- Legislate all diving activities in the UAE.
- Ensure environmentally respectful diving practices in all EDA members.
- Promote and support the diving industry within the UAE by coordinating the efforts of the diving community.
- Promote diving safety in the commercial and recreational diving fields through standardisation of practices.
- Promote and preserve historical aspects of diving within the gulf region and enhance environmental education to diving and non-diving communities through EDA projects and events.

EDA'S PROJECTS AND EVENTS:

- EDA's quarterly magazine 'Divers for the Environment' (Mar, Jun, Sept, Dec).
- The Dive MENA Expo – co-located at the Dubai International Boat Show (March).
- Digital Online – EDA's Yearly Underwater Photography and Film Competition (May).
- EDA's quarterly Movie Screenings in partnership with VOX Cinemas (Feb, May, Aug, Nov). Now available Online for our members living outside of the UAE.
- Cleanup Arabia (all year round participation).
- School/Corporate Cleanup Arabia Events (On request).

COVID-19 MEASURES:
Due to the ongoing pandemic, the format for this year's CUA has changed. We are not able to host the usual events with our members and stakeholders in November due to the restrictions on social distancing. However, this does not mean Cleanup Arabia cannot go ahead. We are going to make Cleanup Arabia mean more than ever before!

We must be positive and adapt to this new norm for the foreseeable future.

NOTES

CLEANUP ARABIA T-SHIRTS
We created a sustainable T-shirt brand design in 2018 and only new EDA members since then will receive their T-shirt for all future Cleanup Arabia participation and volunteerism. Participants who were part of CUA 2018, are to continue using their T-shirts from that year.

All new members can email Ioline with their size and we'll get those sorted for you.

REUSABLE DRINKING BOTTLES
Don't forget to bring your **REUSABLE** water bottles as part of our sustainable responsibilities. We don't want to be adding more unnecessary plastic to our calculations. Bring a water cooler to refill from if you are going to be out for a few hours, you don't want to run out of water. (*Renewing EDA members will receive their EDA Gift Bottle.)

GLOVES FOR BEACH & MESH BAGS FOR DIVES
EDA will supply you with gloves for your beach clean-ups and mesh bags for your dive clean-ups. All you need to do is email us requesting them and we will have them ready for your collection. Our gloves are washable for you to keep reusing them for each of your clean-ups. Please do not throw them away, these items are not single-use.

TAKE PHOTOS
Please take photos of your collections no matter how big or small they are. It helps us record all the information. They will also be used in the magazine (photos with you and your group are a bonus if you're happy to be published).

WEAR YOUR MASK
Please be safe and adhere to the rules and regulations whenever you are outside in public spaces and practice social distancing.

THE CAMPAIGN POST COVID-19

Cleanup Arabia should not just be about our campaign in November each year over a few weekends. Cleanup Arabia should be every day we are able to get out into the outdoors and give our environment some TLC. With so many of us independently taking part, solo or in small groups, we are able to cover more ground and different areas than we would at one big event. Divers are especially conscious to pick up marine litter whenever they see it.

WHAT YOU WILL NEED FOR BEACH CLEAN-UPS:

- Gloves (EDA will supply your gloves – these are for you to keep and washable for reuse).
- Bring a bucket to collect rubbish (a reusable and washable item for all your clean-ups).
- Your reusable water bottle and a water cooler to refill from to keep you properly hydrated, especially in warm temperatures.
- First-aid kit for minor cuts and scrapes.
- Sunscreen and your mask.
- The Ocean Conservancy Data Form to record your results (can be done at the end of collecting).
- Pens or pencils.
- Hand sanitiser or wipes for after the cleanup.
- Closed toed shoes to protect your feet.
- Optional: If you have a fish or luggage scale (a scale with a hook) at home, you can use it to weigh the trash you collect (subtract the bucket weight).
- Your phone/camera to take pictures to document your efforts.

PICK A LOCATION

Identify a safe location to clean where social distancing is easily achievable. Think ahead about where you will properly dispose of trash at the location you choose. Monitor your health and the health of your family members before considering a clean-up of any size.

PROPERLY DISPOSE OF WASTE

Properly dispose of items collected. Do not place trash in overflowing bins. This may cause items to fly away and end up back in the water.

OUR COMBINED RESULTS

We are a strong community, let's work at making this difference together! We will register all incoming results to the Ocean Conservancy. We'll announce all your independent clean-ups on all our social media platforms, and we will total all our combined results and publish them each year in the December magazine issue of 'Divers for the Environment'.

CLEANUP ARABIA CERTIFICATES

All those that take part in Cleanup Arabia will receive their Cleanup Arabia certificate of participation.

THE OCEAN CONSERVANCY DATA FORM YOU NEED TO FILL OUT

*You will find the Ocean Conservancy Data Form (front and back) with instructions for you to print and fill out on the following pages. Please scan and email it back to us along with your photos each time you are done with your clean-ups. Do not forget to note down your clean-up location as this is important for us to compare statistics and don't forget to take photos.

EMIRATES DIVING ASSOCIATION
Al Hudaiba Awards Buildings, Block B, 2nd Floor, Office 214, Jumeirah 1
Postal Address: P.O. Box 33220, Dubai, UAE

EDA
جمعية الإمارات للغوص
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WWW.EMIRATESDIVING.COM

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THE DUBAI VOLUNTARY DIVING TEAM

DVDT'S 1st CLEAN-UP: 6 NOV 2020
The Dubai Voluntary Diving Team did the first underwater dive clean-up for Cleanup Arabia 2020 at 4 dive sites on Friday the 6th of November with an 8-man team. They tackled Block Reef 1, 2 and 3, and the Atlantis Barge in Dubai. They also did a surface clean and collected helium party balloons, water bottles, wood and foam box pieces. They set out on their mission at 6:30 am and finished at 3 pm bringing back with them 15 bags full of fishing waste and debris, amounting to a total of 85.75 kg of rubbish!

DVDT'S 2nd CLEAN-UP: 13 NOV 2020
Their second dive clean-up was done on Friday the 13th of November and the 6-man team pulled up 8 bags of ghost nets and fishing cage ropes amounting to a total of 37.20 kg from 4 wrecks: the Wooden Dhow 1 and 2 in Sharjah, and the Atlantis Barge and Cement Barge in Dubai.

DVDT'S 3rd CLEAN-UP: 27 NOV 2020
The third dive clean-up was done on Friday the 27th of November, covering a distance of 50 metres with a 3-man team at the Ajman Wreck. They filled up 6 bags with various fishing nets and 1 plastic bottle weighing a total of 33.7 kg with sadly, a lot of bycatch. The Essa Wreck in Sharjah was positively clean.

Well done DVDT Team for all the hard work and commitment!

DUBAI VOLUNTARY DIVING TEAM
UNDERWATER CUA RESULTS: 6, 13, 27 NOVEMBER 2020

UNDERWATER CLEAN-UPS	
MOST LIKELY TO FIND ITEMS	TOTAL
Food Wrappers	4
Foam Take Out Containers	1
Plastic Beverage bottles	2
Plastic Grocery Bags	2
Other Plastic Bags	4
Paper Cups & Plates	1
FISHING GEAR	
Buoys/Pots/Traps	3
Net & Pieces	5
Line	2
Rope	3
OTHER TRASH	
Balloons	4
Construction Materials	1
PACKAGING MATERIALS	
Other Plastic/Foam Packaging	1
DEAD/INJURED ANIMAL	
Dead Fish (Ghost Nets)	Multiple
TOTAL ITEMS	33
TOTAL NO. OF BAGS	29
TOTAL WEIGHT (KGS)	155.9
TOTAL HOURS VOLUNTEERED	28

EDA MEMBERS PULL THROUGH FOR AN **UMM AL QUWAIN MANGROVE CLEAN-UP**

FEATURE AND PHOTOGRAPHY **ALLY LANDES**

With two planned Cleanup Arabia dive clean-ups forcibly put on hold due to last minute bad weather forecasts in Fujairah across 2 consecutive weekends of November, a new last minute plan was devised.

Instead, this small group of 5 EDA members volunteered to go out and investigate the Umm Al Quwain Mangroves to conduct a shore clean-up on Friday the 27th of November. With mangroves being such a delicate ecosystem, the amount of rubbish left behind by visitors is a cause for concern, and we were shocked by the state we found it in. With a short clean-up done over 1.5 hours, and only 100 metres covered, we had run out of bags and had to terminate the sweep. The rubbish collected was not debris washing up, but rubbish very evidently left behind in chosen picnic spots.

Items of concern were 4 DD batteries and 7 AA batteries that had been thrown into two

different fire pits. We collected diapers, sanitary items, 15 face masks entangled in the flora, and one had already started breaking up into fragments. 17 odd shoes and soles, and 5 individual socks. If anyone plans on heading out to do the same, please be aware of the endless broken glass in this area.

With other campers in the vicinity, one group was inspired to start their own clean-up and clear what they could around their camp ground which is very much appreciated.

To be continued...

EDA MEMBERS – 27 NOVEMBER 2020
UMM AL QUWAIN MANGROVE CUA RESULTS

MANGROVE CLEAN-UP	
MOST LIKELY TO FIND ITEMS	TOTAL
Cigarette Butts	84
Food Wrappers	37
Plastic Take Out Containers	5
Plastic Bottle Caps	332
Metal Bottle Caps	35
Plastic Lids	17
Straws/Stirrers	13
Plastic Forks/Knives/Spoons	53
Plastic Beverage Bottles	550
Glass Beverage Bottles	235
Beverage Cans	177
Plastic Grocery Bags	28
Plastic Cups & Plates	153
Foam Cups & Plates	135
FISHING GEAR	
Buoys/Pots/Traps	1
Line	1
OTHER TRASH	
Cigarette Lighters	7
Shoes & Soles	17
Fake Grass Carpet (broken up)	1
Full Bags of Rubbish	19
DD Batteries	4
AA Batteries	7
Face Masks	15
PERSONAL HYGIENE	
Diapers	4
Sanitary Towels	6
Wet Wipes	36
PACKAGING MATERIALS	
Other Plastic/Foam Packaging	19
Tobacco Packaging/Wrap	18
TINY TRASH (< 2.5 cm)	
Glass pieces	Multiple
Plastic pieces	Multiple
TOTAL ITEMS	2,309+
TOTAL NO. OF BAGS	21
TOTAL WEIGHT (KGS)	137

A glimpse of a small section before the clean-up and the state visitors leave the area in.

The results after a clean-up of the same area.

In partnership with

UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT

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SHARKS VERSUS HUMANS

FEATURE AND PHOTOGRAPHY **STEFANIE BRENDL**

Shark populations will collapse under continued commercial exploitation. Many species are already highly endangered, but the global fishing industry is fighting us every step of the way to increase protections. Shark squalene is one more element in this equation. In the case of vaccines, the use of sharks is blatantly avoidable. There are viable alternatives that are just as effective, that are available right now and that will be able to be produced with much better quality control.

"Sharks curing COVID? That will be the end of sharks!"

That was the thought that shot through my mind when we stumbled on the information that shark squalene was being used in the development of COVID-19 vaccines. And it made the hair at the back of my neck stand up as I sensed the presence of danger. Grant it, that might sound a bit dramatic, but hear me out. The feeling of danger was based on years of working in shark conservation and having observed how humans deal with the exploitation of animals, particularly when we see a good reason to do so.

Fighting for sharks means countering arguments that justify the overfishing of sharks. And those come from many directions, anchored mostly by a multitude of commercial interests; fuelling the economy, maintaining jobs, traditions or societal needs, and most of all, keeping highly profitable trades alive.

If we have a hard time protecting sharks against the greed of large scale fishing corporations and the rampant desire for status symbols such as shark fin soup, just imagine how difficult it will be to argue on sharks' behalf once they are considered "the cure" for current and future diseases.

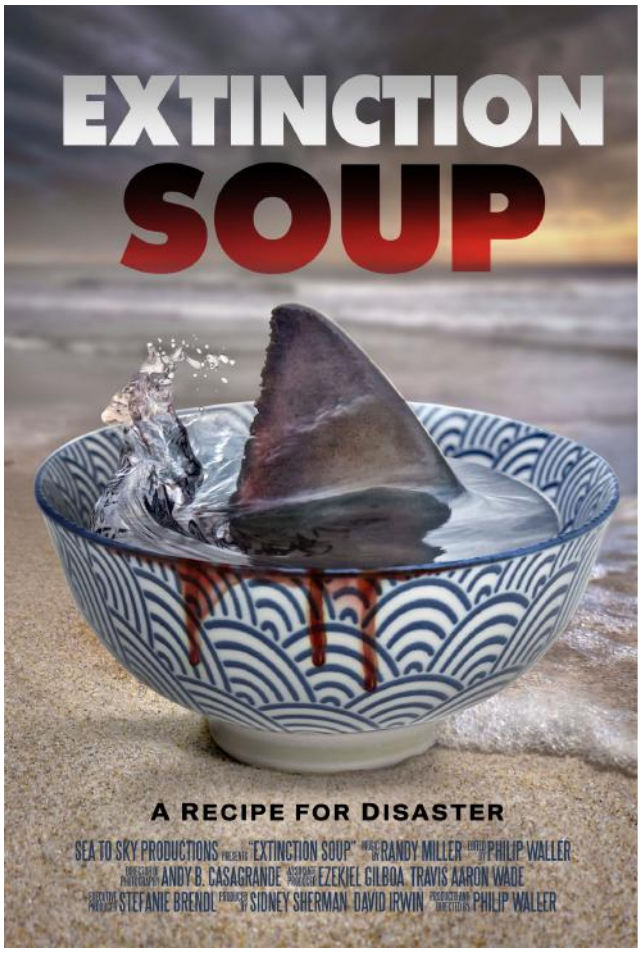
If people see sharks as a vital component of fighting the current pandemic, all bets are off for sharks. It will legitimise the taking of any species at any level for decades to come.

I could take you on a deep dive into the vaccine issue here, but it may be more important to look at the big picture. Here is a quick explanation: Squalene is a compound that is used in cosmetics and vaccines, for different reasons. It can be made from shark liver oil or other sources, such as olives, wheat, sugarcane, yeast, and many more plants. In vaccines, the ANTIGEN is the stuff that cures you or gives you immunity. Squalene is a component of an ADJUVANT, which is essentially an immune booster that helps make the antigen more effective. Adjuvants have been used in flu vaccines and testing of treatments of SARS and MERS viruses. Shark based adjuvants are also being used in some of the COVID-19 vaccines in development.

Considering that vaccines for pandemic viruses will have to meet a global demand, we must assume that current and future vaccines will be made at the scale of billions of doses. While the amount of squalene used per dose is very small, the continued use over decades to come will push this into the millions of sharks needed to fulfil the demand. The reality is that the COVID virus will likely mutate and other pandemics are sure to come. Our solutions must be based on sustainable, reliable, renewable sources, such as farmed plants. Wild animal populations are a non-renewable resource. They are limited in numbers. Relying on a naturally limited product to fulfil a global demand that is crucial for human health is short-sighted and, let's just put it bluntly, insane!

Shark populations will collapse under continued commercial exploitation. Many species are already highly endangered, but the global fishing industry is fighting us every step of the way to increase protections. Shark squalene is one more element in this equation. In the case of vaccines, the use of sharks is blatantly avoidable. There are viable alternatives that are just as effective, that are available right now and that will be able to be produced with much better quality control.

So why are they not being used? Because getting shark squalene has been cheap and easy and using it as an ingredient hasn't been questioned in a serious way. Inquiries about why sharks are the preferred source usually end up being answered with outdated arguments; that plant squalene is harder to extract and more expensive; that the sharks they are using are not endangered; that shark squalene is just a by-product that isn't hurting anyone. First of all, a billion-dollar industry ought to be able to figure out how to adjust the process even if a little R&D is needed and some extra cost is involved. Secondly, it took us no time to find out that the production of alternative squalene is up to speed, scalable, and available right now.



If we know this, then why hasn't the industry reacted? Stating that the sharks that are used in their squalene are sustainably caught and that no endangered species are targeted is simply feeding us a line that the commercial fishing industry has been using for decades. The truth is that sharks are caught all over the world and shipped around to be processed in multiple countries. There is very little oversight of which species are processed into oil and squalene. And little is mentioned about the fact that some of the rarest sharks are the most desirable for shark oil production. It is the deepwater sharks with the largest livers to body ratio that are going to be of interest. And at this point, we haven't even had a chance to study those species.

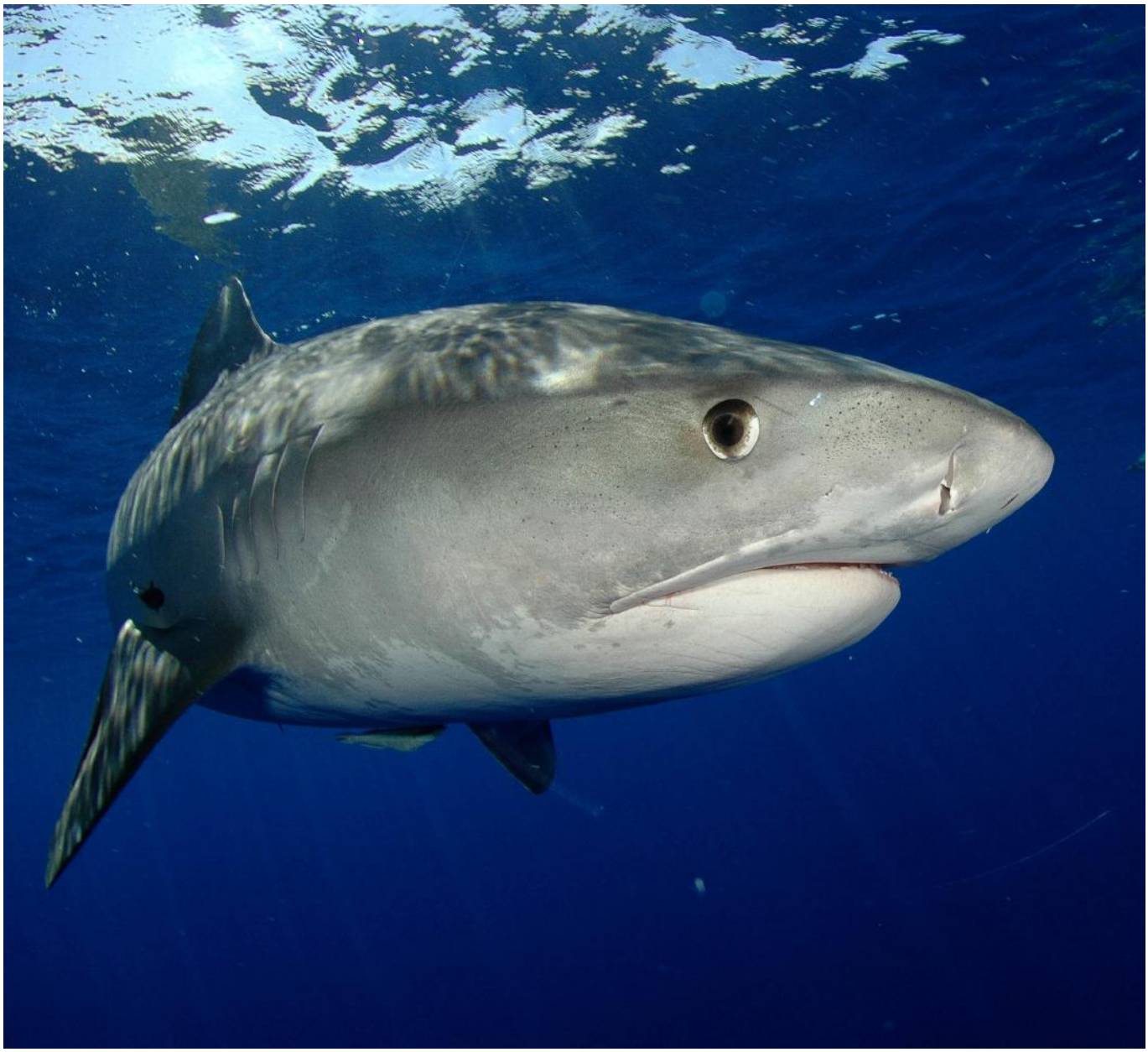
Shark Allies has dissected this issue in great detail in a series of articles on our website if the previous paragraph has filled your mind with questions. We are working hard to raise awareness of this issue. You can help by signing and sharing this petition (see page 45). If you would like to be kept informed about our work on this campaign and others, you can sign up to our newsletter.

But now I would like to point out the bigger issue at hand: As long as we see sharks as nothing more than a collection of parts that we can turn into products, we are proving that we are as ignorant as ever. We continue to make the same mistakes with wildlife. Exploit and profit the animal for as long as we can, then leave it to the advocates to go through great length to save the last of the species. And often at great cost and with little success.

To truly understand why we should care about sharks, we don't even need to look beneath the ocean. Natural systems essentially follow the same rules, on land and in the water. Predators are a key component of biodiversity. There is no better way to demonstrate this than by looking at an easy to understand example on land: The reintroduction of wolves to Yellowstone Park in the United States. I highly recommend watching this 7-minute video on YouTube. "How Wolves Change Rivers". In a nutshell, the park was suffering from an overpopulation of deer that were destroying the trees and overgrazing the land. Culling efforts did not work. The decision was made to reintroduce wolves, one of the top predators in this ecosystem. The result was beyond anything they could have imagined. It resulted not only in a reduction of grazing deer, but it also changed how and where they grazed, which in turn saved groves of trees, which prevented erosion and provided coverage for many small prey species that returned to the park, and that in turn brought back birds of prey, bears and smaller predators. The new growth changed the riverbanks, which encouraged beavers to once again thrive. Their dams created new niches for fish species, amphibians and many water birds, and it created new wetlands that are drought and fire-resistant. Ultimately, even the flow of the river changed. The biodiversity of the park exploded and the balance of the system returned.

Replace the wolves with sharks in that story and think of how they affect their environment, how they change the composition of species (herbivores vs carnivores), how their presence affects the behaviour of grazing fish that chomp down on reefs and seagrass beds, and how that, in turn, affects the wide range of animals that live and thrive in these living systems. Sharks also cover the important task of cleaning up the dead, culling the weak and sick, and keeping diseases from spreading. The strongest survive and that is what keeps our fish populations healthy. The verdict is very clear – sharks are that critical component in the ocean. The big difference between land and ocean is that we cannot easily replace predatory fish once we lose them. In the ocean, our only path of action is to protect sharks and help their numbers recover naturally. And since most shark species reproduce extremely slowly, achieving recovery is a highly complex and multi-decade long endeavour. Meanwhile, no fish can bounce back if the place they live in has been completely destroyed or has lost most of its biodiversity. So bringing back reefs and fish populations go hand in hand with protecting sharks.

