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DIVERS FOR THE ENVIRONMENT

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DIGITAL ONLINE 2020

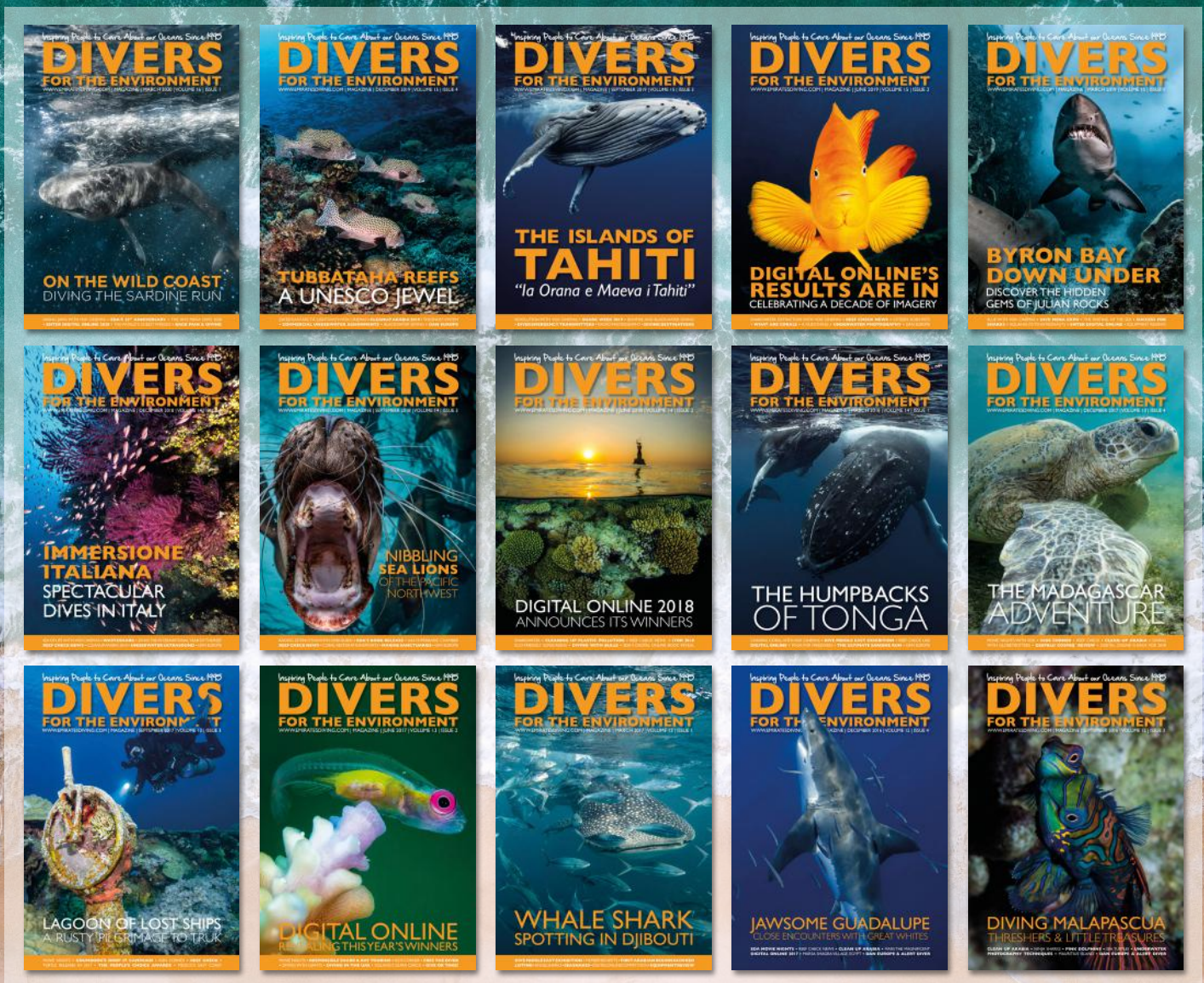
EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION

PRESENTING THE RESULTS

RUBBER JELLYFISH SCREENING • CORAL GARDENERS • MARINE DEBRIS FOUND IN GREENTURTLES
• SHARKS & CLIMATE CHANGE • MYSTERY STEAMSHIP • DIVE OPERATIONS & COVID-19

SOCIAL DISTANCING 2020

#StayHomeStaySafe



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Emirates Diving Association

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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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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 September 2020. Send all articles, feedback or comments to: magazine@emiratesdiving.com

COVER

PHOTO BY OLA KHALAF
2nd Place Macro DSLR/MILC Winner | Digital Online 2020



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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.