The good news is that we have seen that shark populations will recover if we give them



a chance. And the even better news is that all we have to do is stop overfishing sharks. In most cases, no further action is needed. Just leave them alone and nature will find a way to repair the damage.

Now back to the shark products.

If we can all agree that most shark products are unnecessary or without real benefit to humanity, except for the pursuit of income, jobs, and practices that are outdated, then we should also agree that it's time to do something about it. Yes, people need to eat and make a living. Yes, shark products have value. Yes, full utilisation of an animal is desirable, if it is being killed. But all of these points are evaluations that have had to change over the years. With human population numbers growing and large scale industries expanding, the rules also have to change. These arguments are no longer justifications to continue old practices, but rather an outline of the challenges we face. We must find solutions to true sustainability.

So while sharks used in vaccines seems to be one of the lesser problems we face, it also represents, once again, an issue that we can turn around now, rather than struggle with once it has grown into a critical problem. Do we really want to wait until another shark species is pushed to the brink and then go through the long process of getting them listed on an endangered species list? Commercial fishermen claim that shark fins are a by-product of shark fishing for meat. Squalene production is touted as a tiny by-product of fishing. Vaccine producers blame the cosmetics industry for using most of the squalene, and cosmetics companies claim that the couple of millions of sharks used in cosmetics is nothing compared to what the shark fin industry takes. Essentially everyone is pointing at someone else and the end result is that 70-100 million sharks or more are taken every year.

It comes down to this: If you are using or selling shark products, you are part of the problem. Just because someone else is a bigger user or producer doesn't take away your responsibility to fix your own industry. And that is what we are asking. Find ways to fix what is broken in your own business instead of claiming innocence because the other guys are worse.

Stop claiming that shark fishing on a global, commercial level can be sustainable, just because there are isolated cases where a certain species, at a certain time of year, might be slowly recovering or hanging on at reduced numbers. It's time to stop making excuses.

And here comes the real question we must ask ourselves: Knowing what we know about sharks, how can it be that we invest so little into their protection? Think about it. The loss of sharks is one of the major challenges we face in ocean conservation, yet, it is mostly handled by small-ish advocacy groups and a few medium-sized non-profit organisations. There is very little help to be expected from governments, and within the philanthropy and

charity space, humanitarian causes dominate. Every time I step into an office to talk to officials and leaders about shark conservation, I am confronted by the attitude that sharks are a fringe effort. Something that us crazy animal advocates and divers care about, but that is low on the list of priorities. The connection hasn't been made between human survival and the health of the ocean. Considering how much our life depends on the ocean, and how much a healthy ocean can only exist with functioning, balanced systems, an urgent change in our thinking is needed. We can no longer ignore the incredibly important role sharks are playing in our future.

And that is why Shark Allies exists. While there are much larger ocean focused organisations with more power and influence, there are only a handful of groups around the world that are dedicated to sharks. And sharks need a committed team of champions that will fight for them. We must build up the movement to protect sharks from this grassroots level because we have no other choice. I could name each advocate, group, and funder that works on behalf of sharks by name, which is a frightening indication of how small this community really is. But I am equally inspired by the passion and dedication of everyone on that list.

Our hope and vision are that we can bring more awareness of the issues to the public and increase the community of allies. If we want to give sharks a chance we must make shark-saving work a priority that will be supported by many, so that we can match the powerful fishing lobby, change commercial industries and motivate reluctant governments.

SHARK ALLIES

If you are interested to find out more about our campaigns, please visit us at: www.sharkallies.com and **@SharkAllies** on social platforms

Also check out, share, and sign our petition on Change.org:
www.change.org/sharks-in-covid19-vaccines

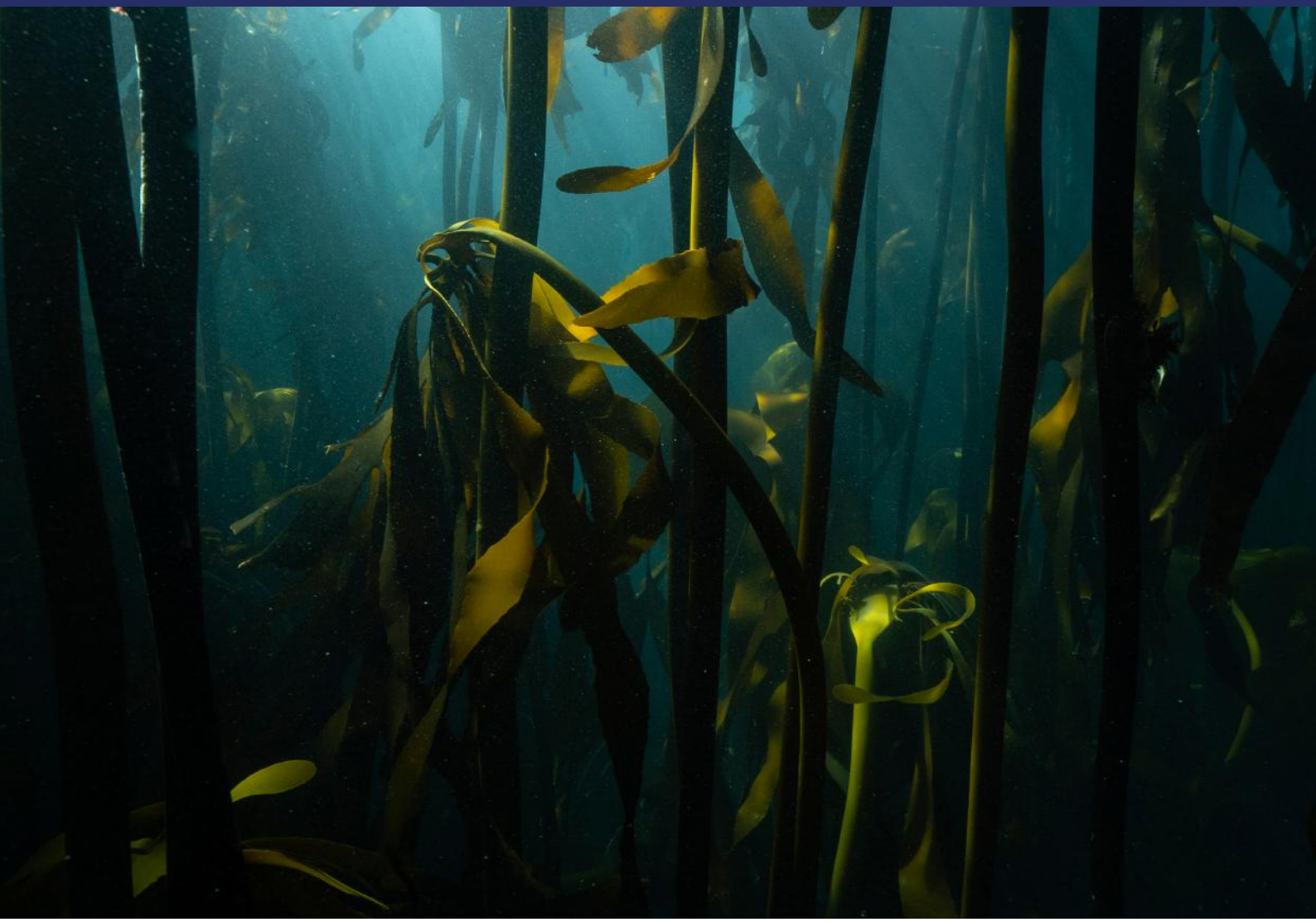
And if you like what we do, please consider donating to Shark Allies. We depend on the support of our Allies.

OPENING TO NATURE

FEATURE AND PHOTOGRAPHY **FAINE PEARL LOUBSER**

"Times in the wild are the most real things we ever do, apart from time spent with loved ones. We are fully present, not a single thought of past or future, suspended in blue liquid meniscus, on the edge of a planet flying through space. We pass hundreds of thousands of life forms, a carpet of vibrating life, we are a semi aquatic air breathing primate in marine bliss."

CRAIG FOSTER



Four years ago, as a young aspiring filmmaker and photographer, I found myself in a position, I never imagined being in. I was 19-years-old and completely lacking inspiration. Over the past two years prior to this, I had built up a sizeable following on Instagram through my adventure photography, and it was for this that I was picked up as a brand ambassador for GoPro. To an outsider, things couldn't be better, and technically speaking everything was going well. But I slowly found it harder and harder to find the same satisfaction that I used to get out of my adventures. I realised then, that the platform of Instagram, which had been so helpful in getting me to my goals as a creative, was now becoming a burden. Where my photography had once been a byproduct of the adventures I was having, it now seemed as if adventure was just a guise to hide what was actually commodification.

I had lost the intention to just explore and have fun, and instead there was only a superficial intention to capture what looked like adventure so that the world could double tap my image on Instagram so I could keep my sponsors happy. It got to the point where I hated posting on Instagram, but with duties to brands, I had to continue producing and sending out these "adventurous photos". The irony was, I was living a life that, on the surface, so many people wanted to live, and I was hating it, hating it for its superficiality. With every photo taken, and every caption posted alongside, I fell deeper and deeper into a state of self-loathing, feeling like I was betraying myself but compelled by the allure of status.

In amongst a kind of search for authenticity, I realised that despite all the superficiality involved in the chase of the next 'adventure photo', any time spent in the sea felt real. It was the one place where Instagram, or social media, or my phone or everyday stresses of normal life couldn't reach me. It was also, oddly enough, the place that I felt safest.

Having grown up in the Cape Peninsula of South Africa with parents who loved the sea, my exposure to it conditioned me into having the confidence to explore this underwater world. The kelp forest, which for many, was something that felt scary, slimy and unknown, was something that felt like a safe haven to me. I think this in part was due to an experience I shared with my brother while on a camping trip up the West Coast of South Africa. I was about seven-years-old and my brother, five. We were swimming in a shallow, seemingly protected inlet, when all of sudden, the two of us were rapidly sucked out towards open sea. In a desperate attempt to prevent this from happening, I managed to grab onto a kelp stipe, and my brother grabbed onto my foot. An aerial view would have shown two tiny children dangling off a brown piece of algae, which was the only thing stopping us from being swept out to sea. Taking a glass half full approach, rather than being traumatised by a near-drowning experience, I just developed a deep-rooted, psychological feeling of protection from being surrounded by kelp. And so, feeling that some kind of realness lurked in the depths of my ocean experiences, I decided to pursue it further.

I reached out to the one person who I felt knew more about the sea than anyone else, and that happened to be Craig Foster. Craig is one of South Africa's top documentary filmmakers, and fortunately for me, my dad and Craig have been friends since school, so I was incredibly lucky to have this access to him. For the past ten years, Craig has been diving in underwater forests along Cape Town's coastline every single day, most notably, without a wetsuit. Through this, he has made incredible discoveries, from over 40 new behaviours to 5 new species. Drawn by his passion and knowledge, I sent Craig an email, asking whether I could join him for a dive. He responded saying "of course" and he then went on tell me that he'd be diving without a wetsuit, but that I was more than

welcome to wear one. I took this as a loaded challenge, and thought to myself, "no it's fine, I'll go without a suit".

The day arrived, and as fate would have it, it was grey-skied and cold, and the water looked as uninviting as it could possibly look, hovering at around 12 degrees Celsius. And yet, seemingly oblivious to this fact, Craig stood on the shore, bare-chested, wearing his diving shorts, and eager to get in, while I was wrapped up in my puffy jacket. I think he could sense my discomfort of the cold (it wouldn't have been hard to realise it) and he told me to visualise lighting a fire in my chest. I tried, willing to use any and all means necessary to prepare myself. For a couple of minutes, it might have worked, but as soon as I entered the water, its iciness shocked my body and any fire in my chest was immediately quenched. "This is horrible," I thought to myself. But I didn't have a moment longer to think as Craig led the way, weaving through the kelp forest.

After a couple of metres, he came to a stop, dropped down and used his torch to look into a small crevice in the rocks. It was at this point that he motioned for me to come look. Curious, I dropped down to join him, and there lying in a crack not wider than my hand, were three striped pyjama sharks. We looked at them, and they, with glinting, galaxy-like eyes, peered back at us, seemingly unperturbed. I was completely amazed. Amazed not only by the beauty of these sharks, but amazed at the ease with which Craig was able to find them. He knew the forest in and out, the small signs and tracks left behind to the micro-habitats of all of these animals. As we continued moving through the forest, Craig would, with this continued ease, point out these incredible creatures. I was particularly fascinated by his apparent ease at finding the masters of disguise, the octopus.

From the surface, he was able to spot these magicians 8 metres below. I eventually asked him how on earth he was able to see these creatures, to which he responded, saying that the key wasn't necessarily in spotting the octopus, but rather the tracks that it had left behind. I wanted to ask him more, but we'd started moving again, and so I dipped below the surface, eager to spot an octopus myself. We came to a stop once again, this time alongside a reasonably shallow underwater cave. Craig turned to me and told me that I should follow him down, but ensure that I kept my movements to a minimum. He showed me how to use the kelp as a way to pull myself down efficiently, and then grasp the stipe for stability. With that practice in mind, I followed him down, latching onto a kelp stipe while Craig swept his torch beam across the cave. A grey flicker of movement dashed across, and to my surprise, there in front of me, was a young spotted gully shark.

I have been snorkelling for much of my life, but in this one dive, I'd probably seen more and learnt more than I'd ever seen or learnt in my entire life. It felt as if I had been given a glimpse of an entirely different world, a world filled with magic. Except it wasn't, it was reality, and the world that I was living in was superficial. As all of this ran through my mind, an hour in this icy water had come and gone, and I realised that I wasn't even cold. I found that I actually enjoyed the freedom of this suit-less dive. Besides the obvious removal of a physical

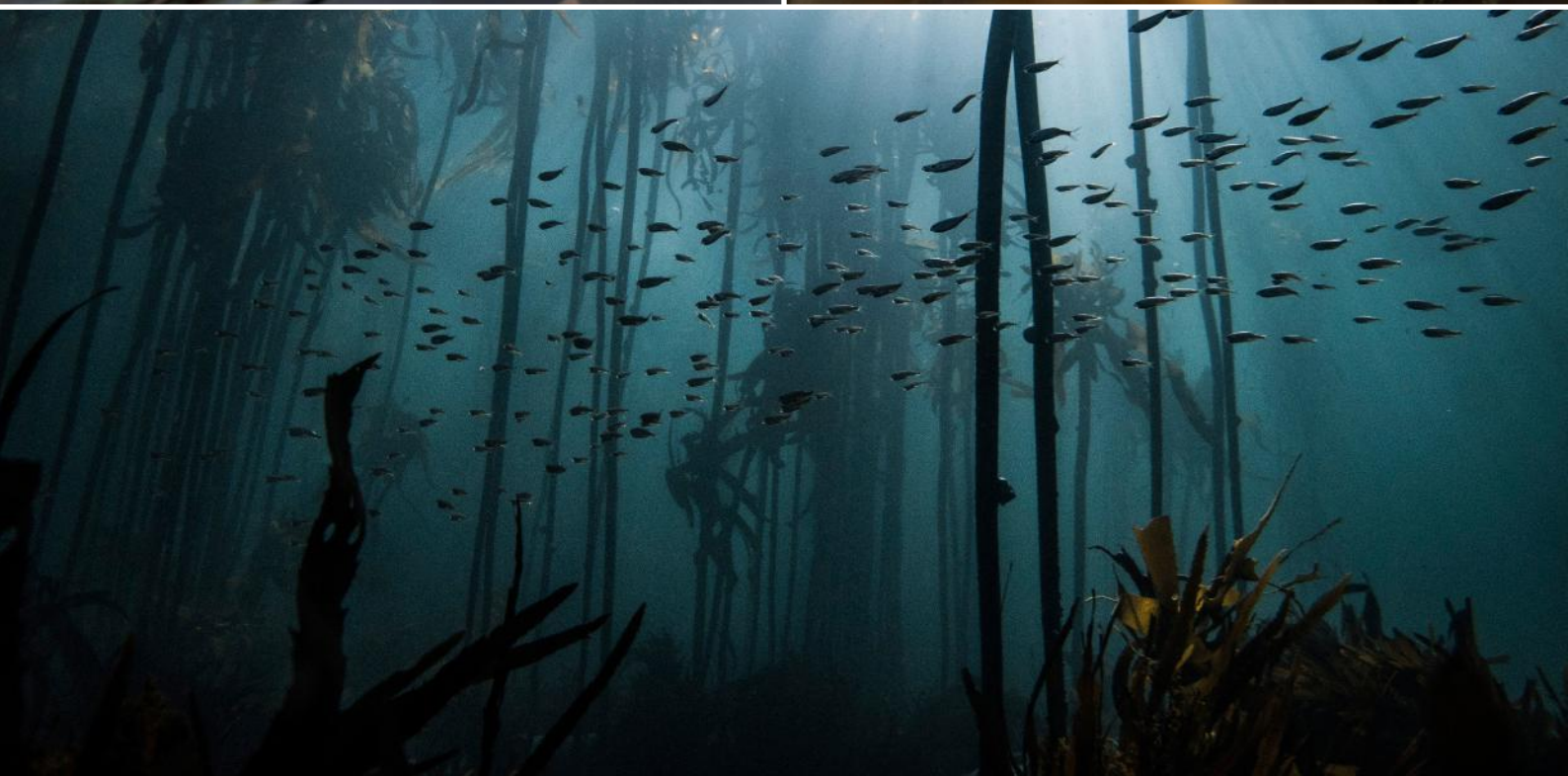
barrier, it almost felt like there had been an emotional barrier removed between myself and the forest.

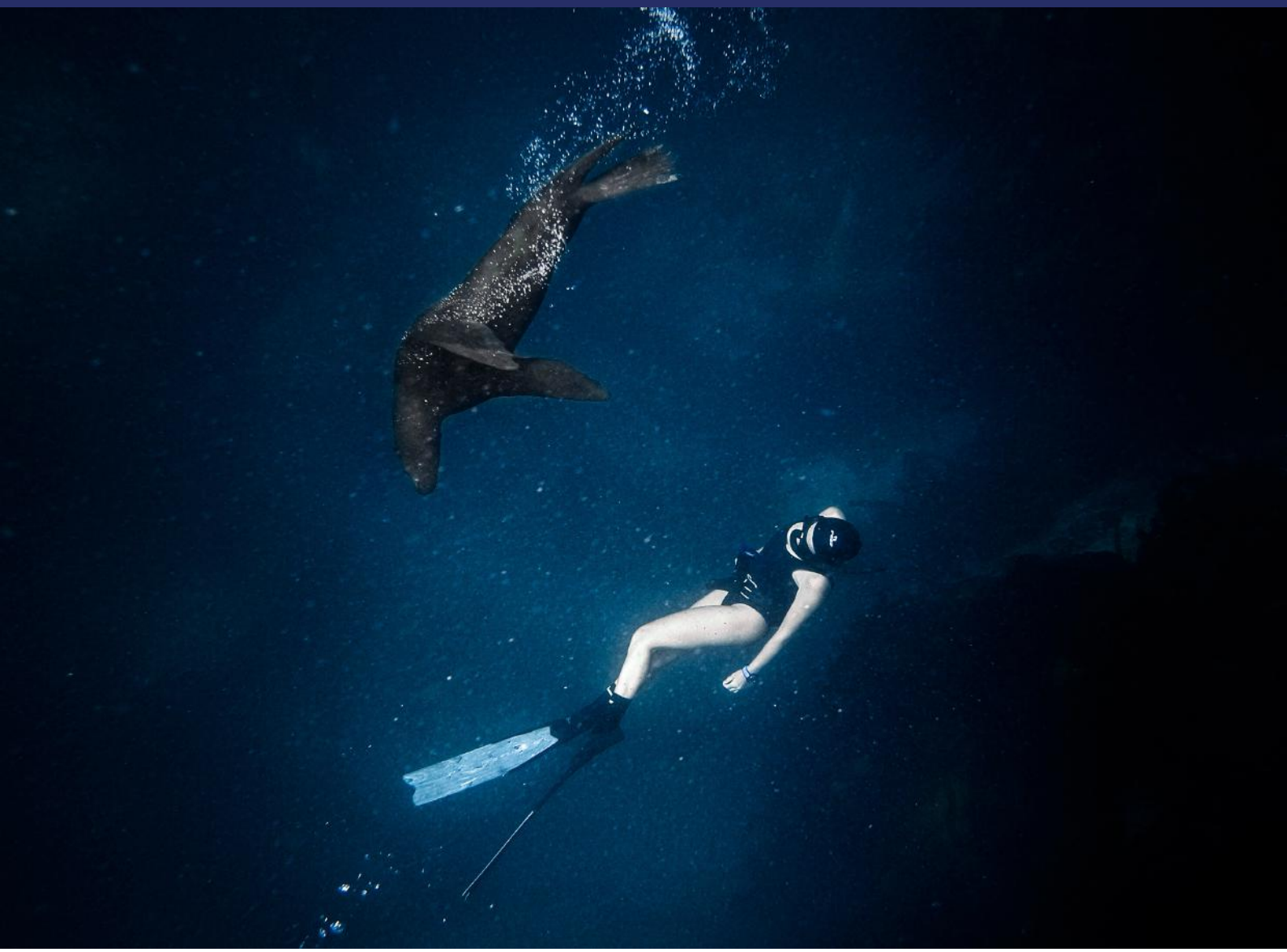
I drove home that day with a feeling of such ecstasy that I burst into tears. Now, that ecstasy was in part due to the cold. The body responds to the cold in much the same way that it does to pain, and that is by releasing loads of endorphins, but it was more than that. It was this deep interaction and connection with nature that had left me in awe. And when I later thanked Craig for the dive and explained to him how I felt, he left me a message saying, "Times in the wild are the most real things we ever do, apart from time spent with loved ones. We are fully present, not a single thought of past or future, suspended in blue liquid meniscus, on the edge of a planet flying through space. We pass hundreds of thousands of life forms, a carpet of vibrating life, we are a semi aquatic air breathing primate in marine bliss."