THE QUARTERLY CONTRIBUTORS

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

STEVE WOODS

Steve Woods is an underwater photojournalist working in and around Indonesia as a conservation photographer. He founded the Gili Shark Foundation in Lombok, Indonesia and works for various other marine conservation organisations either on location or shooting/donating imagery to them. Steve's commercial clients have ranged from The Guardian, The Times, The Washington Post, New York Times, filming Americas Next Top Model underwater, Rough Guides, SCUBA Diver magazine, Dive magazine, as well as various other national and international publications. He has also contributed to a number of marine conservation documentaries focusing on Sharks and Manta Rays. www.stevewoodsunderwater.com



JESPER KJØLLER

Professionally involved in the diving industry since he started diving in the early nineties, Jesper ran a successful Scandinavian divers magazine for many years. His articles and photos have appeared in books, magazines and websites all over the world. Today he lives in Dubai, involved in marketing but finds time to teach diving to Global Underwater Explorers.



NATALIE BANKS

Natalie Banks is a marine conservationist, spokesperson, researcher, scuba diver, writer and advisor. She has been sought for advice by Australian Governments and conservation organisations as well as having had articles published in international media outlets.



FERNANDO REIS

Conservationist, environmentalist, shark expert, specialised in shark diver training and in shark advocacy. Fernando Reis is the Founder and Executive Director of the Sharks Educational Institute which he set up in 2016. www.sharksinstitute.org



PATRICK VAN HOESERLANDE

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



SILVER LININGS IN A TIME OF CRISIS:

EXPLORING OPPORTUNITIES TO PROTECT THE PLANET



IBRAHIM AL-ZU'BI
EDA Executive Director

As I sit here in lockdown during the midst of the global COVID-19 pandemic, now more than ever, there is a reason to believe in a more positive future. As human activity takes a pause for breath, and global industries – in particular travel and trade – have been constrained, we've seen Mother Earth react almost immediately with green shoots of recovery. Whether it be air and river pollution as we have seen in China and in the Venetian canals, or increased sightings of rare animals, such as dugongs in Thailand and jaguars on the Mayan Riviera, two things have become ever clearer.

We as humans have a profound impact on the health of our planet. Equally, our planet has upped its sleeve on the immense powers of recovery. It's been encouraging to see this positive impact and no doubt this period will be an important future reference point in analysis of the human impact on the climate. We do however need to be careful not to get carried away with this short period of improved sustainability.

Over the centuries, humans have fundamentally changed the make-up of our planet. Our activities have caused global warming and the destruction of the natural world with farming, mining, and housing, driving wildlife out of their natural habitats and into more contact with people. This activity has brought imminent danger to humanity, given that 75% of all emerging infectious diseases come from wildlife.

The COVID-19 pandemic is no different, but it may have a favourable climate impact. The virus has resulted in the shutdown of most human production and transport activities, causing CO₂ emissions to drop in several countries around the world. The Organisation for Economic Co-operation and Development has projected that CO₂ emissions may decline by 0.3% - 1.2% in 2020, and European and Asian cities have already witnessed a drop in Nitrogen Dioxide (NO₂). This decline in pollution has had an immediate and visible effect on our environment with images quickly spreading on social media showing a "healing earth".

As tragic as these past few months have been, the pandemic has already taught humanity crucial lessons that can help us curb climate change.

Our first lesson is on how connected we are as humans. If one of us falls, we all fall. The second lesson is that prevention is better than the cure. The third lesson has shown us the power of having a global focus. If governments can take extreme actions and shut down

workplaces and restrict movement, they can also take similarly drastic steps to change how we produce and consume energy. Measures do not have to be as abrupt or as severe, but coordinated, concerted global action is indeed possible. The fourth lesson is that we now understand how behavioural change is important for us to tackle global challenges. People have started working from home, reducing human interaction, riding bikes everywhere, and we have stopped handshaking. We have a better understanding of the consequences of our actions, and this presents a huge opportunity to shift our behaviour to a "greener" one too.

Last month, we held the 11th year cycle of Digital Online – EDA's Underwater Photography and Film Competition winners' announcement via a virtual event. I thank all our underwater photographers and videographers for sending EDA their amazing photos and films of the varied marine life from all the places they have dived. It is very inspiring and beautiful as usual. I want to congratulate all the participants for enriching EDA's photo library with such amazing imagery – I am sure you will all agree with me when you see all the photos in this issue. I also want to thank the judges, the sponsors, and the EDA team for another successful EDA event towards promoting for diving, not only in the UAE, but the whole region and world.

I do hope you enjoy reading our summer issue of 'Divers for the Environment'. The EDA team is working tirelessly to have another successful year and we are looking forward to seeing you all at the next EDA events.

Stay Safe,

Ibrahim N. Al-Zu'bi

A VIRTUAL EDA MOVIE SCREENING WITH VIMEO ON DEMAND

RUBBER JELLYFISH



Carly Wilson, Rubber Jellyfish's Director, sorting through balloons collected on clean-ups.

With our May Movie Screening having been just around the corner, we asked Conservation Heart Films if it was possible to purchase a screening to host it virtually through access codes. The idea was liked so much, it has been turned into Rubber Jellyfish's new screening method during COVID-19.

On the 6th of May, we successfully went ahead with our screening of Rubber Jellyfish through Vimeo on Demand so our EDA Members could watch it from the comforts and safety of their own homes. The only difference being, everyone could choose the timings they wanted to see it on the same day as the rest of us so we could get a conversation going through our social media platforms.

RUBBER JELLYFISH FILM SYNOPSIS

We all know that throwing rubbish on the ground is littering, so why is letting a balloon float away seen as something different? Rubber Jellyfish is a feature-length documentary that explores the effects of helium balloons on the environment, wildlife and human beings. Mum-to-be Carly Wilson sets out on a personal journey to meet key players on all sides in the fight to ban balloons,

and exposes the confronting truth behind our favourite party product. As she travels around Australia seeking to understand the science and various points of view, Carly discovers a range of issues, from the heartbreaking impact on sea turtles to the potentially deadly effect of helium on children. Her journey takes her from littered beaches to the capital, as she speaks to activists, businesses, and politicians to find out why the balloon problem is being ignored and if something can be done.

THE FILM MAKER'S JOURNEY

"Rubber Jellyfish took me over three years to make. I actually had two children over the process (one during production and one during post production) so I can literally say that this film has been a labour of love. Despite the challenge of creating a film with one and then two little kids to look after at the same time, I pressed on because as I started investigating the topic, a very interesting story started to unfold that I felt people deserved to know about. Eventually a community began to build around the project which has resulted in a finished film that has made a significant global impact and something I am very proud of. The film explores the surprising damage that helium balloons are causing to

endangered marine wildlife and unravels the balloon industry greenwashing that has lead consumers to believe that latex balloons are 100% biodegradable and environmentally friendly. This has in turn lead to the popularity of balloon release ceremonies and countless animal fatalities as a result. The film is already making an impact as far as policy goes and the balloon industry is also changing and improving which I feel is partly the result of the public exposure generated by the film. This experience has opened my eyes not only to a largely unknown and troubling conservation problem but also the power of film making."



EDA Member, Lara El Lakkis watching Rubber Jellyfish from her home.

CONSERVATION HEART FILMS presents in association with DEER OWL PRODUCTIONS

RUBBER JELLYFISH

*The confronting truth behind
our favourite party product*

Proudly supported by:



www.rubberjellyfishmovie.com

A RECORD DECREASE IN DUGONG MORTALITY RATES IN THE FISHING WATERS OF ABU DHABI

TEN DUGONG DEATHS RECORDED DURING PEAK SEASON IN 2019-2020 COMPARED TO 23 DEATHS IN PREVIOUS SEASONS



The mortality rate of dugongs in the fishing waters of Abu Dhabi has decreased significantly, the Environment Agency – Abu Dhabi (EAD) has observed. Ten deaths were recorded during peak season in 2019-2020, compared to 23 deaths in previous seasons.

Data from EAD shows that seven dugongs died from drowning, while the causes of the other three cases have not been identified.

The decrease in the number of deaths is a result of the enforcement of the Ministerial Resolution regulating surface fishing nets in Abu Dhabi, where the act of surface fishing via encircling nets in the Emirate of Abu Dhabi was prohibited.

Ahmed Al Hashmi, Acting Executive Director of EAD's Terrestrial and Marine Biodiversity said, "In the past season, recorded dugong deaths were the lowest for the past five years. We recorded only ten deaths in the 2019-2020 peak season, which lasts from October to the end of May. This shows the success of the resolution on the regulation of surface fishing via encircling nets.