After the incredible high had subsided, I encountered a different emotion, one which I had never expected to feel, and that was a deep sadness. It saddened me knowing just how little I knew and understood about this underwater world despite having spent so much time in it, and it saddened me to know how I, along with most of humankind, saw itself as distinct and separate from nature. But, despite this sadness, I could feel a sense of excitement return, I could feel my passion and inspiration returning.

I have now been diving almost every single day for the past four years, and that initial awe still hasn't left me. Instead, I have found myself becoming even more entranced by this sea forest. From watching the lives of two striped catsharks, one which succumbed to predation, and the other which hatched, to diving with whales, witnessing the mating rituals of common cuttlefish, and seeing tuberculate cuttlefish hatch in front of my eyes, watching a young rocksucker land on my hand, and then onto Craig's head and staying with us for several hundred metres. Not every experience was easy though. There were some fairly scary experiences like swimming in rough seas with wind speeds of over 80 kmph in which masses of water were whipped up into the sky, driving me down the coast, to a near drowning experience of having to assist a friend in 500 metres out at sea. Yet, even in more difficult situations, each interaction was a process of slowly learning the language of the wild. It has been an incredible landscape for outward learning, but equally profound for my own inward learning.

Occasionally I have experienced fleeting yet paradoxically timeless moments when the boundary between myself and the world has suddenly dissolved, and the kelp forest and all its myriad creatures have become powerfully intertwined into my own self – where my exhale is matched by the exhale of a passing brydes whale, a fur seal and the push of the tide in one collective breath. Strangely, these moments have been dominated by experiences with cape fur seals. And as of yet, I'm still unsure why. From being included into a pack of seals who followed my every move, to dancing with a seal, being allowed to witness a seal hunt an octopus just a metre away from me, and finally, culminating in an experience I still have difficulty understanding, let alone explaining.





For maybe 10 seconds, although I find it hard to quantify the time, I entered into the mind of a seal. Somehow the playfulness and freedom of a passing seal I'd watched earlier, had filled my entire body. From the sounds to the movements… I felt I had no control, rather it was the mind of the seal guiding me through reality. I no longer had hands or feet, but flippers which propelled and swirled me through the water at a speed that didn't seem possible in my human mind. Then, just as the seal I'd watched earlier had done, I popped up for air making the same distinctive seal sound. Rolling onto my back I extended my flippers to the sky, absorbing the warmth of the sun. And then, as quickly as the seal's mind had made its presence known, it left… My hands and feet were mine. Curiously, immediately after, I remember trying to go back to the seal state, but I felt cumbersome and totally uncoordinated. I gave up, almost embarrassed that I'd even attempted to try. I had heard of people having strange therianthropic animal experiences, but it didn't seem like something that would happen to me. In fact, I'd personally always been sceptical of these human-animal experiences, and, I would say that there is definitely still a part of me that is sceptical even of myself. But, when I told Craig about this experience, in an attempt to understand it better and maybe bring myself some sanity, he said that actually, what I had experienced wasn't as strange as it sounds. He went on to explain that virtually all hunter-gatherer communities experience therianthropic forms and that it was a key aspect in altered state experiences and high-level tracking, in which the hunter enters the mind of the animal. Rock art across the world shows this in a very visual sense where the human form was often combined with the form of another animal. Even today, the animal-human form is something that has been embedded in our culture through stories like batman and spiderman. We have, through a society disconnected with nature, forgotten about these experiences, making them seem abnormal and otherworldly, and I think that this system of belief is so strong within me that I still struggle with the experience that I had, but one thing seems certain, the more you open up to nature, the more it opens up to you.

These experiences in nature have been hugely transformative for me in bringing back my inspiration and passion. And while, I initially shied away from social media, I have decided instead, to use it as a powerful storytelling tool for ocean conservation. I started working for Sea Change Project, a nonprofit founded by Ross Frylinck and Craig. Essentially, we are a community of scientists, storytellers, journalists and filmmakers who are dedicated to exploring the ocean, specifically this little stretch of coastline on the Cape Peninsula. We look to tell stories that we believe have the unique power to change opinions and behaviour, trying to raise the status of kelp forest, the great African sea forest. It is through these authentic, real experiences, being in touch with nature, that we believe we have the ability to create a shift in behaviour. After all you can only protect what you love, and you can only love what you understand and know.

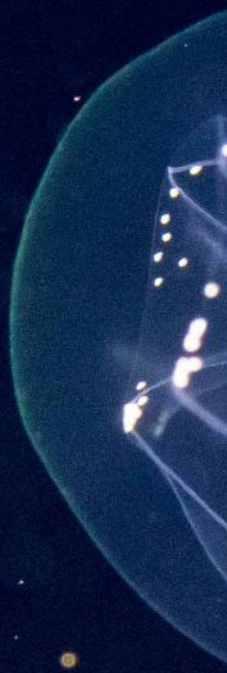
FOR MORE INFO, GO TO:
SEA CHANGE PROJECT
Instagram: www.instagram.com/seachangeproject/
Facebook: www.facebook.com/theseachangeproject/
Website: www.seachangeproject.com

FAINE PEARL
www.instagram.com/fainepearl/

LET IT SNOW, LET IT SNOW, LET IT SNOW

FEATURE **JAMES CAMPBELL** PHOTOGRAPHY **MARINE CANAC OWEN**

Marine snow is so important not only to marine ecosystems, but to terrestrial ecosystems and the climate of the earth itself.



During this time of year, the image of snowflakes falling and woolly hats seems a world away in the heat and bustle of the UAE. The thought of being sat around a warm fire with hot cocoa is somewhat less appealing than being in the firing line of a functioning AC.

The chance of snow in the UAE is minimal to say the least – unless you're in the peaks of Jebel Jais. We will, however, get snow in the oceans. This is not the type of snow you would wish to catch on your tongue, make snowmen (or women, shouts Eric Idle) out of or even make into a snowball to throw at your friends. Nor is it picturesque snowflakes of ice, but in fact, marine snow. Marine snow is so important not only to marine ecosystems, but to terrestrial ecosystems and the climate of the earth itself.

To acquire marine snow, first like all the majority of ecosystems, we need the sun and the photic zone – the area of the ocean which sunlight can penetrate down into. In crystal clear water this can be as deep as 1,000 m, but realistically this is limited even in clear water to 200 m and in coastal waters, only 50 m. Photosynthesis requires light energy, converting it to chemical energy. In the oceans this means that marine plants (algae) are limited in habitat space to this photic zone, which without light they cannot feed themselves. The majority of the open oceans marine algae are microscopic organisms called phytoplankton. These phytoplankton form the foundations of the open oceans' food webs, fulfilling their roles as primary producers. Primary producers are autotrophs, meaning they produce their own energy in contrast to heterotrophs which acquire energy from other organisms normally by means of feeding. Imagine the importance of plants to the terrestrial land ecosystems of the planet and then you can see the significant role of marine algae in the oceans.

Marine snow is organic particulate matter which falls from the upper oceans or again, known as the photic zone, down to the depths to the aphotic zone where there is no light. These organic, therefore carbon containing, particulates originate from dead zoo/phytoplankton and waste products from larger marine animals. These particulates are denser than the water column so therefore they sink, coagulating on the way to form aggregates which in turn fall faster towards the depths of the abyss.

Down in the abyss the particulates usually remain there and enter food chains. Whales however (particularly sperm whales) dive down from the surface to feed on different organisms returning to the surface and restores this energy to the surface waters. Sperm whales (the largest predator on the planet) commonly feed on large squid, which have beaks that are indigestible and precipitate in the whales' gut to form a substance known as Ambergris. It is a bile duct secretion in the intestines that is excreted by them or found in dead sperm whales. This substance costs more than gold and truffles per gram and its main use, therefore the reason for its high value, is its scarcity and its function as a fixing agent for odours in high end perfumes.

Okay… that's all well and good, some dead stuff and some "waste" falls from the surface waters to the ocean floor, tip top. This is actually one of the most crucial aspects of the most important biological and physical pumps on the planet – the carbon cycle; and more relevantly, the oceanic carbon cycle. The oceanic carbon cycle consists of three pumps: the solubility pump, the carbonate pump and the biological pump.

The solubility pump is the dissolution of atmospheric CO_2 into the oceans forming carbonic acid (the same stuff that makes even plain sparkling water not great for your teeth) and carbonate ions. This dissolved inorganic carbon circulates throughout the whole ocean by means of the thermohaline conveyor belt. The thermohaline conveyor belt is a global system of water movement whereby dense, cold, salty water sinks into the deep oceans driving the thermohaline current and circulation of water throughout the global oceans, as all the Earth's oceans are connected. The more CO_2 that dissolves in the oceans the more acidic it becomes. This is the process known as ocean acidification which potentially could have more of an immediate impact on the oceans, and in turn the global climate, than the process of global warming.

The carbonate pump is the process by which the carbonate ions formed from the solubility pump and dissolved calcium in the oceans are utilised by marine fauna and flora to form calcium carbonate. This calcium carbonate is used to form the shells of many marine animals and importantly the plant phytoplankton called coccolithophores. Foraminifera also form calcareous structures but are far less abundant than coccolithophores. Coccolithophores are phytoplankton that form coccoliths, calcium carbonate plates surrounding the organism. Although tiny 2-25 micrometres across, their

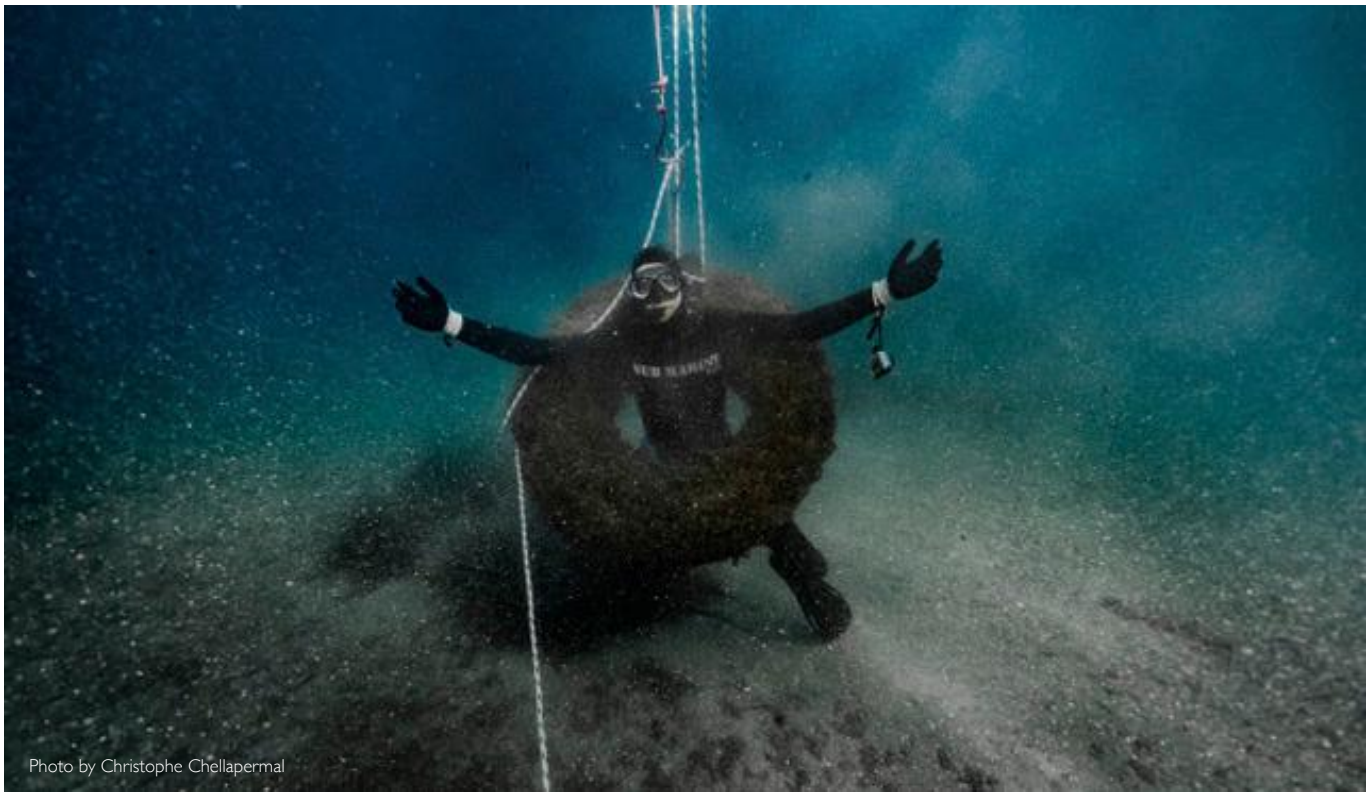


Photo by Christophe Chellapermal

sheer numbers amount for a huge amount of carbon, for example the 100 m tall, chalk, white cliffs of dover on the south east coast of England are primarily composed of billions of these tiny coccoliths. Coccolithophores are one of the most abundant species in the ocean and are the main primary producers in the marine environment re-enforcing their importance to planet earth.

A couple of fascinating topics regarding marine plankton, coccolithophores and their role in sequestering excess atmospheric carbon is the CLAW hypothesis and Iron fertilisation. Starting with Iron fertilisation, plankton blooms are restricted in growth by limiting nutrients in the oceans, primarily iron, so the addition of solute iron to the ocean promotes and allows growth. The natural process where winds blow westerly across the Sahara and northern Africa gather iron containing dust on the way before depositing it into the mid-Atlantic Ocean. This fertilises the oceans and allows for a naturally occurring bloom of phytoplankton and subsequently the organisms which thrive on them. This increase in phytoplankton decreases the amount of dissolved CO_2 in the oceans and causes more atmospheric CO_2 to be removed from the atmosphere by dissolution into the ocean. A prospective answer to climate change would be to artificially add dissolved iron into the seas to trigger a bloom increasing the amount of carbon sequestration.

The other topic is the CLAW hypothesis, Coccolithophores produce a chemical called dimethyl sulphide (DMS) as a metabolic waste product, this is released into the atmosphere forming aerosols which act as cloud condensation nuclei, similar to the cloud seeding undertaken here in the UAE. Therefore, an increase in atmospheric CO_2 would increase the abundance of coccolithophores and the production of DMS in turn increasing the amount of cloud formation and thus blocks more of the sun's rays, decreasing the global temperature. This suggests that phytoplankton play a huge role in the Earth's homeostasis. Again, this is a hypothesis and should not be used by certain orange potatoes as a hard fact that climate change does not exist.

The last system in the oceanic carbon cycle is the biological pump. The biological pump is the process by which energy is transferred in the form of organic carbon from one organism to the other. This energy is cycled between organisms through feeding, excretion, death and decay remaining in a semi closed system. A large proportion of the organic material will remain in this cycle for considerable periods of time until it falls out of the system in the form of Marine snow.

This is where the marine snow comes into its own with regards to the importance of maintaining the earth's thermal equilibrium. Marine snow acts as a carbon sink, the loss of this organic material from the food chain though death and fecal matter or waste are again the main components of marine snow. This falls down into the abyss, becoming sequestered into the sediments and acts as a major energy source for the base of food chains in the depths, where autotrophic self-feeding is impossible due to lack of sunlight. The organic material once in the ocean depths can remain there for more than 1,000 years negating its detrimental effects on the earth's climate.

This organic sequestered material formed from large quantities of marine snow is then buried underneath further sediments and over millennia, it is subjected to intense heat and pressure, forming oil, or specifically petroleum. Once upon a time, the fuel you put in your car was plankton and whale poop – fuel for more than thought. It's through this process that marine snow plays a vital role in the carbon pump by removing carbon dioxide from our atmosphere, and reducing the effects of our impacts from burning fossil fuels which release the carbon from the oil leading to climate change.

Climate change is something which I hope everyone is aware of, especially in the diving community, with the impacts of rising sea surface temperatures and ocean acidification directly damaging the coral reefs we love.

Increasing carbon dioxide levels are a leading cause of the greenhouse effect, raising the temperature of the planet and in turn driving the rising sea surface temperatures. Our burning of fossil fuels should be exactly that – fossilised, antiquated, left to ancient history, but unfortunately, we're not there yet.

However, the world is changing and leaning more on renewable energy sources and collectively the human race is becoming more conscious of climate change and the impacts humans are having upon the environment.

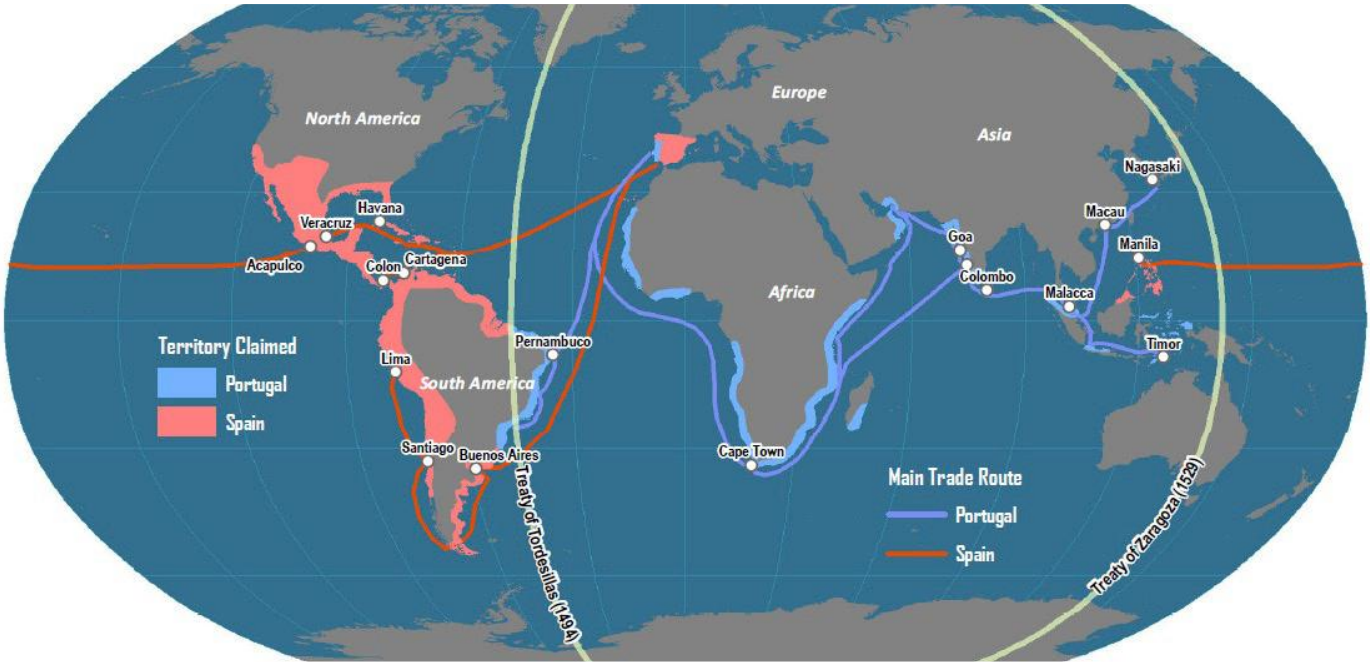
So this Christmas, let's be thankful for marine snow as it's our greatest safeguard against global warming – without marine snow, there would be no more white Christmases. Merry Christmas!

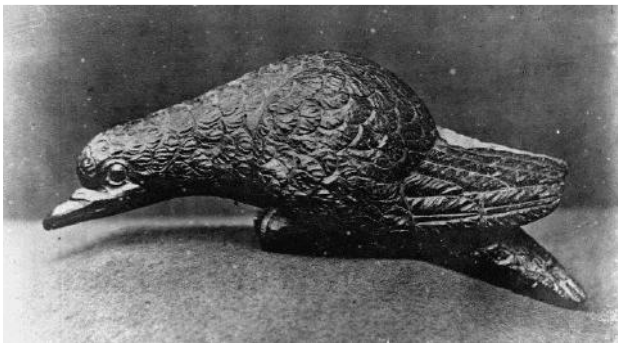
TIME TO FIND NEW ZEALAND'S BURIED SPANISH AND PORTUGUESE TREASURE

FEATURE **WINSTON COWIE**

An opinion piece by New Zealand historical author, whale shark whisperer, master diver and fellow of the Royal Geographical Society, Winston Cowie.

The Pouto Lighthouse on New Zealand's rugged north-west coast looks over the lonely shores of the Pouto Peninsula. Is this the sight of a Portuguese or Spanish wreck?





MAP ABOVE: Pope Alexander the XI drew a line of demarcation down the middle of the world in the 16th century. All lands to the east were available for Portuguese exploration while all lands to the west were for the Spanish. Interestingly the line bisects South America where modern day Brazil is – that is why the Portuguese language is spoken in Brazil with Spanish the main language in other South American countries. **BOTTOM LEFT:** Winston Cowie and New Zealand film maker David Sims on the set of Cowie's first film: 'Mystery at Midge Bay: Discovering New Zealand's earliest shipwreck.' **CENTRE & RIGHT:** Artefacts like the Tamil bell and korotangi (stone bird), may provide clues of early Portuguese or Spanish exploration. The Tamil bell dates to around 500 years ago in India, where the Portuguese had bases.

We have some buried treasure to find ladies and gentlemen. Buried treasure that could re-write New Zealand history. We need some adventurous types with a "can do" attitude to have a crack at finding it. If that is you then read on.

You are divers or those with an interest in the sea of Aotearoa and the Pacific. You will know the legendary stories of Kelly Tarlton and Wade Doak who found the gold on the Elignamite up at the Three Kings. You will have heard of the General Grant down at the Auckland Islands at the bottom of New Zealand, still unfound, still keeping the whereabouts of its 5 million dollar gold haul a secret. You will know that the Niagara, written by New Zealand underwater diving legend Keith Gordon, sits at 120 metres deep off Northland's coast, sinking after hitting a German mine (true story) in WWII, and still with 5 bars of gold unaccounted for – around 3.5 million dollars (9 million dirhams) worth. It also has 1,000 tonnes of oil on board that poses a risk to New Zealand's marine environment. There you go – three challenges worth taking on – finding the gold of the General Grant, and in the case of the Niagara, it's double motivation – yes the gold, but more importantly, removing the risk that the oil poses to Northland's underwater world.

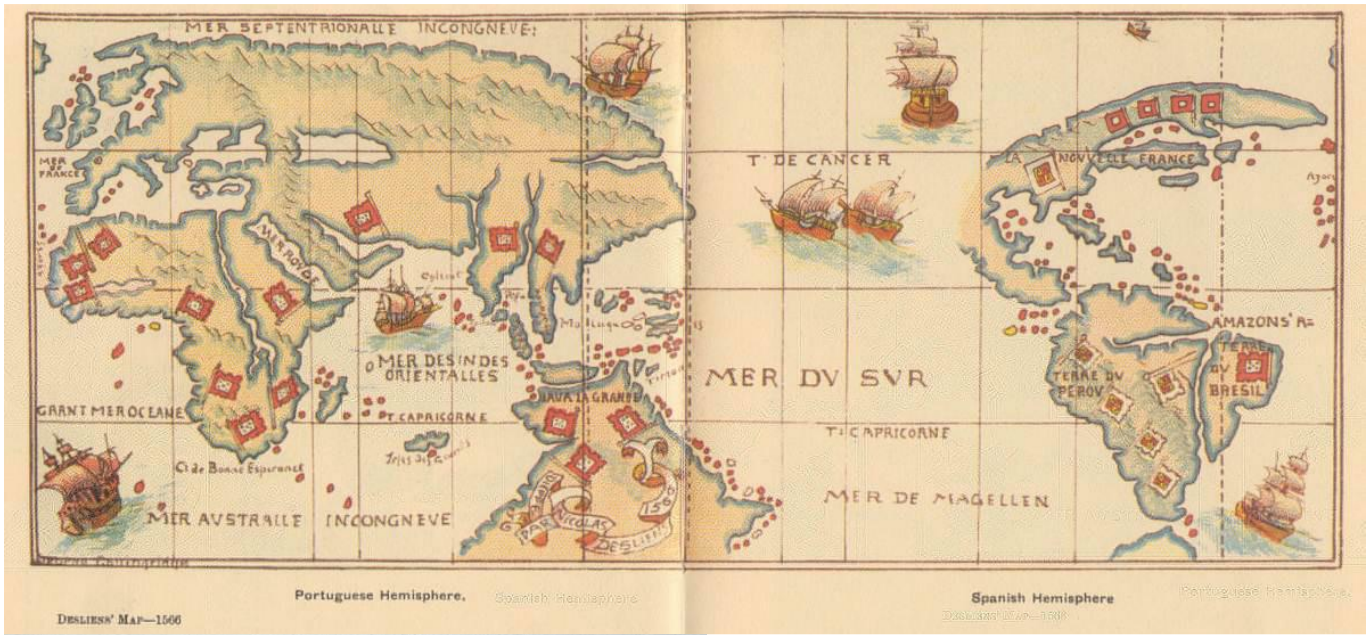
There is other buried treasure to find too, but you may not know of it. Why would you? I didn't. We weren't taught this interesting stuff at school, but with New Zealand history to be compulsory by 2022, as a society we are set to challenge existing paradigms. In seeking and finding the Spanish or Portuguese treasure that is the subject of this article, you will rewrite New Zealand history and conclusively prove that the first Europeans to discover and map New Zealand were not the Dutch and Tasman or the British and Cook, but the Portuguese or Spanish. It is not contested that eastern Polynesians perhaps from the Society of Cook Islands were the first to discover New Zealand. Kiwa, Hotu Matua, Maui and Kupe are part of our folklore. We are talking about the European wave of voyagers.

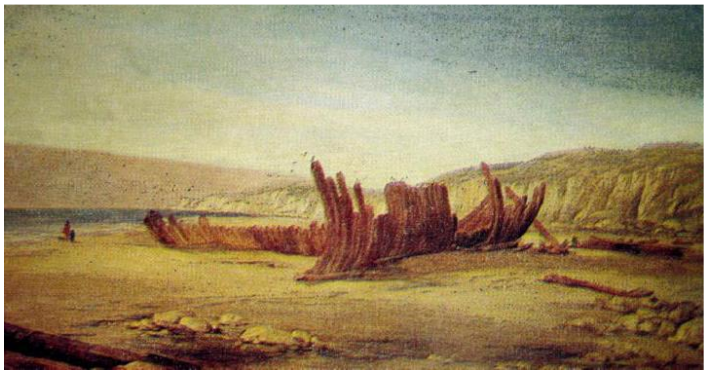
There has been a fair bit of smoke billowing around the Portuguese and Spanish subject for a while now and at the outset I wanted to take a different approach to researching the subject. Rather than say 'this definitely happened' as others have in the past, I wanted to present this historical mystery as a puzzle – presenting those antiquities that have been put forward as potential evidence of a discovery – from maps to shipwrecks to artefacts – as puzzle pieces, putting forward the arguments for and against their antiquity to the reader, and encouraging the reader to decide what part of the Conquistador Puzzle that piece forms. Each puzzle piece is presented to the reader on its own merit; I explain how I came across it, what or who is the source of the puzzle piece, and let you decide where it fits into the theoretical framework. If a puzzle piece doesn't fit, it doesn't fit; I have not tried to twist a puzzle piece to fit with the theory. Each puzzle piece is what it is and means what it means.

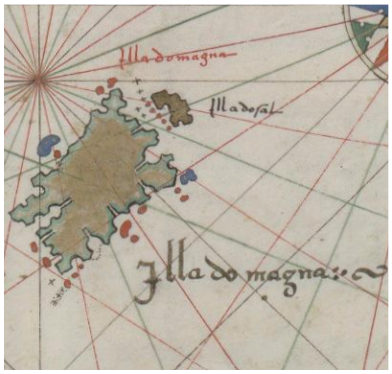
The puzzle pieces are fascinating – you may have heard of some of them – they include the likes of sixteenth-century maps of New Zealand and Australia; shipwrecks; oral folklore of white voyagers coming ashore wearing armour; their massacre by natives; cannon, helmets, a ship's bell, ruins, stone crosses and other enigmatic artefacts found in the vicinity centuries later; red-haired and fair skinned Maori noted by the next wave of settlers to New Zealand; buried treasure; pohutukawa trees on the far side of the world; and lost caravels.

Let's go back in time, 500 years back, to give you the background to this story.

The fifteenth and sixteenth centuries were the golden age of Spanish and Portuguese







MAP ABOVE: The sixteenth century Dieppe maps include a land mass where modern day Australia is with the most detailed map, the Vallard Atlas including over 120 Portuguese place names which are descriptive of physical features. The late Helen Wallis (OBE) considered that on the balance of probabilities these maps were evidence of a Portuguese discovery of Australia. Wallis was president of the British and international cartographical societies. **BOTTOM LEFT:** The Mahogany ship from Warrnambool, Victoria, Australia is another part of the Conquistador Puzzle. **CENTRE & RIGHT:** Is this island off the southern landmass in the sixteenth century maps the North Island of New Zealand, as mapped by the Portuguese 500 years ago?

exploration. Pope Alexander VI drew a line of demarcation down the middle of the Atlantic and said all lands to the east were available for Portuguese exploration (this included Africa and India), while all lands to the west were available for Spanish exploration – the Americas and Pacific. By the 1520s Magellan had gone around the world for the first time, and on the other side of the world in the Spice Islands, modern day Indonesia, both seafaring nations met, sailing in from opposite directions – the east and west.

It was at this time, so the chronicles say, that one Christopher Mendonca, a Portuguese captain, was given a secret mission by the Portuguese King, Manuel I, to find the great southern land of gold of Marco Polo fame. Through google, yes, modern day google – amazing what you can find there – I have managed to source an official record from the Lisbon Archives referencing this very expedition. I can even tell you that he had four ships in his fleet, the names of those ships and their captains.

Between 1520 and 1524 Mendonca was, we have reason to believe, following the instructions of his King and discovering the Great Southern Land that in later years it was claimed that nothing was known about – the Terra Australia Incognita. We know from a postal stone in Cape Town that Mendonca passed through there in May of 1524 and then there is radio silence in respect to his expedition. Funnily enough he ended up in our neck of the woods, not five hours drive from where I write this in Ormuz at the head of the Arabian Gulf.

I digress. How do we know that Mendonca likely went on the expedition? Because in the 1540s these beautiful world maps started appearing from Dieppe in France where the top cartographers and mapmakers congregated in the 1540s to 1560s; and where modern day Australia and New Zealand are located, there are landmasses that match part of what they look like today. Furthermore, there are over 120 Portuguese names on the most detailed map, the Vallard Atlas of 1547, place names that are descriptive of physical features and when the old Portuguese words are compared to what is there today, they match in some places – e.g. the Great Barrier Reef is located where it says 'Costa Dangeroza'; there is a prawn fishery where it says prawns; and pumice deposits where it says pomezita, to name a few.

Why aren't the maps viewed as a Portuguese discovery of Australia and New Zealand you might ask? What do the historians say? Funnily enough, some of the top historians of their day have looked at the maps as you are probably doing now, and have seen what you are probably seeing – a 500 year likeness in the coastlines, where Australia and New Zealand are located today.

Let's start with how we know about the maps. Sir Joseph Banks, Captain Cook's botanist, donated one of the maps to the British Library in 1790, 19 years after he voyaged on Cook's 1769 expedition. This fact raises the question. Did Cook and Banks have these Portuguese charts when they 'mapped' New Zealand for the first time? The story goes that Banks purchased the map from Edward Harley, Earl of Oxford and one of the principal earls of the admiralty. The fact is: he gifted one to the British Library in 1790. Why did he have it?

When the map became available, in 1803, William Faden, who was the Royal Geographer to King George III and also the Chart Committee of the British Admiralty, he reassessed what was known of the world. On the chart of the Indian Ocean he wrote next to New Zealand: 'New Zeeland (Discovered and named by Tasman 1642 but where eastern coast was known to the Portuguese, about the year 1550).' We are talking about the Geographer to the King here – 250 years ago he was the global expert.

Maori Lady's tale of Spanish landing and massacre near Dargaville

The closest Choice City could get to tracking the Maori legend about the alleged Spanish landing was the tape which has been made by retired Whakapara farmer Trevor Schick.

The Schick family settled at Tangahai on the Pouto Peninsula in the 1800's. Trevor's grandfather had befriended an old Maori lady who squatted on their land with family.

One day when she had come to trust him she told him the story of the landing by foreigners.

According to her story the boat came up the Northern Wairoa and floundered near the Mangonui Bluff. A party wearing leather and iron came ashore and headed in the direction of the Kaipara harbour carrying a box. They were followed by the Maoris. When they arrived at McLeod Bay (later recalled Treasure Bay) they realised they were on a peninsula and started to bury the box. At this stage the Maoris descended on the party and killed all or most of them. Although this was acknowledged by the Maori woman, Trevor's grandfather believed she was a descendant of one of the survivors.

"My grandfather described her as having red hair and coppery complexion," he said.

The Maori lady said that helmets and swords were taken from the dead soldiers.

Trevor also believes his father could have stumbled on the cave where the items taken in the raid were hidden. As a youngster he went into a burial cave on the Schick farm at Tangahai, which was a known burial cave. He saw leather and old flintlocks with brass fittings and rotted wooden stocks.

TOP: An early oral tradition account of a Spanish wreck and interaction with local Maori on the Pouto Peninsula. **BOTTOM LEFT:** The Ruamahunga skull dates to between 1619-1689 and is of a woman who was around 45 years old. The Dutchman Abel Tasman who is said to have discovered New Zealand in 1642 is also said to not have landed and there were no women on his ship. Perhaps the skull is related to a Portuguese or Spanish voyage over a century earlier. It is currently an unexplained anomaly in New Zealand's history. **CENTRE:** Gustav Schick and a young Trevor Schick. Good honest country people who told the story that was told to them by local Maori. **RIGHT:** Local Maori from Waikaretu Marae Uncle Paki Pomare Kena and Tahu Kena had interesting early stories about Pouto and wrecks.

Similarly, in 1894, two of New Zealand's most famous historians, Dr Thomas Hocken and Dr Robert McNab, theorised that further research might reveal the true story of the discovery of New Zealand: 'Doubtless before Tasman, there were voyagers who had visited New Zealand. We are justified in thinking that they are buried in the old archives of Portugal and Spain's journals… (that would prove this)!

In the 20th and 21st centuries, the likes of Australian Kenneth McIntyre and, more recently, Peter Trickett have had similar views.

Simple human deduction has not changed in 230 years. A person looked at a map over two centuries ago and, seeing the similarities in the coastline to a continent, coupled with the Portuguese names, drew a conclusion on it; voila. We can do the same today.

What does the most recent expert to review the maps say? We can respect their view. Surely. In the 1980s, this was Dr Helen Wallis (OBE), the top of her field and president of both the British and International cartographical and mapping societies. Her honours included an OBE in 1986. Her view after reviewing the maps was that "the balance of evidence was in favour of a Portuguese discovery." Like Faden and Hocken and McNab, she was the top of her field.

Moving from theory to practicality – Matthew Flinders who was the second man to circumnavigate Australia in 1802-1803 – he did so with Banks' donated Portuguese map in his hands. His view was that the coastline on the map was too close to the truth to have been made by conjecture alone – his conclusion – Australia appears to have been mapped pre Tasman.

Why have we ignored the advice of what these experts are saying? In all honesty, I think it comes down to the mood of society at the time and political sensitivities. If you look at the 1980s in New Zealand when Wallis made this conclusion, there were claims of all sorts of random discoverers of New Zealand from Phoenicians to Celts to all sorts. My view is the water got muddy for the Portuguese and Spanish and they were put in the same boat, excuse the pun, as the others. This was the time also that the Treaty of Waitangi land claims were in full swing – the mood was sensitive – anything out of the ordinary just didn't gain traction – despite a Portuguese or Spanish discovery having no impact whatsoever on ahi kaa and tangata whenua. Different personalities were also dominating research within the New Zealand historical community on pre Tasman at this time – simply put – the personalities didn't get on and rifts developed and this influenced the research that was done. Put all that together, and you have the perfect Spanish and Portuguese theory fire extinguisher.

But… what about that buried treasure. It's 2020. Nearly 2021. History will soon be compulsory.

I'll tell you what I found. Then it's your turn. Get fired up.

I headed to one of the most isolated parts of New Zealand, Northland's rugged Pouto

LEFT: A large speciman of the New Zealand pohutukawa tree, endemic to New Zealand, is found in the coastal city of La Coruna where many Spanish voyages departed from including the Loaisa expedition of 1525. No one knows how old the tree is – it may hold a missing piece to the discovery puzzle. Cowie and the late Maori carver Kerry Strongman gifted the people of La Coruna this greenstone treasure to be worn by the tree as a lasting symbol of friendship between the two countries. **RIGHT:** The Ambassador of Spain to the United Arab Emirates, Jose Eugene Salarich and Winston Cowie holding both copies of Cowie's book – the Conquistador Puzzle Trail (English version) and the Spanish version which was translated by AECID, the Spanish Foreign Office, with the support of the Embassy of Spain to New Zealand.

Peninsula where the smoke from these Spanish and Portuguese stories was coming from, with the view of speaking to the elderly people that lived there and finding out more. With David Sims, former New Zealand National Film Unit, we captured a generation of oral tradition on camera, interviewing elderly Maori and Pakeha, many of whom have passed on now, may peace be upon them.

Three stories stand out. This is your treasure hunt.

In the 1890s Gustav Shick, one of the first European settlers to the area, was told a story by an elderly red-haired Maori woman that was living on his farm. She told him that many, many years before, a ship had been wrecked and men with armour had come ashore. The local Maori had killed most of them, allowing some to live, and she considered herself to be a descendent of one of them, given her red hair. She said they had a chest of treasure that they buried in a cave on the peninsula. This story is corroborated by old Jim and Tom Pomare of Waikaretu Marae One of them was going fishing one night out towards the Pouto lighthouse, and he came across skeletons and armour lying in the sand. He picked up a helmet which had a skull inside it, and buried the helmet nearby. He recited the story to the local police constable Corbett, who we interviewed in detail. That is two different and independent accounts of the same story – both talking about physical artefacts that exist. Get your metal detectors ready. It is a long beach.

Back on the Schick farm, Trevor Schick, Gutstav Shick's grandson, went into one of the caves on the peninsula and came across a helmet that was described as Spanish or Portuguese. He took it for the morning talk on the mat to Te Kopuru School in the 1930s. We interviewed one of his farming neighbours, the elderly Louis Kneebone who has since passed away. Louis was at school with Trevor Schick and she remembered the day he brought the helmet to school. She said he got in trouble and was told to put the helmet back where he found it.

That is a number of different accounts by credible people – good honest country people – of physical artefacts that have been found and reburied in the shifting sands or caves of the peninsula. This is the same coast where a shipwreck resembling a caravel was also seen by two local farmers in the 1980s although it was covered soon after… it's likely still there… waiting for its secrets to be told.

Those helmets; those skeletons with armour lying on the beach; that caravel and that treasure, if found, will change New Zealand's discovery history. The Pouto Peninsula calls. It's time to find New Zealand's buried Spanish and Portuguese treasure – in both the physical and metaphorical sense. It's there somewhere. And it's time to find it and put to rest those 500 year old ghosts.

Who is keen for a treasure hunt? The Portuguese and Spanish historical treasure in Pouto, Northland; the gold of the Niagara wreck in Northland; and that of the General Grant wreck down in the Auckland Islands, in the sub-Antarctic windswept seas at the bottom of New Zealand.

Elal Amaam. Forwards

WINSTON COWIE

Winston Cowie is an award winning environmental policy manager and New Zealand author, based in Abu Dhabi where he works as the Marine Policy Manager for the Environment Agency – Abu Dhabi. A fellow of the Royal Geographical Society, he has an interest in history having written the New Zealand Land Wars historical fiction series, and recently 'Conquistador Puzzle Trail' that proposes that the Portuguese and Spanish voyaged to Australia and New Zealand pre-Tasman.

www.winstoncowie.com

WWW.EMIRATESDIVING.COM

ENTER DIGITAL ONLINE

EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION 2021

HOW TO TAKE PART

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

SUBMISSION DEADLINE

Sunday 18th April 2021 @ 11:59 pm (GST)

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

DIGITAL ONLINE 2021

EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION

SUBMISSIONS OPEN: Sunday, 21st March 2021 | **SUBMISSIONS CLOSE:** Sunday, 18th April 2021 @ 11:59 PM (GST)
DIGITAL ONLINE AWARDS NIGHT & EXHIBITION OPENING: Wednesday, 19th May 2021 | SUBJECT TO COVID-19

DIGITAL ONLINE POST COVID-19

The pandemic has brought many changes into our lives that we are seeking how to adapt our events to keep everyone safe, but still keep you as much involved as possible. Many of us have not travelled at all since the social distancing practices and the various lockdowns. We know that many of you will not have as many new images and footage to play around with for 2021's Digital Online photo and film competition. That shouldn't stop you from taking part.

Since the UAE's dive centres have been back in operation, we know many of you are diving a lot more locally and getting your cameras out at every opportunity you get, so we are introducing a new 'Best of Home' category to celebrate images taken locally, wherever that may be. Now is also the time for us to introduce another category that will get you more artistically involved with, 'Creative Underwater Photography'. You will find the Photography and Film category details on the following page.

The categories are open to photos taken with any type of camera: DSLR, mirrorless or compact. There are no restrictions on when the photos were taken, you just can't re-enter a photo you have already entered into previous Digital Online competitions.

We have downsized the categories for 2021 due to the Coronavirus pandemic and there will only be 9 prizes available, with 3 for each 1st, 2nd and 3rd place wins. With all the surprise lockdowns around the world, we do not want to risk the chances of the wonderful destination prizes being lost, as they are subject to change. So, our prize sponsors are finding you options you can receive directly to avoid any disappointments. We will get back to offering more categories, and have the destinations back when everything returns to normal and we are running back at 100%.

We want to give a big shout out of thanks to all our supporting partners and sponsors for all the years you have backed Digital Online!

DIGITAL ONLINE'S MAIN OBJECTIVES ARE:

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

Digital Online is open to all photographers and videographers of all skill levels with a valid EDA Membership status. EDA membership must be renewed if expired or acquired in order to take part.

DIGITAL ONLINE 2009-2021

Digital Online is about to celebrate its 12th Anniversary! The competition was introduced by EDA in 2009 to resident photographers to develop a relationship and human interaction amongst those unfamiliar with the underwater world environment. The competition holds both local and international marine life categories to offer variety between our local and international diving enthusiasts. The film category was introduced as an extension to the competition in 2012 to share our underwater world through motion pictures and deliver a better understanding of the habitats and surroundings.

The event, now going into its 12th year, sees the continuous and steady growth of new underwater photographers taking part and joining our regular yearly participants. The enthusiasm and passion strives on, and the drive to bring our underwater world's conservation to the forefront increases over time. The purpose of Digital Online is to keep our underwater world visible by displaying its hidden beauties and to exemplify its importance to all life on Earth through the powers of its ecosystems.

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

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

COMPETITION CLAUSE

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

THE DIGITAL ONLINE RULES AND GUIDELINES 2021

RULES AND GUIDELINES

- Digital Online is open to all photographers and videographers of all skill levels with a valid EDA membership status. EDA membership must be acquired or renewed if expired in order to take part which can be done through the EDA website.
- Each competitor can only win one prize or prize package.
- Winners will choose their own prize.
- Participants are obligated to follow environmental conservation regulations and to respect the underwater world during the process of taking their stills and video. Be advised that any damage to the underwater world, including the disruption of the natural habitat of the marine life, provocation through touching, displacing, feeding or annoying, is prohibited and will disqualify the images or the photographer/videographer.
- By entering the competition, entrants declare that they own copyright of the submitted photographs and films and it entails an automatic acceptance of all the rules. EDA reserves the right to publish images in the 'Divers for the Environment' magazine, EDA's social media pages and on the EDA website. Images will also be used in any future promotional material for EDA events and competitions royalty free, but copyright remains with the photographer. Use of images or video will require no additional written or verbal permission from the photographer or videographer.
- Images (photos or videos) must not have already been submitted to previous Digital Online competitions.
- Photos and videos must be taken underwater unless specified in a category description.
- Manipulation is restricted to colour correction, brightness, contrast, sharpening and cropping, except for the Creative Photography category. The Digital Online judges reserve the right to examine untouched images in the other categories if requested.
- Removing backscatter is allowed to an extent, this does not include the removal of subjects such as fish or divers or cutting and pasting sections of images from one to another, except for the Creative Photography category.
- The winners will be announced and their work displayed at the exhibition and award ceremony in May 2021 (TBC). Participants who do not make it to the evening of the event will be asked to collect their prize from the EDA offices.
- Sponsors and prizes will be announced in the March 2021 magazine issue.
- We pledge to run this photography and video competition ethically and with integrity. Our judges have volunteered their time to help. The photographers' details remain hidden to the judges during the judging process.
- All judges' decisions are final.