"It is also evidence of the fruitful collaboration with other relevant authorities to protect endangered marine species such as dugongs and sea turtles.

Al Hashmi added, "The statistics show that the deaths of dugongs during peak seasons coincides with seasonal barber fishing – locally

known as Hiyali. Peak seasons are where dugongs are close to coastal areas and islands."

Al Hashmi indicated that, "EAD is currently reviewing the regulatory legislation that contributes to the sustainability of fish stocks and the protection of marine species and their natural habitats."

He said, "Our inspection team worked closely with the Critical Infrastructure and Coastal Protection Authority to increase monitoring of the illegal use of fish nets in reserves and marine areas. We have also partnered with the relevant authorities to raise awareness about marine wildlife and environmental legislation."

In December 2018, EAD in coordination with the Ministry of Climate Change and

Environment amended the provisions of the Ministerial Resolution regarding the regulation of surface fishing via encircling nets. The use of nets in the waters of Abu Dhabi from December 2018 were prohibited due to a noticeable increase in dugong deaths.

Dugong deaths are normally caused by drowning, degradation of their natural habitats, marine pollution, suffocation after being trapped into illegal fishing nets, and colliding with speed boats.

Abu Dhabi is home to the second largest population of dugongs in the world, amounting to 3,000. They are an important species vulnerable to extinction and mainly living in the waters surrounding the Marwah Marine Reserve.



CELEBRATING ITS 25th ANNIVERSARY, ENVIRONMENT AGENCY – ABU DHABI HIGHLIGHTS ITS MOST PROMINENT ACHIEVEMENTS IN 2019 ANNUAL REPORT



The Environment Agency – Abu Dhabi (EAD) released a new digital version of their 2019 Annual Report on the 13th of May, highlighting their key achievements to preserve the environment and biodiversity, combat climate change and work towards a sustainable future.

In 2019, EAD celebrated its 25th anniversary and the report looks back at the prominent initiatives and projects undertaken across several environmental sectors to improve the quality of land, air and the marine environment in Abu Dhabi. Heading into 2020, EAD has developed a national strategy to propel environmental efforts forwards in the next 50 years.

In the foreword of the report, His Highness Sheikh Hamdan bin Zayed bin Sultan Al Nahyan, the Ruler's Representative of the Al Dhafra Region and Chairman of the Board of EAD said, "Today we stand proudly 25 years on from the beginning of Abu Dhabi's environmental journey, inspired by the late Sheikh Zayed bin Sultan Al Nahyan, the Founding Father of the UAE.

Our priority is to address the local and global challenges of providing real environmental security, as well as outlining our efforts to protect biological diversity and the environment. These priorities stem from the UAE's keenness to conserve nature.

We will strive to protect the progress and achievements of this country over the past few years in order to achieve truly sustainable development within economic, social and environmental dimensions."

One of the many achievements highlighted in the report includes EAD'S contribution to protecting the wildlife and natural heritage of Abu Dhabi. This includes monitoring the Arabian Oryx population in Abu Dhabi that has now reached 5,000, now the largest herd in the world, and protecting the dolphins that live in Abu Dhabi waters, including the Indian Ocean humpback dolphin of which the capital is known for having the highest number in the world.

In 2019, EAD has also closely observed the number of dugongs in Abu Dhabi, with numbers reaching more than 3,000 – making it the largest population in the world. The same year, EAD collected reference samples of invertebrates that led to the conservation of 2,457 species, of which 100 species were not previously known in the UAE.

Another major highlight of the year was increasing the number of reserves that are managed through the Sheikh Zayed Protected Areas Network to include 19 land and marine wildlife reserves, that now cover 31% of Abu Dhabi.

In 2019, EAD and the Ministry of Climate Change and Environment launched the UAE National Framework for Sustainable Fisheries (2019-2030) which is the UAE's first-ever national recovery plan for fisheries. In addition, two important commercial fishing methods were banned in the Emirate of Abu Dhabi – namely gargoor and ghazal.

As a regulatory authority and policy decision-maker; by the end of 2019, EAD had reviewed more than 2,000 impact assessment studies, 4,800 environmental compliance inspections and issued more than 2,500 environmental licenses for industrial, commercial and development projects and facilities.

To enhance air quality efforts, EAD has continued to monitor 20 fixed and two mobile stations that compose the Abu Dhabi's comprehensive air quality monitoring network. Abu Dhabi's extensive network of marine water monitoring sites were strengthened, assessing the state and quality of Abu Dhabi's water and its sediments.