REGISTRATION AND UPLOADING ENTRIES

- Submissions can be entered from Sunday, 21st March 2021.
- The entry deadline is Sunday, 28th April 2021, at 11:59 pm (GST – Gulf Standard Time).
- The participant must be a valid EDA member. Submit entries via email to **photo@emiratesdiving.com** with the requested category detail information.
- File names should include photographer's/videographer's name and the category:
  – Name - Best of Home.jpg
  – Name - Creative Photography.jpg
  – Name - An Ocean Breath.mp4
- Photo entries must be saved in jpeg format and should be sized between 2000 and 6000 pixels in the longest dimension. Please limit your images to a maximum file size of 5MB. Images will be viewed on a monitor and should be in the Adobe RGB 1998 or sRGB colour space.
- Video submissions must be in mp4 format.
- The preferred method for photo and video entry is electronically, however, if this method is not possible due to slow internet connection, you are able to submit via memory stick. Please note, media will not be returned.
- You will receive an email to confirm your registration and photo/video upload. If you do not receive one within 24 hours, your email may not have come through and you may need to try again.

Good luck to everyone taking part in Digital Online 2021. Dive safely and have fun!

*NOTE: HOW PRIZES ARE AWARDED

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

Best of show with the highest points will get first choice. 1st place winners by highest score will choose a prize before all other winners, 2nd place winners before 3rd place winners, etc. Please note, each individual can only win one prize or prize package.

PHOTOGRAPHY CATEGORIES

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

DETAILS TO INCLUDE WITH EACH PHOTO SUBMISSION:

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

1. **BEST OF HOME**
   Definition: Any underwater marine subject taken close to home, wherever that may be.

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

VIDEO CATEGORY

Videographers may enter one film with the following title:

3. **MY OCEAN**
   Definition: Looking for films of all genres – documentaries, narratives, shorts and animation films. Film subject must focus on all aspects of our underwater world including but not limited to, ocean exploration, wildlife, environmental, conservation and oceanography.
- All film genres will be accepted.
- Content must focus or relate to the ocean.
- Non-English films must have subtitles.
- If music is used, it must be from a public domain or royalty-free.
- Film length of 5 minutes max or less, including credits.
- Winning films will be chosen on the basis of creativity and the ability to tell a story that leaves the audience better informed and/or moved about the ocean.

[CREATIVE UNDERWATER PHOTOGRAPHY]

CHANGING WAVES

FEATURE AND PHOTOGRAPHY **IMRAN AHMAD**

You are the one in control and the only one who can make it possible to shoot and make it look totally new. It is all about being different! Lastly, stay humble and create photography with your heart.

It is almost impossible to get my Asian parents to agree that scuba diving, or let alone underwater photography, is a job. But like all stubborn kids, I had to defy all norms and take the unbeaten path. I call it, "Total Freedom".

THE FREEDOM TO EXPLORE AND LEARN FROM MY MISTAKES

The path of recognition is never easy, and this is true, still to this day. It is all about thinking out of the box, seeing things differently and of course, being unique. In the late 90s, collecting material was hard. The internet was still evolving and information was limited and hard to come by. However that did not stop me from jumping into the water and trying out new techniques.

The Nikonos III was my first camera and 36 rolls were incredibly precious. Instead of snapping away, I would stare and focus on points of interest, and move the camera to understand what was presented to me before actually taking a picture. To date, even with digital photography, I find it hard to waste a shot. I construct every shot I want to take inside my head.

SEEING THINGS THAT OTHERS DO NOT

The unintentional blindness of a photographer's focus on one thing alone, they sometimes fail to see something else that may also be right before their eyes. I always make a point to remind myself that there are ten different ways to photograph a subject. Shifting your view, changing the size of the frame, using composition rules, and most recently, using an uncommon lens to capture images. Some ask me, why? The answer would be that anything is possible, and to be different, you must be able to innovate to elevate and evolve your images and techniques.

Always have a concept or a theme. Write those ideas in a note book if you have to. This helps you to remember and check up on those ideas you have. There will be times, when you may want to update them.

THERE MUST ALWAYS BE INFORMATION OR MOTIVATION TO A SHOT

Limited with my gear at the time, I not only studied diving magazines, but I sought knowledge from the fashion industry, the automotive industry, I looked at insects and wildlife and so much more. Even in my early stages, I knew that in order to excel in this field, you have to wow the audience.

I WAS ALWAYS DIFFERENT AT SCHOOL

Was it easy? Not at all! My inspirations were David Doubilet, Stephen Frink, Jim Church, Ernie Brooks II and Amos Nachoum, as well as many others. I studied their work, breaking it down and working backwards. It was an interesting chapter in my life as I discovered more possibilities and more challenges. I succeeded in combining the advancement of technology and a dash of creativity to find my own personal style.

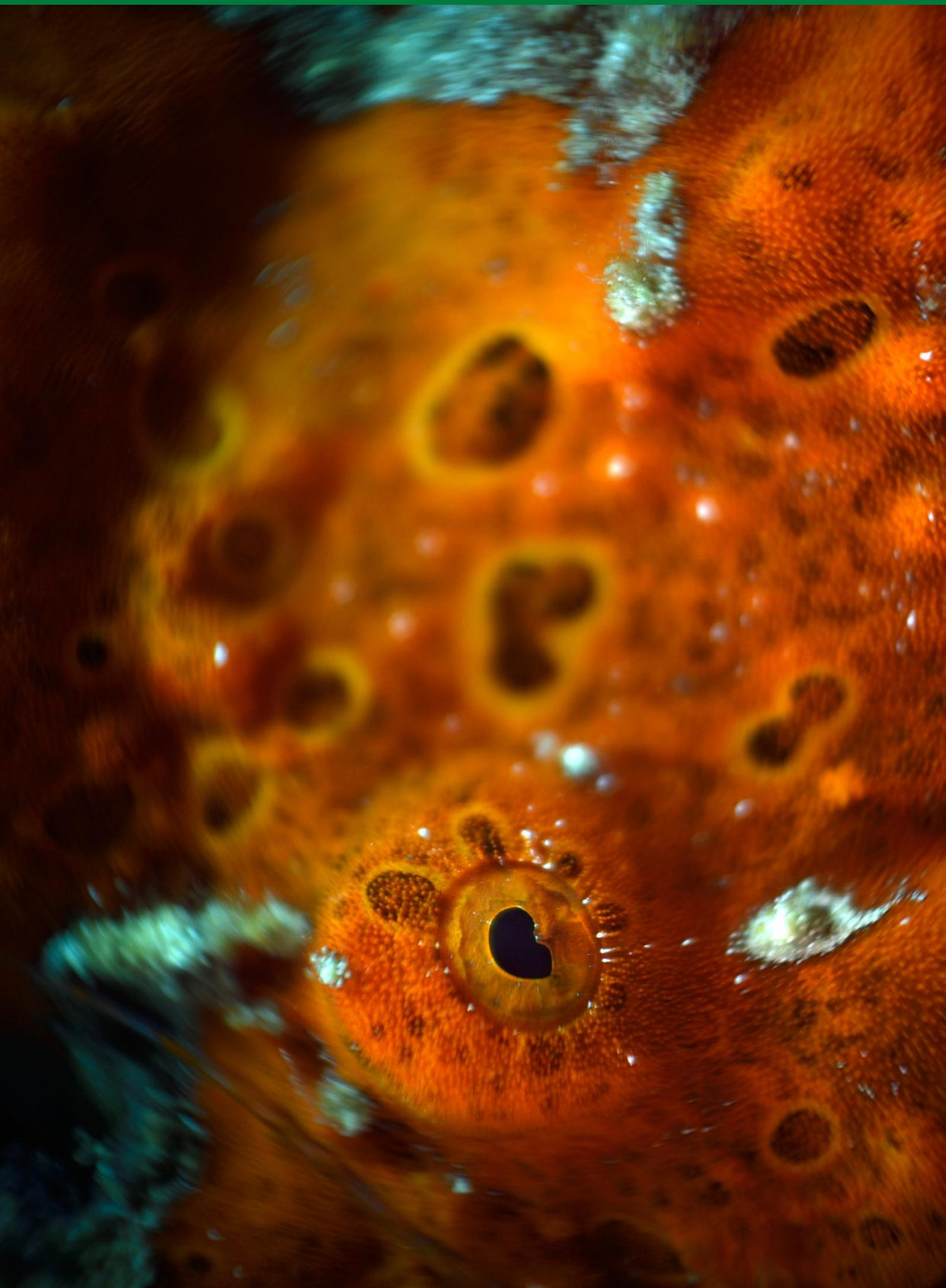
I'VE ALWAYS SAID, A FISH IS A FISH

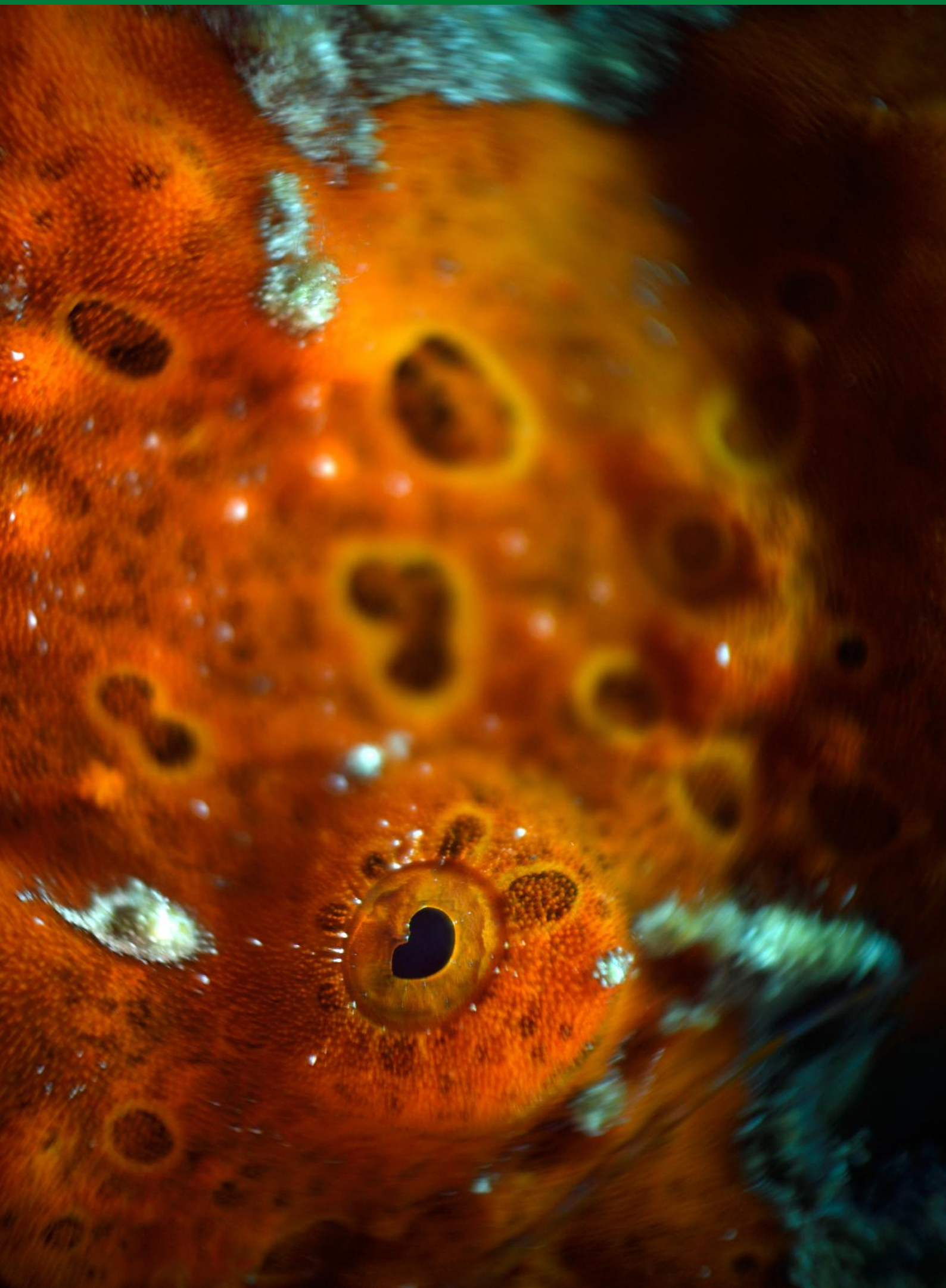
It was never about fish identification for me. That was never my interest. I love to isolate a subject and look at what makes it interesting. The design, the flow, it's colour, or simply the subject itself. Capturing it in a different way from someone else is what drives me. On another note, if your purpose is to document fish IDs, make it look good. That is how I got into the Ocean Artist Society (OAS).

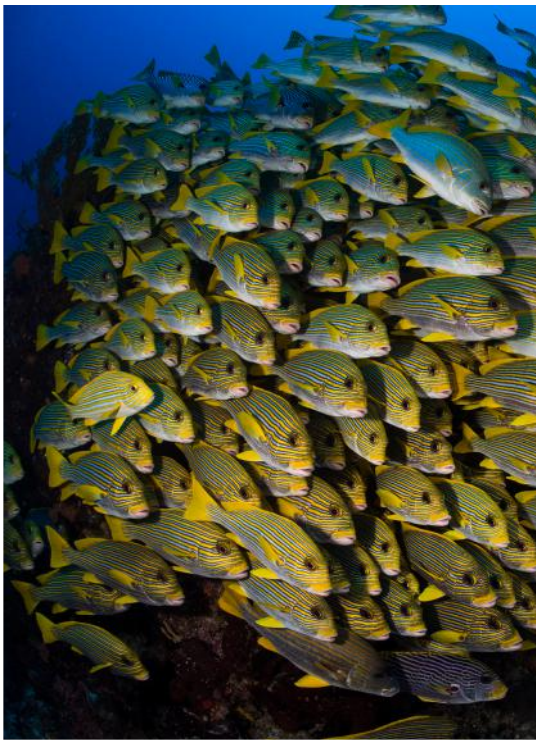
THERE MUST NOT BE SIMILARITY, BUT ADVANCEMENT

Making books was another aspiration of mine. I am blessed to chance upon a very famous editor and publisher, Dietmar Fuchs. He was presenting, 'what is art in underwater photography' in Singapore and I knew that was my forte, so I sat in on his presentation. At the end of my presentation, I gave him my booklet, 'PURE Series' and that got me selected for the Blancpain Ocean Commitment.

The PURE Series had been inspired by David Doubilet's work with nudibranchs he







had photographed on a white background. I remember one evening in Singapore when we had dinner together after the show, and I told him that I wanted to try it. He smiled and said, "Let me know when it's done." I wasted no time in brain-storming. I wanted to work with subjects that I could not control, and so I photographed lionfish, squids, blue-ringed octopus and more. The easy part was locating them, the challenge was having them float towards our huge makeshift studio. Like all art, patience is a virtue.

Once I got the images published, I met David Doubilet and Sylvia Earle in Hong kong. David said to me, "Imran, if we were writers, this would be plagiarism, but because we are professional photographers, this is an inspiration". That humbled me to my core. Lastly, Sylvia looked at me and said, "Never stop what you're doing, Imran." This is the process of inspiration and aspiration!

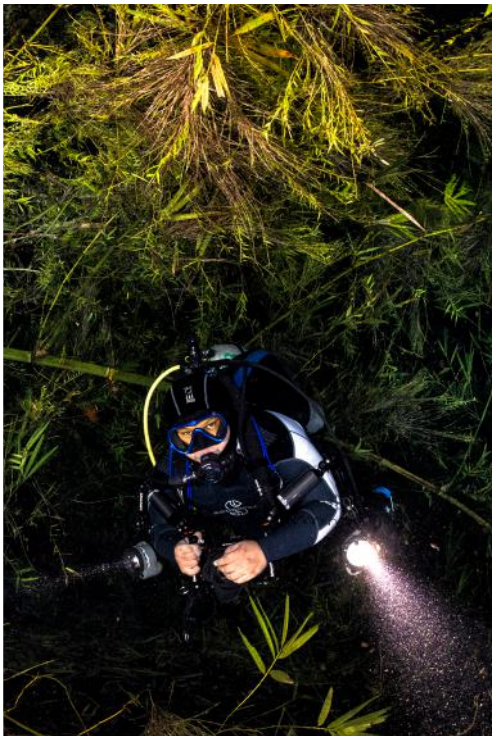
EVERY IMAGE IS UNIQUE & HAS POTENTIAL

Any successful photographer knows how to keep themselves motivated. They are always looking for the next best image, planning the new destination or trying out different gear to best complement their ideas.

If you ask me, what is interesting about underwater photography? I would have to say the learning curve, and it is not something you get from surfing the internet. It is about failing and learning from the mistakes made in those techniques. While some people discouraged me for trying, or talked me down about my reverse ways, you will know that you are on to something special when the negative voices get louder. You are the one in control and the only one who can make it possible to shoot and make it look totally new. It is all about being different!

GOING OUT IN STYLE AND MAKING IT LOOK GOOD

Lastly, stay humble and create photography with your heart.



PHOTOGRAPHICALLY INSPIRED

Imran Ahmad is one of Asia's most celebrated and internationally published underwater photographers. He has been capturing the magnificence of life both below and above the water's surface for over 20 years. His style is different from anything else seen. He is known for his Experimental Photography with light and motion.

Imran graduated from Middlesex University with a Bachelor of Arts in Filmmaking. He is an ambassador for SEACAM, BLANCPAIN, MARES, NIKON, DAN Insurance, RGBlue Lights (Japan), and a member of the Ocean Artist Society. He spends much of his time as a university lecturer and professional photographer giving presentations, promoting photography in all its aspects, both as an art and documentation. Imran is also a judge to several influential photo competitions around the world.

He currently runs photo workshops on conservation, underwater, travel, commercial, and runs photo dive trips around the world. When not photographing underwater, Imran can be found at his photographic showroom located in Kuala Lumpur, Malaysia. ESCAPEINC ASIA is a one stop showroom for all your professional photography needs in Asia.

SHOWROOM: www.facebook.com/escapeincasia
FACEBOOK: @IMP.ESCAPEINC
INSTAGRAM: @escapeincphotography

IMRAN AHMAD BIN RAYAT AHMAD

- Nikon Professional Photographer
- SEACAM Pro Photographer & Ambassador
- Blancpain Ocean Ambassador
- RGBlue Light Ambassador
- Mares Ambassador
- DAN Ambassador
- DEEPBLU Ambassador
- Ocean Artist Society Member
- ESCAPEINC ASIA
- ESCAPEINC Dive & Photography Trip Services
- ESCAPEINC Photography (KL) Sdn Bhd

EMAIL: imp@escapeinc.com.sg
WEBSITE: www.escapeinc.com.sg

SEACAM UNDERWATER HOUSINGS
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PORTFOLIOS:
www.flickr.com/escapeinc
http://jpgmag.com/people/Imppie

FACEBOOK:
www.facebook.com/IMP.ESCAPEINC

ESCAPEINC PORTFOLIO:
https://bit.ly/2IO4D0A

BLOG:
http://underwaterphotographer.tumblr.com/

PUBLISHED BOOKS:

- Seychelles Unexpected Treasures (Underwater Photo ART)
- Pearl of the Caribbean, South America (Underwater Photo ART)
- Ocean Tapestry, 50 Best Images Around the World (Underwater Photo ART)
- Hidden Sanctuary, Malaysia (Mabul & Sipadan Underwater Look Book)
- PURE Series, Asia (Underwater Photo ART)

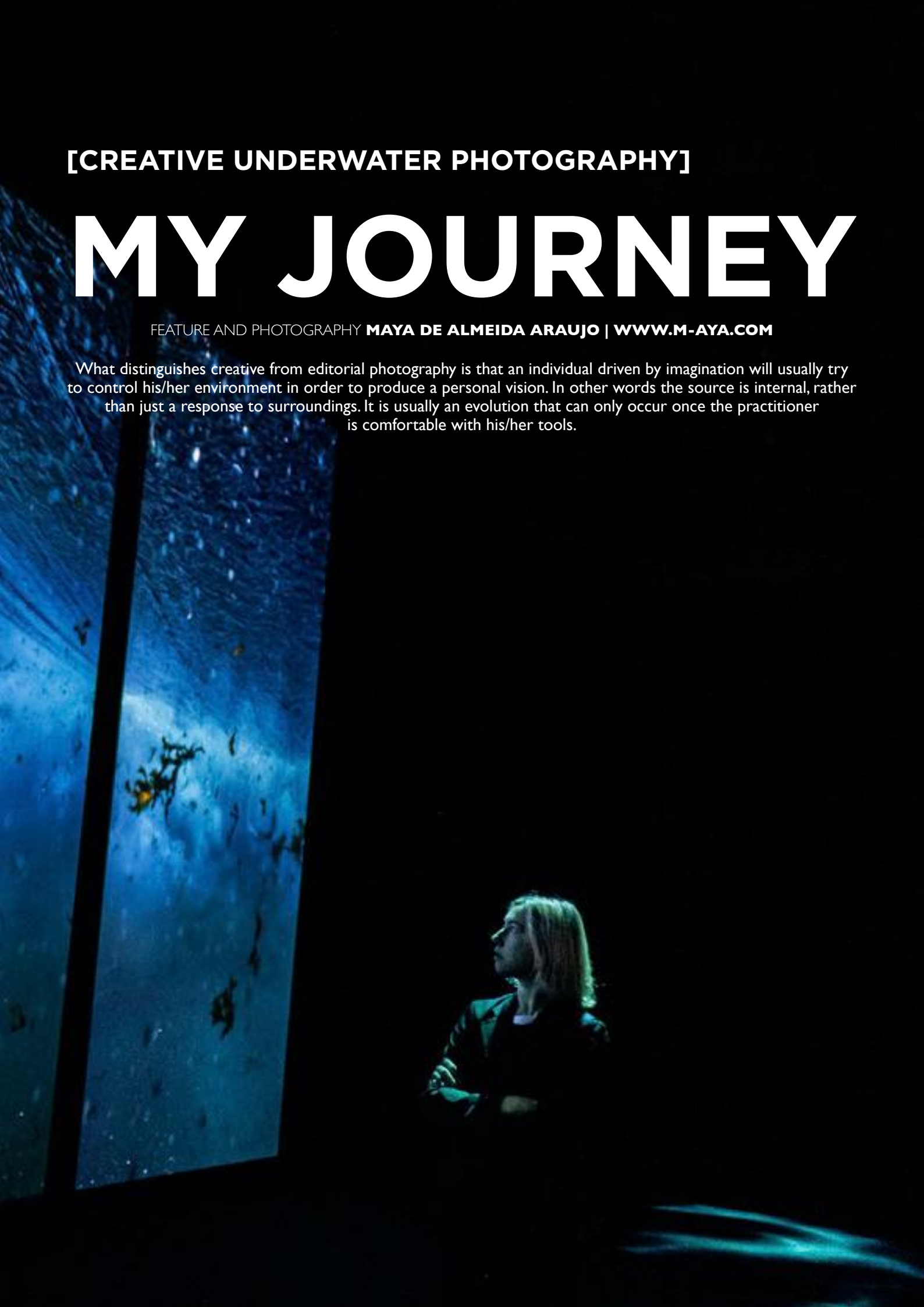
Immersive Art Installation launched 2020.