In 2019, 18,000 groundwater wells were assessed across Abu Dhabi resulting in the launch of the Abu Dhabi Ground Water Atlas to improve the efficiency of groundwater use.

The agency has also played a transformative role in increasing environmental awareness among members of the public and targeted more students and teachers in 2019, with EAD reaching more than 85% of students (around 1.8 million) in government and private schools based in Abu Dhabi.

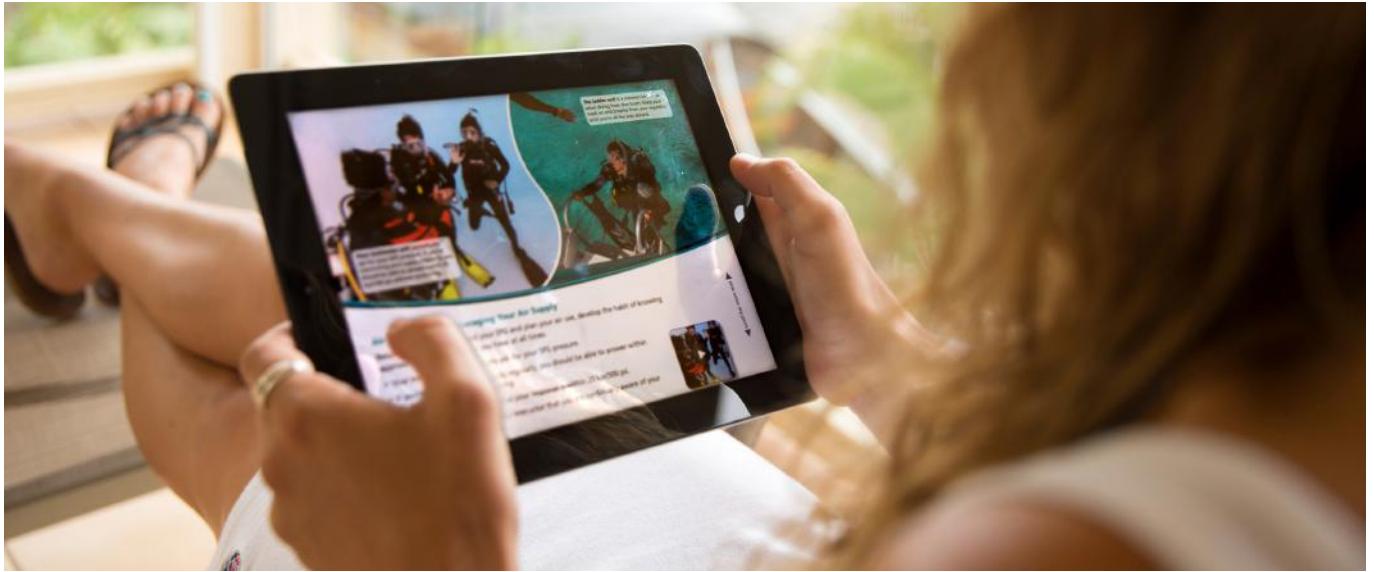
Her Excellency, Dr. Shaikha al Dhaheri, Secretary General of EAD, concluded, "We will continue to work for more success and progress in 2020 with the implementation of our government's vision to achieve a balance between economic and social growth and environmental protection. As always, the agency will work towards ensuring the sustainability of our natural resources and the continuity of a better life for future generations."

EAD's conservation efforts have also extended beyond the borders of the UAE. Another recognised partnership was the successful resettlement of Scimitar-horned Oryx in Chad and in 2019, EAD also expanded their reintroduction efforts to include the Addax and Dama Gazelle.

View the Annual Report 2019 online:
www.ead.gov.ae/annualreport2019/en/

LEARN A NEW SKILL FROM HOME

AND START YOUR DIVE ADVENTURE WITH PADI ELEARNING®



As the lockdown eases, but we are still spending more time at home, there's never been a better time for you or your family to learn exciting new skills or brush up on existing ones.

Adventure doesn't have to wait. Whether you're considering diving into a new sport and scuba is on your list or you want to further your existing experience, PADI®, the world's largest diver training organisation has a range of online courses to get you started on your next underwater adventure now.

Learning to scuba dive requires both knowledge and practical dive skills. PADI has a range of eLearning courses, so you can

start your diving adventures at home with the knowledge development portion of a course and work at your own pace.