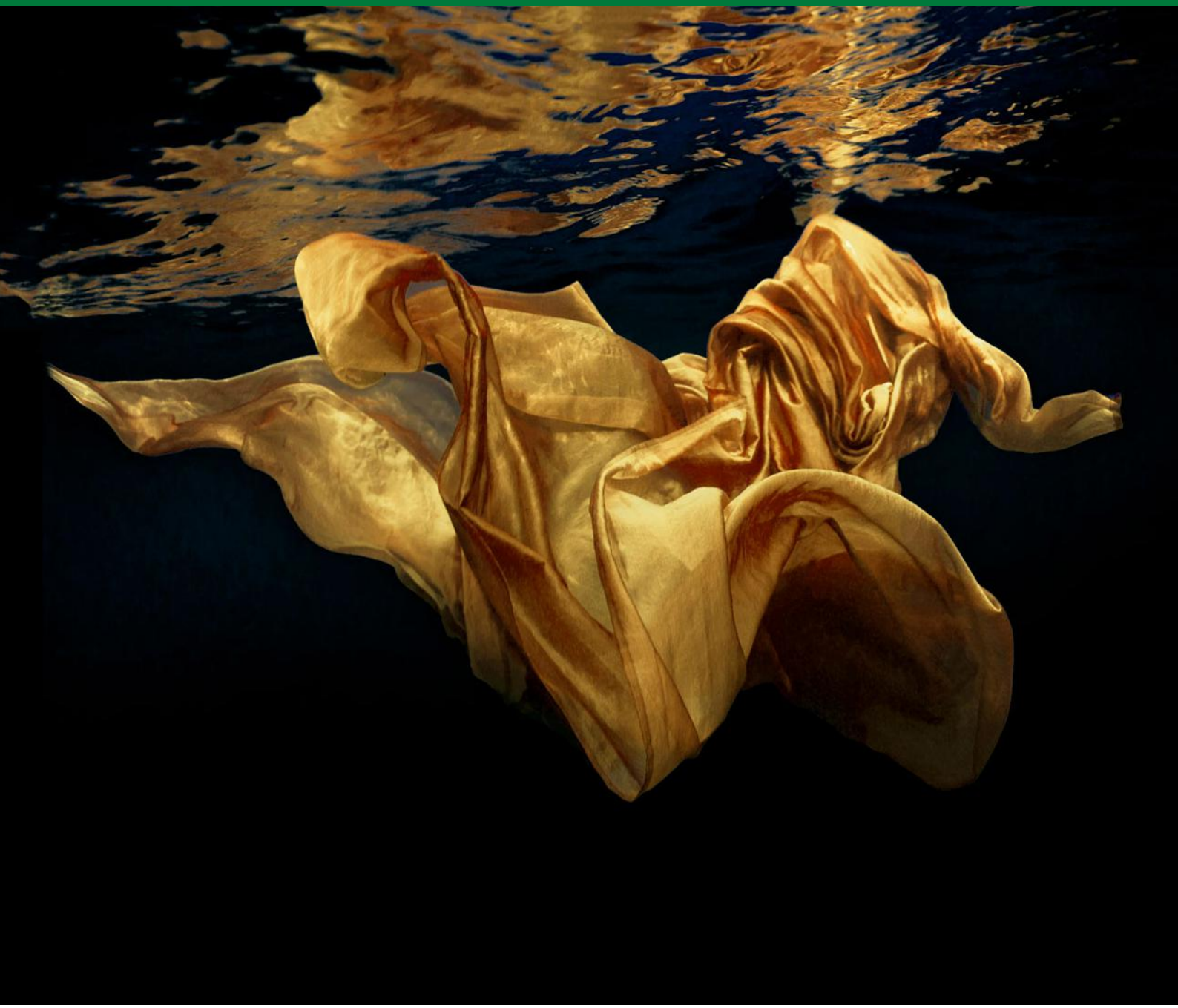
[CREATIVE UNDERWATER PHOTOGRAPHY]

MY JOURNEY

FEATURE AND PHOTOGRAPHY **MAYA DE ALMEIDA ARAUJO | WWW.M-AYA.COM**

What distinguishes creative from editorial photography is that an individual driven by imagination will usually try to control his/her environment in order to produce a personal vision. In other words the source is internal, rather than just a response to surroundings. It is usually an evolution that can only occur once the practitioner is comfortable with his/her tools.





Elephant. Copyright © Maya Almeida Araujo All rights reserved.

My journey has not been one of these well planned linear affairs. I was born in Lisbon from mixed Portuguese/Belgian/German blood and went on to study Biology at the Imperial College in London where I have lived the past 25 years. Having graduated with a published research piece in a reputable medical journal under my belt, meant that as a scientist, I had good prospects. Despite this, it became rapidly evident that the research environment did not suit me. I had a growing need for level intensity and engagement with the world which I could not find in the academic sphere.

University was followed by a brief career in the corporate world. I was fortunate to make true friendships that have held over time and circumstance, and enjoyed some success even setting up my own firm. At that stage, diving and image making were amateur pursuits which filled my craving for the natural world, adventure and a more spiritual existence. Over time, this drive, together with some chance encounters, eventually propelled me into full time professional photography.

Early images consisted purely of editorial and natural history work underwater using only natural light. Most of this was done by free diving in order to approach animals in a way that was more familiar to them and in greater harmony. We come from the natural world ourselves and so this wisdom lives within us.

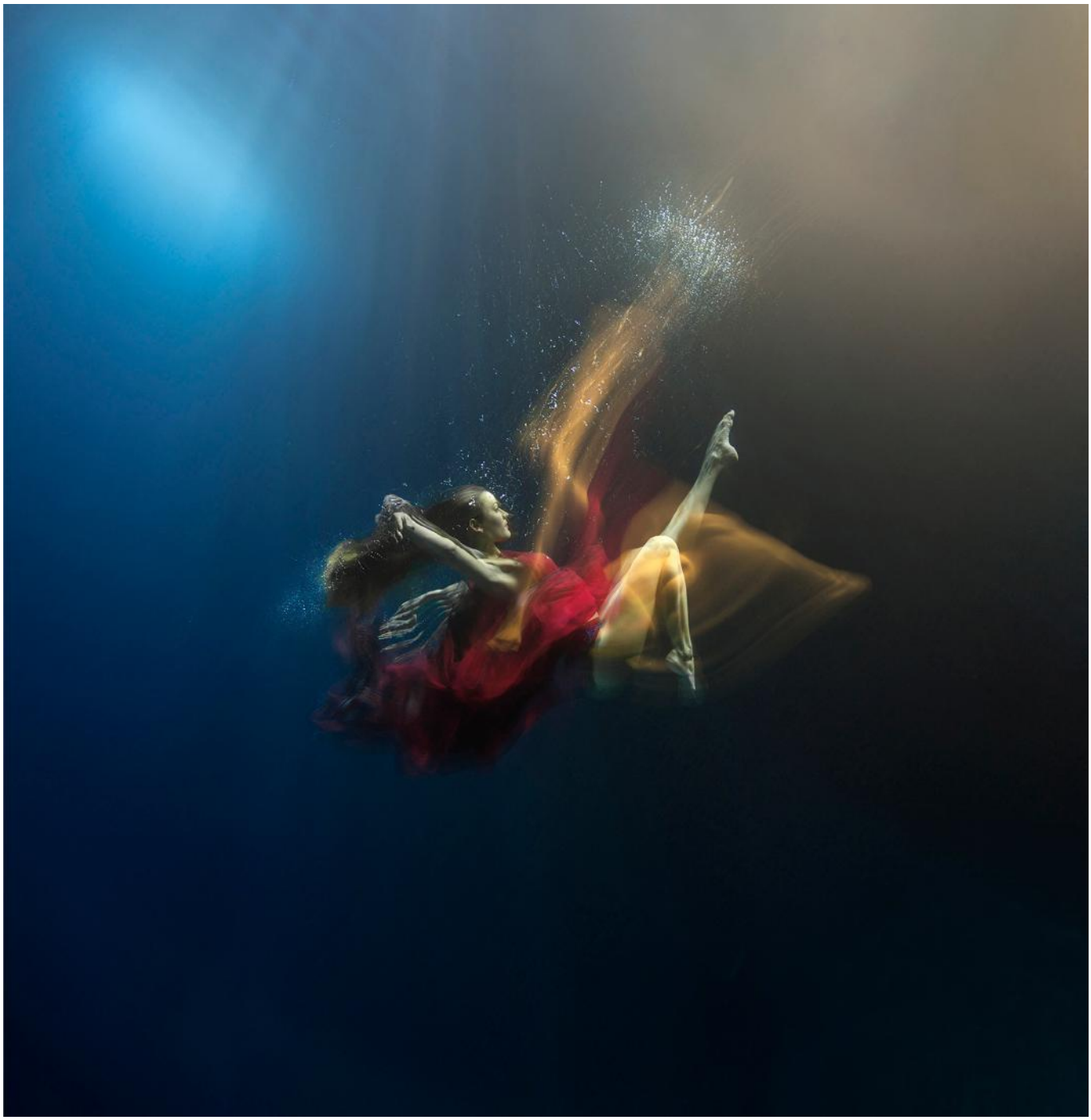
Capturing people came later as a result of a love for dance and the performing arts. The human element brought an unexpected dimension to the creative process, making it more introspective, but also more engaged. Intimacy which arises from a sense of a shared connection. This element has persisted to this day and is something I now seek consciously in my work. I find it in portraiture and in multimedia work through large scale immersive art installations. All of which usually involve water. Photography was how I started, and I now work with light, sound and animation.

The latest piece was launched earlier this year and involved eleven different film crews across various locations using six vessels (two RIBs, one Catamaran, one Fishing vessel, one kayak and one deep water sub) and custom gear. All the captures took place in the Atlantic Ocean and post production took place in London. The result was a site specific art installation for the Lisbon Oceanarium called "ONE" which explores our ancestral connection to the sea.

LINK: www.oceanario.pt/en/exhibitions/one-the-ocean-as-you-never-felt-it/

FINDING YOUR STYLE

What distinguishes creative from editorial photography is that an individual driven by imagination will usually try to control his/her



Water Girl. Copyright © Maya Almeida Araujo All rights reserved.

environment in order to produce a personal vision. In other words the source is internal, rather than just a response to surroundings. It is usually an evolution that can only occur once the practitioner is comfortable with his/her tools.

I find a common mistake new photographers make is to spend too long looking at work created by others in the same field. This is normal at first, but it's important to learn and to then move on. It's of course important to keep learning, but not limit oneself by what others have managed to accomplish. To understand that there is nothing lost in trying something new.

I've been asked about my sources of inspiration, and its rarely images. I don't intellectualise how I create, but I can talk about what 'feeds me' on a soul level: There are times when I just look for intimacy in the work. Others when I'm infatuated with a character, colour, or movement and feel the need to 'paint' with light. What has been a consistent source of inspiration is music, movement, and the body. To me, these represent Life.

When I made the decision to pursue the field of image making professionally, I looked for mentors who's work I admired and spent time with manufacturers of lighting equipment in order to add knowledge and discipline to the creative process. Most of the images that arise in my head are non literal, so it was therefore essential to develop technical skills to be able to bring them to life.

COLOUR OR BLACK & WHITE?

These are two different and distinct journeys. Colour is about aesthetics, black and white is all texture and form, and closer to how we see.

Colour for me is about fantasy and creating other dimensions. Black and white is about essence. It is more primal in its rawness which is closer to our subconscious and as a result, is also more intense.

WORKING UNDERWATER

Unlike sound, light travels more slowly through water, presenting creative challenges and opportunities… In this intimate space, one is more focussed. Sensitised to movement and form, and I believe that the creative process becomes more intuitive.

Nowadays, I use strobes in everything. The rigs, cables, lights and trigger mechanisms are all custom built and are usually adapted for different scenes. Locations vary from purpose-built tanks, to pools in private homes or the open ocean. In every instance, the environment is highly controlled and comprised of a tight team of special individuals that I've collaborated with from the onset. People who enjoy the shared process of creative experimentation.

Without the right team and technical know-how, my work would not be possible.

PHOTOGRAPHY OR ART?

Images are a powerful tool for communication. A photographer often responds to a brief or captures an image as it is presented to him. Whereas an artist creates from his own mind and his gift is the ability to translate personal experience into a voice that speaks broadly. One that is hopefully devoid of ego, but rather represents universal concepts.

A wise person once said that, "The Artist is no other than he who unlearns what he has learned, in order to know himself."

CATHARSIS AND CONNECTION

What I enjoy about the creative process is its ability to push the boundaries of reality. But what I find most rewarding is the touching feedback which I've had the fortune to receive from viewers who have taken the time to write to me.

I believe that art has a role to play here. When someone connects deeply and is immersed in a piece, it gives people permission to feel, to surrender. And this reinforces my belief that we are all so much more alike than we imagine.

ADVICE TO YOUNG PHOTOGRAPHERS

Dare to fail. If you work authentically, your work will always be special and the experience in itself will be the reward. Starting out now, I would put less pressure on myself, pause more to try and enjoy the journey.

M A Y A

LINKS & RESOURCES

WEBSITE:
www.m-aya.com

BEHIND THE SCENES:
https://vimeo.com/387342292

TRAINING:
www.creativelive.com

UNDERWATER HOUSINGS:
www.seacam.com

SPIRITUAL INSPIRATION:
www.eckharttolle.com

LATEST EXHIBIT:
www.oceanario.pt/en/exhibitions/one-the-ocean-as-you-never-felt-it/

THE ADVENTURES OF A UAE DIVER
THE MAGNIFICENT MALDIVES

FEATURE AND PHOTOGRAPHY **SARAH MESSER**

From the UAE, the Maldives is easily accessible. For an addicted diver living in the UAE, it's a must go to destination. Take note: once you go, you can't help but go back!

The last seven months of diving in the UAE has really opened this addicted diver's eyes to the great reefs and wrecks we have right on our doorstep. We've had some of the clearest water and best vis I have seen in my time diving here over these last few months, and the marine life has been more abundant than ever. From whale sharks in Abu Dhabi marina, to large numbers of eagle rays congregating in Dubai marina, the fishies have been enjoying the pandemic related peacefulness it seems! And thanks to spending all our time here with weekends to fill, my dive centre friends tell me they have never been busier for teaching courses, and we now have many newly qualified divers in the UAE. Hooray for more buddies!

Nevertheless, once the airports opened and international travel restrictions eased off in August, I started to wonder where I might be able to get to for some further afield diving. It became pretty clear that going too far into Asia was still risky. Travel regulations and lockdowns were changing rapidly, I had to be confident that I would be safe. When you start looking for tropical destinations closer to home… the Maldives is the best of the best. And lucky for me, the regulations were manageable. With no mandatory quarantine for tourists holding a negative PCR test, it shot right up to the top of my destination list. (I should add here that this was not my first trip to the Maldives, in fact it was my fourth).

RESORT, ISLAND, OR LIVEABOARD

The Maldives is a small archipelago country made up of 26 atolls covering approximate 298 square kilometres. Male is the capital and most densely populated island, and is the home of the main international airport, Velana. Male is not particularly somewhere to stay over unless you need to, it's more city than the non-urban sea-scape you expect, and most tourists, whether divers, holiday makers or honeymooners, immediately travel on to their destination.

The biggest choice you need to make is what kind of diving holiday you want. There are many, many options, although your budget will likely set your options. As a popular luxury destination, people often think that it will be too expensive, but there is definitely a price range for everyone.

So what is the difference between these options? Liveaboards are self-explanatory and there are many types, big and small, long stays and short safaris. The resorts tend to be a smaller island with only one hotel available. The other islands vary in size and will have several hotels, guest houses, and B&B options. The latter also tend to have resident Maldivians living there and are often dry (no alcohol is served). Almost all the hotels, whether island or resort will have a range of accommodation available and different packages. Key tip – remember to look at what eating options there are, if you are at a resort hotel you will likely find half board or full board, the best option as there will be few other choices.

As we are addicted divers, make sure you've done your homework on the local dive centres. Firstly, make sure there is one available! And second, check out the reviews. You will find plenty around online, from Trip Advisor or other diving websites. You want to know you are going somewhere with qualified and experienced dive instructors, with a strong safety record.

LOCATION, LOCATION, LOCATION

What the Maldives lacks in land mass, it gains in diversity of dive locations. The main atolls all offer something very different, so again you need to do your homework as to what you want to see.

South Male is less about the coral and all about the big schools of fish and large pelagics – grey reef sharks, eagle rays and mantas. There are

several atolls that make up the North – which is where my trips have so far always taken me. The Baa Atoll is home to Hanifaru Bay, famous for the significant numbers of manta rays and whale sharks from March to November. Coral quality is very good at some dive sites, less so in others. The Far North Atolls are less frequented and by the very nature of being more remote are home to more species of sharks and pelagics, plus giant trevallies. The Southern Atolls, and particularly those in the deep south are fantastic for sharks, jacks and tuna, plus in some locations tiger sharks, threshers and hammerheads. The south also has cave and swim-through dives, if this is what floats your boat.

GETTING THE TIMING RIGHT

I have spent all of my diving trips so far on the North Ari Atoll at a tiny island resort called Gangehi. More on that later. The reason I have been back to this atoll so many times is the number of varied dive sites, the quality of the coral is good once you get into the open sea, and most importantly to me, the manta rays are a-plenty! But as with any diving destination, the timing really matters.

The Maldives is so close to the equator that it is actually in the southern hemisphere, so their winter months are the same as our summer months. In fact, time zones across the country are not equal, and the islands further away in the north are an hour ahead of central and the south.

The temperature is fairly consistent throughout the year, hovering religiously around 29/30 degrees Celsius. The best weather is November to April, and the monsoons are May to October. It's a tropical climate, so when it rains, it rains hard, but it generally passes within an hour or two and the sun shines again. The sea temperature is cooler in the monsoon months (it was 26°C on my trip in September, and is 29/30°C outside of monsoon season) and visibility is not as clear (however don't be thinking Fujairah, UAE here, think Red Sea on a bad day).

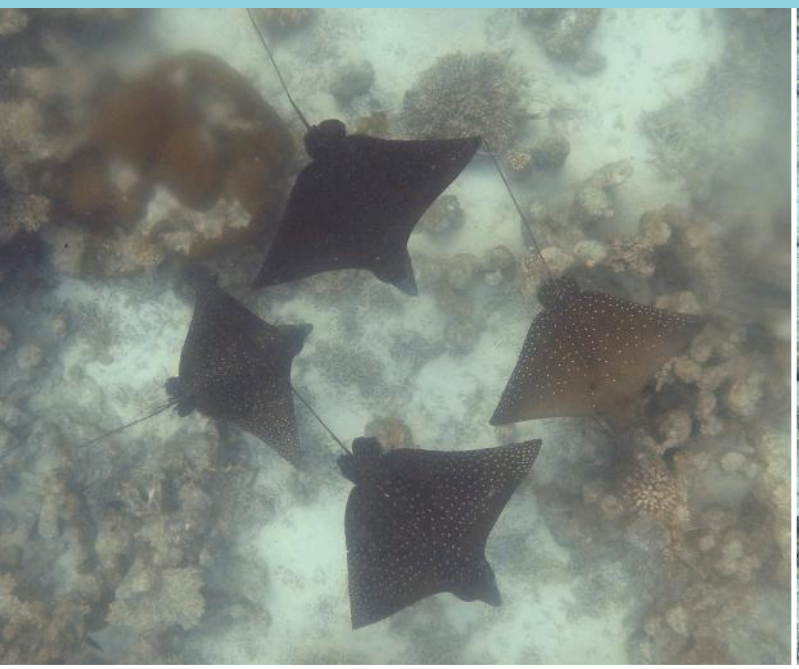
You can expect to see more marine life November to April. I have so far been to the North Ari Atoll in March, April, July and most recently September. In my experience March/April were the best months for fish and manta spotting, and September was the quietest month (but not without its highlights).

THE DIVING – PART I

It's a tragic truth that the Maldives does not look like it did 10 years ago, thanks to extensive coral bleaching. At the sea level to around 5/6 m, particularly close to the islands, almost everything is lifeless and white. It's quite distressing to see if I'm honest. You will see on some dives magnificent bleached structures, and you can imagine what it once must have looked like. This shouldn't put you off though, there are many dive sites where there is healthy and strong hard and soft coral, in beautiful multi-colours. Your dive guide will know exactly where to take you, often these sites are further out in the open ocean where they benefit from deeper, cooler water flow.

Importantly, despite the state of the corals there is still plenty of fish spotting to be done and you will see huge shoals of fish in many places.

The Maldives can be challenging diving. It is famous for its channels between atolls, where currents are strong and unpredictable. These are favourite hangouts for reef, leopard and nurse sharks. In the far north and south, you're in the open ocean with currents passing each other. This makes it all the more fun for an addicted diver! There are many drift dives, and it's a general rule that where the currents are strong, the coral is healthier, because fast moving ocean is both cooler and bringing nutrients along with it. This usually corresponds with more fishies, more pelagics,



and more predator hunting to see. So get your brave face on and get stuck in, the more challenging the dive, the more there will be to see. Another reason to do robust homework about the dive centre you go to.

On every visit, I have met divers who are on their 20th trip, their 30th trip, heading towards their 40th. I myself have been 4 times in 3 years and am intending to go again at the end of this year to go to the central atolls. The diving is nothing short of spectacular.

NORTH ARI ATOLL – GANGEHI ISLAND

Gangehi is a 40 min seaplane flight or 60 min speedboat ride from Male. There is one hotel on the island, the Gangehi Island Resort and Spa. The entire island is so small you can walk around it in 7 mins (if you're walking really slowly). There is a gym in case you need to get your 10,000 steps in without walking in circles. In normal times, the island has two restaurants open, and two boats running for diving and excursions, plus guests from around the world. The pandemic is making life difficult for them, as I suspect it is for most of the hotels in such a tourist dependent place. One restaurant remains open for now, and one boat is operational. Guest levels are heavily reduced and have been all year. You can choose from garden, beach or over water accommodation, with different price levels for each.

Like most islands, their house reef is damaged from coral bleaching but still has its fair share of adult and baby reef sharks, eagle rays, blue spotted rays, a resident turtle, octopus, and crabs of all shapes and sizes.

The island's staff are wonderful – welcoming, helpful, no request is too much for them. The food is delicious, fresh seafood from the days catch, Maldivian feasts, and because of the smaller number of guests, the chefs will cater to your daily cuisine whims. I also highly recommend the spa, the lady who is there currently is a rare masseuse who knows how to send you into a spa-induced relaxation coma.

THE DIVING PART II

The dive centre is well equipped and on every visit the boat crew and staff have been the same. They understand the ocean, dive sites and currents like an encyclopedia. It's amazing and comforting to be part of. Nitrox is available for a fee.

Gangehi have something like 50 dive sites within reach. They are close to a channel with crossing currents which means daily shark viewings. Their schedule is usually two dives in the morning, lunch on the island, and one dive in the afternoon. With enough divers or snorkellers they will organise day trips to the further away sites too. Night dives are possible if the currents are favourable, and are well worth doing (my best night dive ever was from Gangehi in 2019).

On this visit, with so few guests, I was often the only diver and so had a truly personalised experience. Awesome! We could go where I wanted, and in this instance I was lucky enough to be there with Gill, the resident instructor. He had not been at the island for many months, and most of those had been in lockdown so he was still learning the dive sites himself. With many years of experience from Egypt and other diving destinations under his belt, his attention to safety is high and it was really great fun to explore these sites together, some of which were new to me and some of which I had been to before.

I mentioned earlier that September was the quietest visit I had. Having said that, we were lucky enough to see two passing mantas, many reef, leopard and nurse sharks, as well as several stingrays. There was something to write home about on every dive. On my March/April visits, there have just been more of these and the cleaning stations which were quiet now, were then heaving cities of pelagic activity.

A MUST GO DIVING DESTINATION

From the UAE, the Maldives is easily accessible. For an addicted diver living in the UAE, it's a must go to destination. Take note: once you go, you can't help but go back!

Some key things to look out for:

- Not many hotels include diving in their prices, it's calculated separately at the resort. If you're on a budget, calculate what you can do carefully.
- Most resort dive centres will offer dive packages, cheaper per dive the more diving you do.
- Tax is 25% – make sure you include this in your budget.
- Look out for the transfer costs from Male, and remember the sea plane only allows 20 kg of luggage in the price. On the plus side, once you've packed your scuba gear you only need your swim wear flip flops and something to cover up in on top.
- Plan your timings carefully so you're more likely to see what you want to see.

If my plans go ahead, I will have a different Maldives experience to tell you about in the next EDA magazine, after taking a liveaboard around the central atolls. Till then, wishing you all happy and safe diving, buddies!

MORE INFO TO PLAN A TRIP:

GANGEHI ISLAND RESORT:
https://gangehiresort.com/

LIVEABOARDS:
www.liveaboard.com/diving/maldives

MALDIVES DIVING INFORMATION:
https://travel.padi.com/d/maldives/

TURKISH SURPRISE

SCUBA DIVING DURING THE GLOBAL PANDEMIC

FEATURE AND PHOTOGRAPHY **FARHAT JAH**

At the end of the dive we were so taken by what we had seen, that we wanted to do more...


AQUARIO DIVING CENTER
BODRUM
ro-turkey.com
AQUA LUNG
REUCHAT

ABOVE: Kenan Dogan, one of Bodrum's diving pioneers. **Opposite Page Top:** Fish on the MV Pinar 1. **BELOW:** One of the caves.

Only a few hours away by flight from the UAE, lies the Anatolian plateau and its enormous coastline. The corona pandemic has destroyed dive tourism as we know it, and there are so few places that UAE residents can go to dive. On a whim, Raf Jah decided to explore one small corner of his native country and he came back with rave reports. The diving season in Bodrum in Turkey is closed for now, but re-opens early next year. This is what he found.

I won't lie, I am Turkish. I could live anywhere around the world, but my Turkishness will never desert me. I also have high expectations. I did my Divemaster training in Turkey but was not impressed with the marine life. But now COVID-19 had intervened in my life, and I was desperate to dive. So with rather low expectations, my wife Francisca and I flew to Istanbul, hired a car and drove across Turkey to Bodrum (we could have flown, but we planned to explore more of Turkey later on).

KENAN DOGAN, BODRUM'S DIVING PIONEER

The one problem we had was choosing who to dive with. There are plenty of operators in Turkey but we were completely out of touch. I had made a contact from a dive trade show I attended a few years back, to a man named Kenan Dogan. I rang the number on the website.

"Can we dive with you?" I asked. "I am a dive tour operator, but I hear you are pretty full".

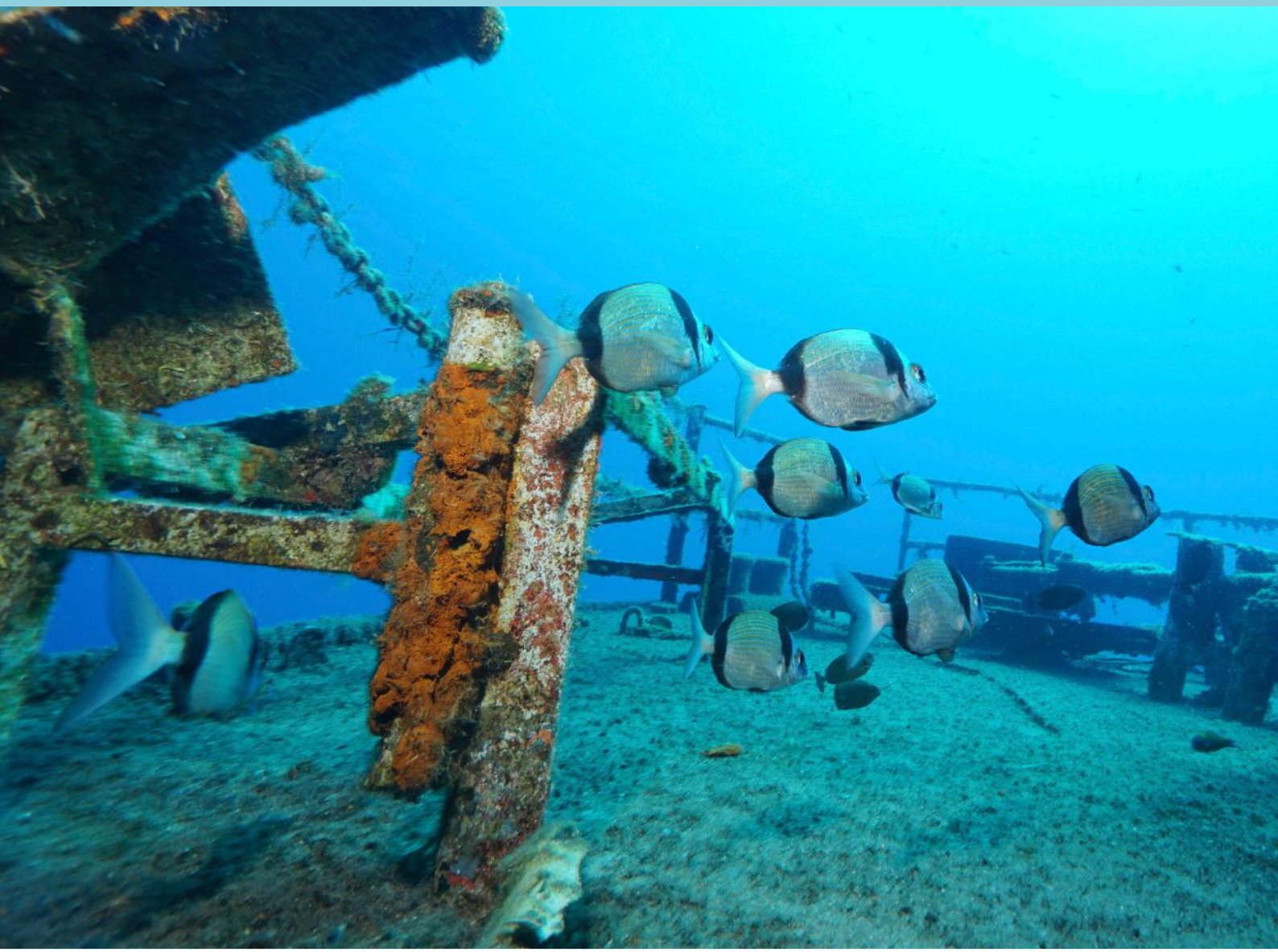
"Come, come", he shouted down the phone; "I'll give you a discount, but just come to Bitez Port, 09:30 tomorrow". And with that, the phone clicked and he was gone.

Kenan was a gruff character, but he was squeezing us onto his dive boat during a global pandemic, so who was I to complain!

The next morning, we turned up early and looked for the AquaPro dive vessel. We found it moored at a jetty and loaded our kit onto the boat. Unlike most of the Turkish dive boats, this was not a wooden taka (Caique) with a marinised Ford truck engine. Rather, it was a purpose-built metal hulled dive platform with twin Volvo Penta diesel engines. The 'MV Vertigo' reminded me very much of a slightly small Red Sea liveaboard. The dive deck was run by a steely blue-eyed man by the name of Can (pronounced Jaan in Turkish). A veteran security officer, he was also a CMAS instructor and a good organiser. He conducted a few basic checks, our temperature was taken, and we then went upstairs to sit down. Soon enough, a tall, wizened man with a thick black beard and sunglasses appeared.

"Ferhat!" he shouted at me. Kenan Dogan had arrived. He walked straight up to the helm, turned on the engines and watched them warm up. As soon as he was satisfied with his gauges, he tooted the horn three times as a signal to his crew and any late comers, and we slowly chugged out of Bitez Port.

Like every adult Turkish man, Kenan had been conscripted into the Turkish Armed forces at the age of 19. He had been selected for dive training and had spent his two years as a Turkish naval diver. As soon as he was discharged from the Navy, he became a commercial diver and then went on to open his own dive centre. At the age of 56, he has been diving in the Bodrum area for the last 30 years and as he was to prove, there was very little he didn't know. Since 2007 Kenan and his friends had



ABOVE: The shallows of every bay are packed with fish. **BELOW L-R:** The remains of an amphora in a cave at 32 m; the Aegean is full of colourful sponges.

been instrumental in sinking three wrecks in the area.

PINNACLES AND REEFS IN THE AEGEAN

45 minutes after leaving the Bitez Port Marina, Can came upstairs and told us it was time to dive. We pulled on our scuba gear and lunged into the water. I descended on what looked like a pile of rocks. This, I thought gloomily, was going to set the tone for the rest of the day. But upon looking carefully, I realised that we had actually landed on an underwater pinnacle. Can was getting the group together and so I looked down and around. This pinnacle was massive, it rose off the floor of the Aegean Sea.

Can signalled that all was well and that we should head off and descend. We were diving in two buddy teams. Can took us slowly along the reef descending gently from one cluster of rocks to another. At each cluster there was a burst of life. My Inon strobe lit up the sponges under every rock. We swam slowly deeper and deeper, and then Can broke off to play with a school of barracuda, swimming lazily underneath them. They were not as large as the barracuda that you find off Papua New Guinea, but they were definitely barracuda and they were bunched up into a circling mass.

We bottomed out at around 32 metres. We were now well off the wall on the sandy bottom. Can was poking around some enormous boulders. He called me over. He had found nudibranchs, gobies and anthias. My flash unit fired and lit up the multitude of sponges and small fish. It never occurred to me that the Mediterranean could be so colourful. In my youth I had heard about the Turkish Sponge Divers who had discovered ancient shipwreck after ancient shipwreck, but I didn't think there were any sponges left.

My computer started to beep. I had been down a while. I checked my SPG which read way too much air. I banged it and the gauge dropped a few bar.

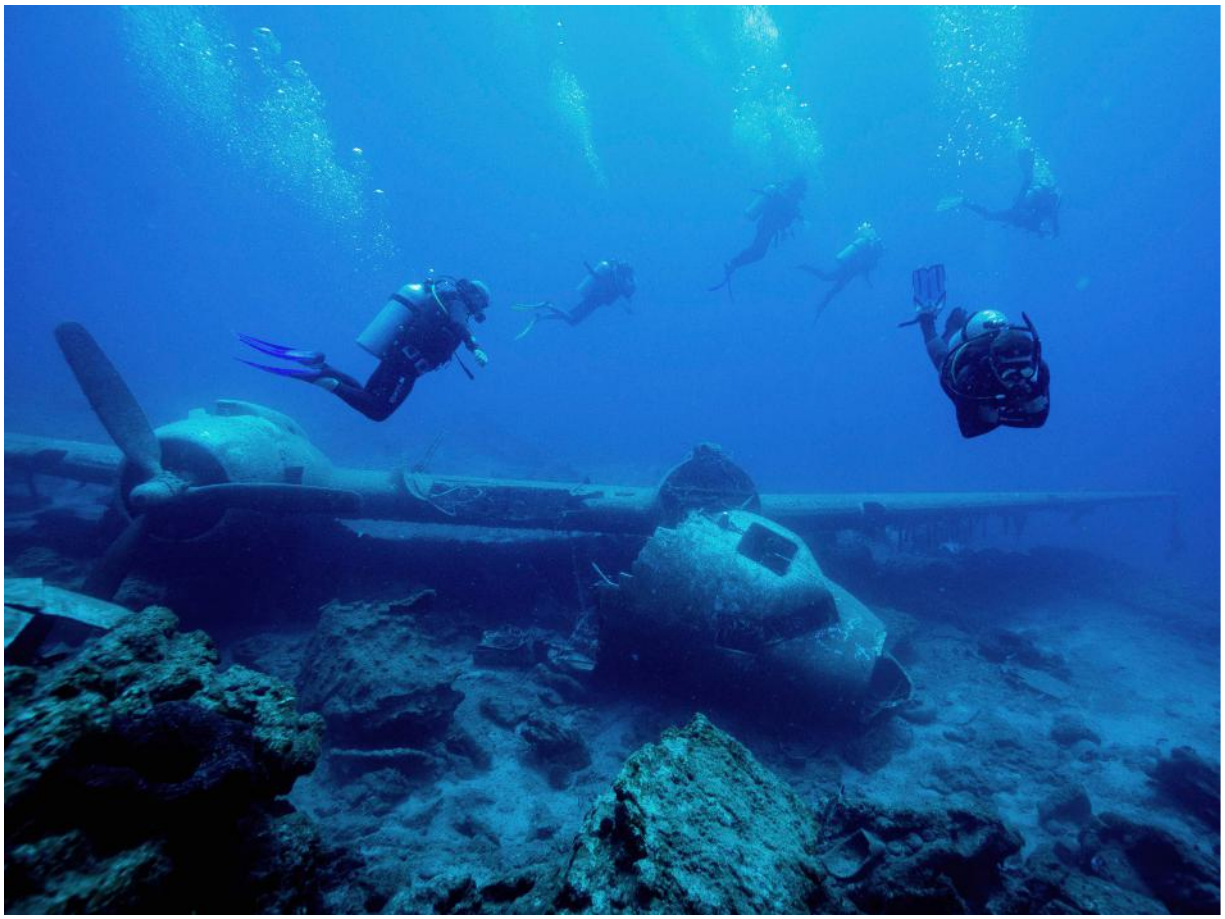
"I must remember to grease that spigot O ring" – I made a mental note.

My computer would not let up, and not wishing to turn my first dive into a deco dive, I thought I should perhaps wend my way slowly upwards. We regained the wall, and then swam along it at around 18 m, meeting the other divers from the boat. They had stayed at 18 m but they clearly looked very happy. At this depth, schools of bream were swirling around us and even more smaller fish darted in and out of the rock face. By the time I reached 50 bar, we had circumnavigated the reef. I did my now mandatory safety stop and then climbed back aboard. If this dive was representative of what was to come, Turkish diving definitely had something worth visiting.

Kenan pulled out a backgammon board and flagged down a passing boat. The pleasure craft was skippered by his friend who responded by turning into the bay, mooring up, and coming aboard. Three rather fast and very furious games of backgammon ensued.

When the discover scuba divers had finished, the snorkellers had tired, and we had finished our sandwiches, it was time for our second dive. Barracuda Bay was a steep wall that ended at 33 m with a series of caves. Can and his buddy wandered off while I took photos. The grooves cut into the volcanic rock made for some dramatic scenery, and the usual fish

The wheelhouse of the Pinar 1 wreck.



LEFT: Divers at the Dakota DC3 aircraft. **RIGHT:** The stern of the Pinar 1 at 14 m. **FAR RIGHT:** A view of Bodrum Harbour.

suspects were out and about. At the end of the dive we were so taken by what we had seen, that we wanted to do more.

"Can we dive a second day?" I asked Kenan. Kenan could see that we were seriously interested.

"You like it here!"

"Well it is certainly interesting." I was being non-committal.

"Tomorrow we will dive the 'Pinar 1'. My friends and I sank it," Kenan said enigmatically. And with that we disembarked.

TURKISH NAVAL TENDER: PINAR 1

The Pinar 1 was laid down in Germany in 1938. She was then sold to the Turkish Naval Forces Command and entered service as a fleet tender. She would supply water to the destroyers and frigates. As the world's navies modernised, Turkey's fleet stayed the same. Her older warships did not have the ability to desalinate and therefore a fleet water tender was as essential as an ammunition carrier. It was only in 2007 that the need for a Pinar 1 diminished. The Turkish Navy agreed to donate her to the Turkish Scuba diving community. She was stripped of military material, recyclable materials, cleaned and handed over to the Bodrum Underwater Association. The Turkish Naval Forces Command towed her free of charge to Bodrum. There the Turkish Divers set about making her safe for diving and conducted a final very deep clean.

In 2007 she was sunk in a spot agreed by the Divers Association, the Turkish Coast Guard and the local government. The Bodrum Divers sited the vessel and pumped her full of water. As she started to sink, Kenan Dogan was the last man off her decks as he boarded a waiting dingy. All of which can now be seen on YouTube! This was to be our wreck of the day.

Can took us down a slope of rocks, until a shape emerged out of the gloom. This was the stern superstructure of the Pinar 1. The vessel was lying bow down but upright on the sand. I circled the stern at 15 m taking a few photos, staying well off the bottom. Can signalled us to follow. I stayed at 15 m trying to take in the whole wreck in the 30 m visibility. There was sea grass and sand all around her. I looked down and a moray swam freely between the long blades of grass. Schools of fish descended down off the deck and went towards the sand.

Can signalled wildly and I looked into the blue. Some rather large stingrays rose off the bottom and swirled out in front of the bow. I could not take a photo as they were beyond the reach of my lens. A moray swam freely through the grass below the freighter. By now we were at the bow and I could take it no longer. I dropped to the floor in front of the bow. I hovered above the sand at 36 m and shot the Pinar 1's bow with Francisca swimming beside her. We closed in on the bow and saw rabbit fish hanging around where the bow met the sand at 32 m. The view of the side of the freighter and the sun shining down on us through 30 m of blue water was serene. I snapped off a few more shots of the hull, for ships, rivets and holes interest me. They are always covered with life.

The Pinar 1 was a magnet for fish. As with most of my Turkish dives, my computer started to complain. While AquaPro Dive Centre welcomes tech divers and rebreather divers, there was a standing request for no decompression stop diving unless pre-arranged. With one minute remaining, I ascended to the deck and mast. Here my Aladin relented and I levelled off to explore the superstructure and rail lines. Lionfish had arrived in the Aegean and I found them around the hatches. While they may be destructive, they make great photographic subjects. Cisca pointed out loads of nudibranchs on the railing, and after a deck swim through, it was time for our safety stop and eventual ascent.

"I am blown away by the marine life," I said to Joby Dogan, Kenan's wife and the organiser of all activities on the MV Vertigo.

"There are 8 different types of nudibranchs that we see on a regular basis here, this is an excellent area for macro photography", she confirmed.

"It's pretty good for wide angle as well!" I retorted, thinking of the Pinar 1.

"Oh we have a lot more wrecks, do you want to see the plane next?" she asked. "It really is down to choice. We have 30 dive sites which are great, but not everyone wants to wreck dive."

We did more in the area, on reefs, with many schools of groupers and rock faces, and we dived a dramatic broken up Dakota DC3 aircraft (another military gift). Can guided all but one of our dives, forgiving me of my trespasses. In all our days, we did not manage to dive Barracuda Point, the Coast Guard Cutter wreck or half of Kenan's walls. But on our last dive, Kenan strapped on his twin set, forward rolled into the water and took us down a reef. It was packed with groupers hunting smaller fish, colourful sponges, octopus and stunning underwater scenery. The visibility was around 50 metres and it was a wonderful end to our day. My buddy and I squeezed an hour out of my tank and we ascended to our usual spot on the flying bridge next to Kenan.

"Your mind is like mine," he said. "It's full of projects".

"Well Turkey is my project now," I replied.

"I have another project," he said quietly. "A new wreck, a big one maybe," and he winked at me. "You will have to come back".