This convenient, interactive study option allows you to learn anytime and anywhere and uses videos, audio, graphics, reading and short quizzes to help you learn and gauge your progress.

You have an entire year to complete the online portion, and can connect at any time with a PADI Dive Centre to complete your in-water training.

When the current global situation calms, you will then be ready to get in the water right

away, develop your dive skills and complete your certification with your PADI Instructor. PADI has Dive Centres located across the UAE making underwater exploration, adventure and truly memorable dive experiences easily accessible for novices or experienced divers right here on our shores.

For more information about PADI eLearning, please contact a PADI Dive Centre or visit www.padi.com/dive/promotion-elearning



WHY NOT SOCIAL DISTANCE IN THE SEA THIS SUMMER?



The summer season is almost upon us again and with the majority of us spending summer here in the UAE, what better way to escape the heat than diving in the ocean?

My name is James Campbell. I'm a marine biologist and I work at Freestyle Divers in Dibba, Fujairah. I arrived here at the beginning of 2020 to establish a marine conservation department with education as my primary focus.

Over the last months of lockdown, I have had far more time to develop materials than expected and the result is that we now have a broad spectrum of courses to increase awareness and understanding of the conservational issues threatening our beautiful coral reefs here in the UAE.

I will be running courses and practical internships that cover the different ecological and social aspects of our marine ecosystem – these can be tailored to an individual's interests depending on time availability and areas of particular focus.

Divers spend thousands of hours underwater and sometimes during a dive you will wonder how and why different species are interacting in the way in which they do. Congratulations! You're already an ecologist and the study of ecosystems will allow you to perceive the underwater realm in a new and analytic way.

If you've ever wondered what coral is; why that fish is fluorescent yellow; why that fish is charging at your mask; how the oceans actually work and why they are so vital to humanity and our planet, then this is your opportunity to find out more.

Within the Freestyle Divers Academy curriculum, we offer courses for every age group. Whether you are a snorkeller or an experienced diver; you can choose to dip your toes into marine biology or dive right in. The core course is an extended version of the RAID ecological diver programme – this can be delivered as a short course for busy ocean lovers with time constraints, or it can become a full month internship.

We are very keen to get our younger generations interested in diving and to educate them about our beautiful oceans and what we can do to minimise the threats facing them.

Our Junior Ocean Explorer course is aimed at kids up to 12. They can spend a full day learning about the oceans and marine ecosystems, before snorkelling with turtles and sharks (baby sharks, doo doo doo doo...) After months of home schooling, we're sure that parents will all love a little "me time" while we take the kids on a swashbuckling ocean adventure.

The Ocean Explorer programme is aimed at teenagers up to 16, combining a Try Scuba Diving session with marine biology educational lessons over the course of one day.

If you are already a qualified diver, then you can get involved with our conservation work at the Freestyle Divers Academy. We have internship programmes that combine educational sessions with practical diving. We do work with artificial reefs, coral propagation, as well as scientific reef surveys as part of our environmental monitoring programme at Dibba Rock, the oldest marine protected area in the UAE.

These internships can be two days, five days, ten days or twenty. You can do the modules consecutively or spread them over multiple weeks. The educational focus can be tailored to specific interests.



Feel free to email me at james@freestyledivers.me if you would like more information. I look forward to welcoming you to our Freestyle Divers Academy science team!

DIVEHEART BORNEO WITH SOME VERY SPECIAL KIDS

BY **ERNEST C. TEO – DIVEHEART BORNEO COORDINATOR**



Diveheart is a non-profit organisation which started out in Chicago, USA with the objective 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 programme is to instill 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.

Diveheart supports educational scuba diving programmes to provide both physical and psychological therapeutic value to that person. With the programme, we’ve discovered the forgiving, weightless wonder of water which provides the perfect gravity-free environment for those who might otherwise struggle on land. Underwater, we’re all equal.

We work with individuals who have a variety of disabilities, including physical and developmental disabilities, vision and hearing impairments, amputations, traumatic brain injuries, post traumatic stress disorder and more.

The in-water training was organised by local Kuching PADI dive centre, Premier Marine and Scuba Centre and the Diveheart training was conducted by myself, Ernest C. Teo, a PADI Instructor and the Diveheart Borneo Coordinator. Among the volunteers

were medical professionals and professional rehab physiotherapists. The Diveheart Kids programme in Kuching, Sarawak is the first one to have been done in Borneo.