TURKEY: KNOW AND GO

GETTING TO BODRUM

Getting to Turkey from the UAE has never been easier. Turkish Airlines and Pegasus connect the UAE to Bodrum via Istanbul and Turkish Airlines offer "visit Turkey" fares.
www.thy.com

We flew to Istanbul on Turkish Airlines and hired a car from Avis. The reasons for this was that there was simply so much to see in Turkey.
www.avis.com

DIVING IN BODRUM-AQUAPRO BITEZ

Every coastal town in Turkey has a series of dive centres. All dive operations in Turkey are regulated by the Turkish government's eminently sensible but strict maritime and diving laws. As you may have read in the article, we dived with Kenan and Joby Dogan at Aquapro Bitez. Joby is an SSI, NAUI, CMAS and PADI instructor, and Kenan has more qualifications than I can remember, including vessel captain, and commercial hard hat diver.

Divers are split into groups depending upon their ability, with advanced divers being given smaller groups. All dives are led by a registered dive leader, but photographers are catered for. The best times to dive are in the spring: April, May, June and after the summer rush – so September and October. The diving is excellent in July and August, but this is peak season and prices in hotels are always higher at this time of year.

AquaPro also offer Technical Diving, and full rebreather support.
www.aquapro-turkey.com

STAYING IN BODRUM

Bodrum has every level of accommodation from tiny guest houses to the most luxurious hotels. We stayed at the Marina'da Hotel which is opposite the Bitez Marina. It has an excellent authentic Central Asian restaurant and bar, and overlooks the sea and Bitez Bay. Moreover, it is a 30 seconds walk from the dive boat. Opposite is a superb restaurant called Bitez Café. For those wanting more luxury, the Ramada by Wyndham is a few minutes walk up the hill. Beyond this there are self catering apartments in Bitez and many, many more hotels.
www.otelmarinada.com

BODRUM CASTLE

No visit to Bodrum is complete for a scuba diver without a visit to Bodrum's Crusader Castle. Here you will find the archaeology museum with George Bass' discoveries, the famous underwater archaeologist. Almost every underwater find is brought to this small, but excellent museum for display.

TURKEY – NOT JUST ABOUT THE DIVING

Civilisation in Turkey is thousands of years old. There are tombs that date back to the Trojan Wars just above Bodrum. Two and a half hours away are the ancient ruins of Ephesus. Further afield, the ancient cities of Hatusa (near Corum) **https://bit.ly/2ITCy7Y** and Catalhoyuk (near Konya) **https://bit.ly/2IQwkpx** completely rewrite our understood history of mankind.

Of a slightly more recent ear are the Selcuk mosques, palaces and citadels. Then the Byzantines built in ancient Constantinople, including the city walls and the Aya Sophia Church. Constantinople became Istanbul in 1453 with the advent of Sultan Mehmet the Conqueror, at which time the Byzantine Empire entered its decline. Anatolia and Istanbul flourished under the Ottomans, and their architect Sinan produced some of the most magnificent architectural treasures to date. In 1923, the architecture of Turkey changed with the creation of the Turkish Republic, and a new 1930s art deco style was introduced, with a clear Teutonic influence. Since the 1990s Turkey has boomed economically, and most cities now have modern glass and concrete centres with shopping malls and wide boulevards. All of this means that hiring a car or taking trains and buses around Turkey is a fundamentally worthwhile cultural, culinary and historic experience.

FOR PACKAGES FROM THE UAE, YOU MAY CHOOSE TO USE: **www.orientafricatravel.com**

RISKS AND HAZARDS IN SCUBA DIVING: PERCEPTION VERSUS REALITY

FEATURE **SARAH EGNER** PHOTOGRAPHY **MARCELLO DI FRANCESCO**

While scuba training agencies include risk awareness protocols to decrease hazards associated with recreational scuba diving, incidents still occur. Recently, DAN researchers and partners conducted a study in an effort to learn more about whether additional campaigns or training programmes are necessary to increase dive safety. Rather than focusing on actual risks, the authors uniquely studied perceived risks associated with scuba diving. Findings from the study were published in 'Frontiers of Psychology' in March 2018.

The study investigated the perception of dive safety from both the viewpoint of the diver, as well as the viewpoint of dive operators. The study was specifically looking for gaps between the two viewpoints. Additionally, the study proposed safety programmes or additional training sessions that aligned with the reported perceptions.

Data collection involved questionnaires answered by 3,766 divers in Europe and 91 dive operators in Italy. The surveys asked questions involving safety aspects that are important to have at a dive centre (e.g. staff experience, dive centre insurance, quality of rental equipment, etc.), factors that influence buddy choice (e.g. certification level, age, experience, fitness level, etc.), the importance of various types of equipment (e.g. knife, dive computer, torch, etc.) and incidents perceived as a risk for divers (e.g. changes in weather, equipment failure, gas poisoning, drowning, etc.).

The data indicated that divers and dive operators regarded safety as important, but both perceptions did underestimate some risks. The primary conclusion of the study is that some of the more important risks that are not fully considered, either by dive shops, divers or both, need to be impressed upon divers and/or dive shops during training or specific campaigns.

After analysing data from this study, the authors recommended two programmes, to help provide a culture of safety amongst scuba divers and dive centres. The first is the Hazard Identification and Risk Assessment (HIRA), a DAN initiative to provide dive operators with the knowledge necessary to decrease risks within their businesses. The second is the Diving Safety Officer (DSO), a programme to train individuals to properly oversee HIRA.

The researchers found similarities in the two viewpoints analysed. For instance, both the dive centre and the scuba diver believed the proximity of a treatment chamber to be of low importance when rating safety aspects offered at a dive centre. In terms of matching buddy pairs, both the dive centres and the scuba divers rated gender, age and family member to be of lowest importance. The top rated piece of equipment for both dive centres and scuba divers was a dive computer. The authors recommend training programmes correlate to these shared perceptions. For example, dive training should include more information on generic dive computer use.

There were some interesting discrepancies between the two viewpoints. Dive centres reported that the dive instructors' recommendation should be the most influencing factor when finding the appropriate buddy on the boat. Individual divers, however, did not rate the instructor recommendation as influential in comparison to other factors. Dive centres conveyed that the highest perceived risks in scuba diving are decompression illness, drowning, and boat accidents – these were also what the dive

centres reported to be the top dive accidents they have experienced.

While divers agreed with decompression illness being high risk, they were also highly concerned with equipment failure. Divers were least concerned with marine life and drowning. The shared perception regarding decompression illness led authors to suggest the need for safety campaigns focused on decompression illness. The authors additionally advised courses focused on hazardous marine life and how to treat the injuries as a recommended action. One of the most notable discrepancies reported was that the number of accidents witnessed by scuba divers was much higher than the accidents reported. The authors recommended the need to help enable accident reporting by dive centres.

An interesting aspect of this study is the fact that the majority of the participants, all of whom volunteered, are experienced divers. This could have swayed the data; in being experienced, the divers have witnessed more incidents and may take fewer risks as a result. The authors suggested that it could be beneficial to ensure students learning to dive understand the importance of research in an effort to continually increase the safety of the sport. The data could be more meaningful if surveys were answered by divers of varying experience levels.

While this is one of the first studies to look at attitudes and perceptions of scuba diving risks, the results prove that this information can be beneficial when attempting to make recreational diving as safe as possible for all participants.

IN-DEPTH

This study was funded by the Green Bubbles RISE Project, H2020-MSCA-RISE-2014. The project has received funding from the European Union Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 643712. This paper reflects only the authors' view. The Research Executive Agency is not responsible for any use that may be made of the information it contains.

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DAN | AlertDiver

PROTECTING YOURSELF FROM DIVE BOAT FIRES

FEATURE **FRANÇOIS BURMAN, GUY THOMAS**

The recent tragic boat fires that occurred in September 2019 onboard the MV Conception in the United States and the fire onboard the Suzanna in Egypt in November once again illustrate that diving accidents do not only happen during the dive.

Although it appears that the fires may have started in a similar way, we won't know the actual causes of these fires until authorities finish their investigations. However, there are a few things that both accidents clearly had in common: there were casualties and both fires started at night.

Obviously, these incidents are of concern to divers who are now wondering how to minimise their risks and protect themselves from something they likely have little or no control over. This article provides some background and advice to divers who are planning to make a dive boat trip.

VESSEL FIRE SAFETY

While rare within our industry, fires onboard dive boats can start as a result of numerous causes. These include fires in the engine compartment as a result of heat and fuel leakage and or the ignition of other volatile fluids such as cleaning and painting solvents by sparks from electrical systems. Faults in the electrical system such as overloading or short-circuiting of wiring and equipment can also ignite gas leaks in propane and other cooking gases. More recently, for example on the Conception, it is believed that faulty or damaged Li-ion batteries, which generate significant amounts of intense heat, may have been the source of ignition.

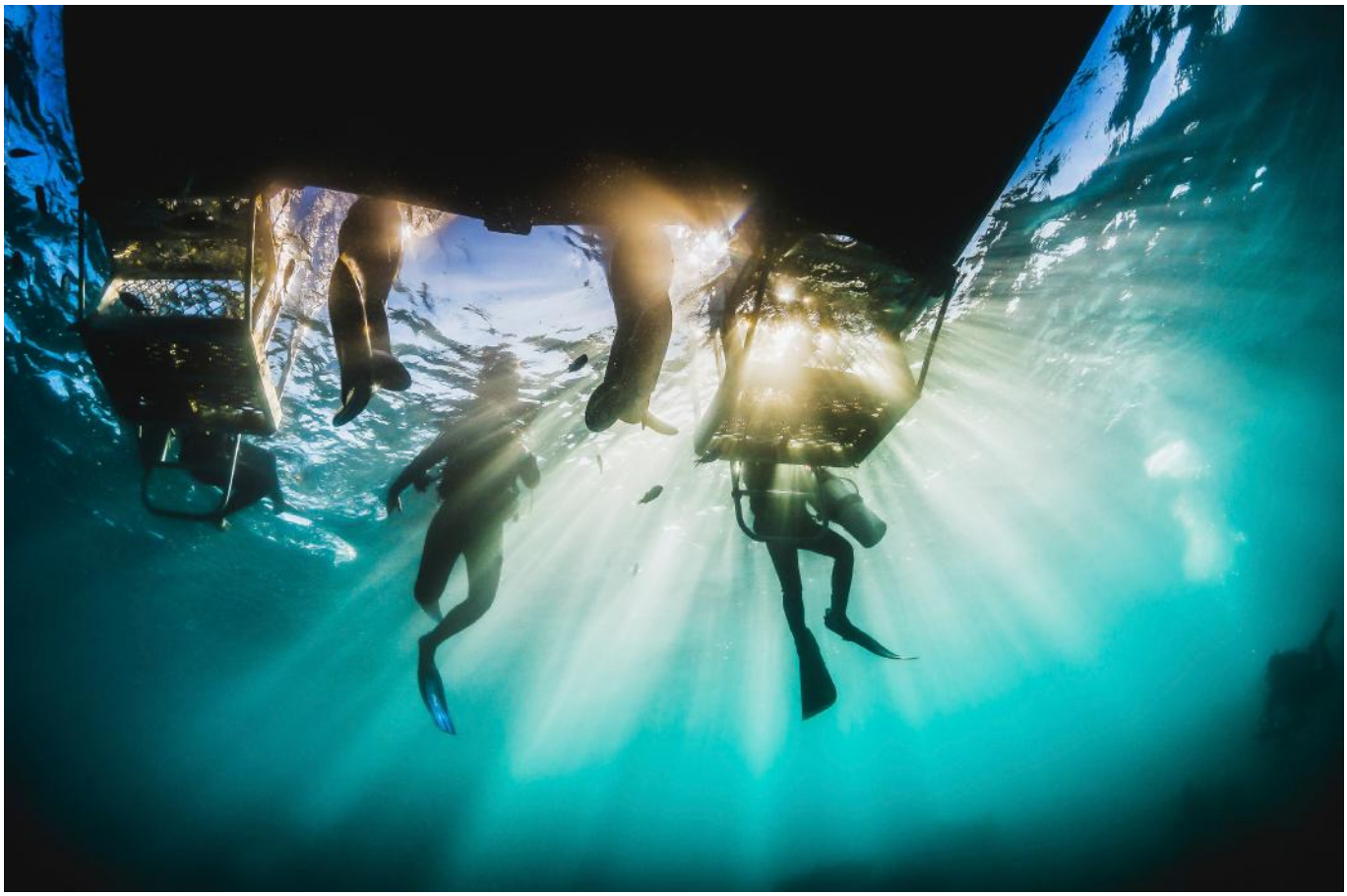
Boat owners are generally required to comply with local laws and regulations governing construction, the use of suitable fire-resistant materials, fire detection and alarm systems, provisions for fire extinguishers, identifying emergency exits and providing the associated signage that may be required prior to opening their vessels or facilities to the public. Owners are also responsible for performing fire risk assessments that focus on possible causes, location and spread of fires instituting operational procedures that will mitigate these risks. Finally, they need to develop and implement Emergency Action Plans in order to protect occupants as well as property at risk; this includes having staff perform regular fire drills. Appropriate training in containing and extinguishing fires is considered a prudent measure.

Though boat operators should be in compliance with the above items, that is not always the reality. Accordingly, we urge dive boat passengers to consider the following:

- Insist on a safety briefing, which should not only include life-jacket stowage instructions, but specifically how you should react in the case of fire.
- Check the escape routes and emergency exits to ensure they are accessible and usable, and familiarise yourself with the operation of any doors or hatches, especially if there are accommodations below deck.
- You may wish to check that there are either portable extinguishers that are accessible and have been inspected, or better still, some form of central overhead fire deluge system.
- Check whether fire alarms and detectors (for flame, smoke and also carbon monoxide) are installed and working. Ask when these were last tested.
- Check whether a (fire) watch system is maintained on board, that there is always a crew member awake and on duty at all times to ensure boat safety and who will be able to react immediately to any kind of emergency. This is especially important for fire safety, and depending on location, may actually be a Coast Guard requirement.
- If you detect any possible emergency situation, know who to notify. If at any time you notice that they are absent or asleep, wake them up or find any available crew member. This is a serious matter and should be reported to the crew member in charge or even the captain, depending on how large the vessel is.

EVACUATION PROCEDURES

A fire can spread fast, smoke can reduce visibility to zero in no time, and the toxins in the smoke can rapidly debilitate anyone. The heat generated by a fire can also cause



significant burns and prevent access to exits. However, most victims in a fire succumb to smoke inhalation rather than burn injuries.

Therefore, as soon as a fire is detected, everyone should react immediately.

Here is some advice on how to act appropriately:

- Wake up others or activate the fire alarm as soon as you notice any fire or smoke.
- Don't lose time searching for personal belongings. Time is crucial and even 30 seconds can make the difference between life and death.
- Remain calm (Yes, this is easier said than done!).
- Don't take any suitcases or bags with you. Your life is worth more than whatever is inside and they can hinder you and block escape routes, making evacuation difficult or impossible for you and others.
- Where possible, and if it is safe to do so, help others during evacuation.
- Follow the instructions of the crew; they should be better trained and equipped to contain a fire, rescue any passenger that has been trapped, and ensure your safety.
- If you see a fire inside a room, avoid opening the door or any window as the entry of fresh air (hence additional oxygen) will rekindle a fire or increase its development and intensity.
- Never re-enter a vessel that is on fire. This may jeopardise both you and the crew's lives.

OTHER CONSIDERATIONS

Although rare, the consequences of a fire may be dire and often fatal. You may want to consider these suggestions when travelling.

First, although your survival instinct might take over and determine some of your actions in a life-threatening situation, many people won't know how to act. Knowledge of fire safety and training in emergency procedures will be very helpful when dealing with a fire, certainly in helping you to keep calm and remain focused.

Keep a small (waterproof if on a boat) bag or container next to your bed, just big enough to hold your passport, wallet and any special medications you might need. It should be as small as possible to not limit your movements and in no way slow down evacuations. If wearing glasses, especially when they could be needed during an evacuation, keep them within reach so that no time is lost in looking for them.

Do not charge the batteries in your flashlights, cameras (especially video cameras and lights), scooter or other large devices in your cabin, and perhaps even your laptop computer, tablet or cellular phone when you not present or when asleep. This is especially important if there are no smoke alarms.

In addition, do not overload any electrical power outlet with too many electrical devices. This could easily lead to overheated extension cords, adapter or power strips, and or cause an electrical overload that could lead to fire.

Since the recent tragic boat fires, some divers have taken to purchasing portable (domestic-type) carbon monoxide or smoke monitors for use in their cabins. You might even consider bringing along a small portable smoke hood (protecting both your eyes and lungs) if you are concerned about fire or smoke emergencies. Note that this is something that the boat owner might consider, depending on where the accommodations might be on the boat.

Finally, pay special attention when smoking onboard a dive boat. Flammable materials, such as fuel, cleaning solvents and compressed oxygen are often present in restricted areas.

Dive travellers, remember that fire risk is not only a concern while you are on the boat; it is also present in the hotels that you stay in as well as in dive centres that you may visit. We should thus be aware of the fact that we could be comprised onshore too.

Are you a dive professional or dive operator? Participate in DAN's HIRA project, and reduce the risks you might encounter in your dive business.

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UPCOMING EVENTS

CLEANUP ARABIA CAMPAIGN

INDEPENDENT DIVE & BEACH CLEAN-UPS | ONGOING
The Campaign Post COVID-19 for EDA Members

Cleanup Arabia should not just be about our campaign in November each year over a few weekends. Cleanup Arabia should be every day we are able to get out into the outdoors and give our environment some TLC. With so many of us independently taking part, solo or in small groups, we are able to cover more ground and different areas than we would at one big event. Check out and read the complete Cleanup Arabia Guide for Members here: **https://bit.ly/38GnQfp**

EDA MOVIE SCREENING

WATSON | VOX Cinemas TBC Subject to COVID-19 and/or Online Screening
Wednesday 10th February 2021 | 1h 39m

Like a crime-fighting superhero of the high seas, Sea Shepherd founder Paul Watson has spent his life sailing the globe to keep our oceans and their inhabitants safe. Blending revealing contemporary interviews with Watson, archival clips of Sea Shepherd's dramatic encounters, and spectacular underwater nature footage, Lesley Chilcott paints a portrait of a man willing to put his own life and liberty at risk in a relentless quest to protect the oceans and the marine life within.

DIVE MENA EXPO

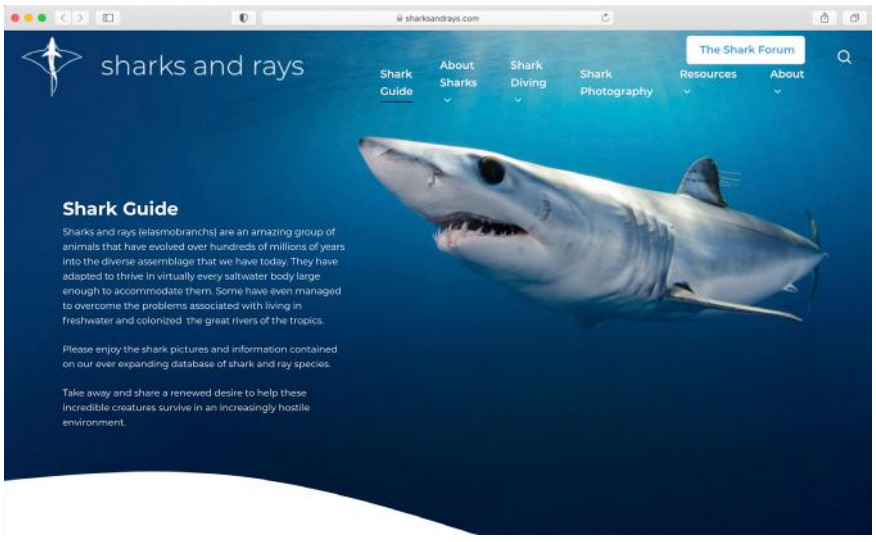
CO-LOCATED AT THE DUBAI INTERNATIONAL BOAT SHOW
Dubai Harbour | 9-13 March 2021 | 10:00-19:00

The Dubai International Boat Show is the largest and most established boat show in the UAE, GCC and Middle East. Whether you want to buy a boat, discover luxury yachts and super yachts, explore the latest diving and aquatic innovations or ride the sparkling waves, it's the definitive event for luxury and lifestyle. Co-located with the Dive MENA Expo, the only dedicated show for the UAE and GCC diving community.

DID YOU KNOW?

SHARKS AND RAYS: SHARK GUIDE

Sharks and rays (elasmobranchs) are an amazing group of animals that have evolved over hundreds of millions of years into the diverse assemblage that we have today. They have adapted to thrive in virtually every saltwater body large enough to accommodate them. Some have even managed to overcome the problems associated with living in freshwater and colonized the great rivers of the tropics.



Please enjoy the shark pictures and information contained on our ever expanding database of shark and ray species. Take away and share a renewed desire to help these incredible creatures survive in an increasingly hostile environment.

Check it out here: **www.sharksandrays.com**

EDA
جمعية الإمارات للغوص
Emirates Diving Association

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MISSION STATEMENT

To conserve, protect and restore the UAE marine resources by understanding and promoting the marine environment and promote environmental diving.

LEGISLATION

Emirates Diving Association (EDA) was established by a Federal Decree, No. (23) for the year 1995 article No. (21) on 23/02/1995 and chose Dubai as its base. The Decree stipulates the following responsibilities for EDA.

- To legislate and regulate all diving activities in the UAE.
- Ensure environmentally respectful diving practices in all EDA members.
- Promote and support the diving industry within the UAE by coordinating the efforts of the diving community.
- Promote diving safety in the commercial and recreational diving fields through standardization of practices.
- Promote and preserve historical aspects of diving within the gulf region and enhance environmental education to diving and non-diving communities through EDA activities.

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DIVE MENA EXPO

9 - 13 MARCH 2021

Reformed & Rejuvenated

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To ensure the success of your business, Dive MENA Expo is targeting **154,000+ certified divers in the GCC**, here's why you should attend:

- **Partnerships with Dive Clubs** hosting their members at the show
- **Celebrity Dive Speakers** in partnership with Emirates Diving Association
- **Interactive dive experiences** on the show floor
- **Special priced stand packages**

Loving what's to come

For exhibiting, sponsoring or visiting enquiries call us on
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Free entry to the show to all divers who have dive licenses with PADI, SSI, BSAC, CMAS, AIDA and NAUI!

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