MERYL'S EXPERIENCE

Kimberly first learnt of the Diveheart programme from her daughter's therapist at the centre where she normally goes for her sessions. A week later, she signed her daughter Meryl for a try out at the pool organised by the Diveheart Borneo team and Meryl immediately fell in love with scuba diving. She was so happy and felt passionate about it.

“I can still clearly remember how hard it was for me to get her out of the pool”, recalled Kimberly.

Meryl is a lovely nine year old girl with cerebral palsy that affects her walking. Initially, a friend of Kimberly's was worried scuba diving may be dangerous for Meryl at her age. However, Kimberly felt differently as the team was well trained and certified for such an activity.

Diveheart programmes provide scuba therapy to participants in a safe and controlled manner with the support from trained Adaptive Dive Buddies. A step further than the usual aquatic therapy, here participants can submerge wholly underwater while escaping the confines of gravity. Being underwater will also soothe the mind of anyone creating additional advantage to participants.

The continuous scuba therapy sessions has made Meryl more comfortable in water. According to Kimberly, “Scuba therapy has benefitted Meryl in a lot of ways. She is able to move every part of her body and it gets her to think what she needs to do. Nowadays, she is more alert of her surroundings, and feels more confident in herself.”

Kimberly enjoys watching her daughter dive and what makes it more joyous, is that Meryl and her siblings now have fun together in the pool after every session. She also said she would recommend scuba diving to her friends as it helps to calm their anxiety, improve their self esteem and makes them imagine all the possibilities.

Since Meryl started participating in the Diveheart Kids programme with the dedicated Diveheart Borneo team, she has set a new short term goal which is to earn her PADI Seal Team certification and to work harder on her physiotherapy so that she can manoeuvre better in water. Her mother said she will support her daughter's dream as Meryl looks forward to dive in the open sea one day.

For those who are interested to be a Diveheart volunteer, they can contact Premier Marine and Scuba Centre in Kuching. Volunteers do not have to be scuba divers as there are many areas they can be of assistance.

www.divekuching.com

DIVEPOINT OF RANNALHI, MALDIVES NOW DIVES WITH THE ENOS-SYSTEM

MALDIVES' 1st RESORT TO HAVE THE BEST DIVER SAFETY SYSTEM ON BOARD



The Maldives has been a highly desirable destination for divers for many years. Here, the Indian Ocean shows off one of its best sides, thanks to the warm nutrient rich waters and currents. Strong currents can however change an eventful dive into a horrific trip – when divers are swept away and cannot be found. Large-scale search operations result, but do not always end successfully.

Divers can rest at ease when they book their trips to Rannalhi island, knowing that Marcus Hauck, owner of the DivePoint dive centre located in the South-Male atoll, has taken on the ENOS rescue system for divers on board his operation since March 2020.

EXTRA SAFETY

Hauck purchased a portable ENOS-Receiver which can be carried on to another boat if required. He has always been vigilant on safety and installed an additional antenna up on the roof of the Dohny (a typical Maldivian boat) to be able to receive alerts including those from longer distances.

A WELL EDUCATED CREW

Just by announcing his intention to implement the ENOS-System, Hauck received high

appreciation from his staff. They have daily struggles with the fear of losing divers to the currents. No wonder the enthusiasm was so high when Karl Hansmann – owner of Seareq and inventor of the ENOS-System – gave them their training.

THE 1st RESORT WITH ENOS

It didn't take long to train the staff since the ENOS-System's beacons are easy to handle and the graph on the receiver screen is simple to read and clearly shows the position of the divers locations.

"What an alleviation!", summarises Hauck and proudly points out that DivePoint Rannalhi is Maldives' 1st resort to have the ENOS-System! There are many islands providing a wide range of water activities: wind and kite-surfing, catamaran, seabob, SUP and much more. But what safety measures are there in place for the water sports enthusiasts? Shockingly, none! The Maldives are well-known for very sudden changes in the weather. This is definitely irresponsible and there's a lot of safety precautions to catch up on – except in Rannalhi.

ABOUT SEAREQ

Seareq was founded in 2003 and specialises

in safety and rescue equipment especially for the scuba diving industry. Seareq developed the Electronic Rescue and Locating System ENOS®, the world's first GPS supported rescue system which functions independently from coast guards and marine coordination centres. Speedy rescue operations are possible, even in remote areas. ENOS®-System attached high attention to detail due to its self-confident principle of function which relieves the international emergency frequencies.

For further information, visit: www.seareq.de



THE AQUARIUM

STORY BY PATRICK VAN HOESERLANDE ILLUSTRATION PETER BOSTEELS

To find out more about life underwater, the dive instructors organised a day trip for the young students to visit the local aquarium. Although they weren't going to dive that day, everyone was looking forward to the excursion. Nella had told them it would be just as if they were all diving together. They would all see the same fish while a Marine Biologist would explain some interesting facts to them.



next room. When the guide opened the doors, they saw all kinds of different colours. He called everyone to him and pointed a few things out. When he asked what they were, they answered with flowers and anemones...

"These are corals," he told them. "Corals are very small animals that

catch food with their tiny arms and together they build immense structures called reefs." He showed them a map of coral reefs that had grown for many kilometres. He told them that these little animals are important to everything that lives in the oceans, as well as for humans. They are a source of food, they provide protection for coasts and offer space for recreation. However, we must take better care of these animals. His story made a deep impression on them. But where was Skubba? Fred had lost him. Was he still in the other room?

After they were all gathered in front of the entrance, they entered the first hall with lots of different species of fish. It was suddenly very quiet. They all looked through a large window where fish swam back and forth behind the glass. Their guide told them that all the fish in this aquarium were found in the local lakes and pits where they dived. This is where they started to recognise a few of the species.

"There, a pike!"

"And there, an eel"! And it carried on like this for quite a while.

When they had quietened down again, the Marine Biologist explained the statistics of each species. He pointed out the differences and similarities between them. They found it very interesting and they would now be able to correctly identify fish on their next dives and correctly name them in their logbooks.

They then crossed over to the hall of the North Sea where they saw crabs, shrimps and sepias. Each species received a lot of attention. It was exciting, especially after Nella had told them that they would soon get to go out on the boat to dive and encounter each of these on their next trip.

They were told that fish in their region displayed very little colour, but this was not the case for the species they saw in the

The group moved on to see an aquarium with larger fish in it. They suddenly saw two pairs of fins appear below the surface of the water. A lady from the aquarium said that divers helped with maintenance and that two of them would give a demonstration. And then Fred recognised his friend. "Skubba!" he yelled.

"He cannot hear you," said the kind lady.

"Right, yes," Fred replied. He knew that, but he was happy that he had found his friend.

After they had watched Skubba's dive in the aquarium, they walked on through to the remaining hall. Moments later, Skubba returned to the group excited to tell them what it had been like in the big aquarium.

When they reached the exit, they were all disappointed at how fast the visit had been, but it tired them out. On the way home, our friends fell asleep in the back seat of the car, with their heads full of dreams from their day's adventures.

THE DIVING BOAT

STORY BY PATRICK VAN HOESERLANDE ILLUSTRATION PETER BOSTEELS

"We're going to dive from a diving boat," Nella had said. Skubba and Fred had not understood this. Fred wondered how a diving boat would work. How could you open the door without the boat filling with water? He would have to look it up. Skubba did not wonder about things like this. He was confident that Nella knew what she was doing. However strange it sounded. They were going diving, and that was the most important thing to him.

In high spirits, they collected their dive equipment and left to go to the marina. When they arrived, they tried to find the diving boat, but they couldn't see more than a few ordinary boats. They thought, their boat must have still been waiting for them underwater.

"Hey, there's Nella!" Fred yelled. And yes, there she was talking to a few instructors and other young divers.

"Good morning, Nella," both friends said in unison.

"Good morning guys, bring your equipment with you and put it over there," she replied.

"Is the submarine still underwater?" asked Skubba.

A smile appeared on Nella's face and the other dive leaders.

"See that big boat over there? That's our boat."

"But you told us we were going on a diving boat?" Fred said. He was still trying to figure out how you could open the door of a submarine without it filling up with water.

"A diving boat? No, it is a dive boat. A boat to dive with, not a boat that dives," she replied with a smile.

A little disappointed, our friends got their gear out of the car and brought it to the boat. Their disappointment was only short-lived. Although not an underwater boat, a ride on this one was still going to be a fun adventure for them.

When the captain gave the signal to leave, they helped to bring in the ropes (called lines) that tied the boat to the quay. The captain explained to Fred how he would find the dive site with his GPS, just like the one used in cars. He also showed him special maps with special directions for boats to take. Fred had always thought that boats could sail wherever they wanted, but that was not the case. There were also traffic rules at sea, and police too.

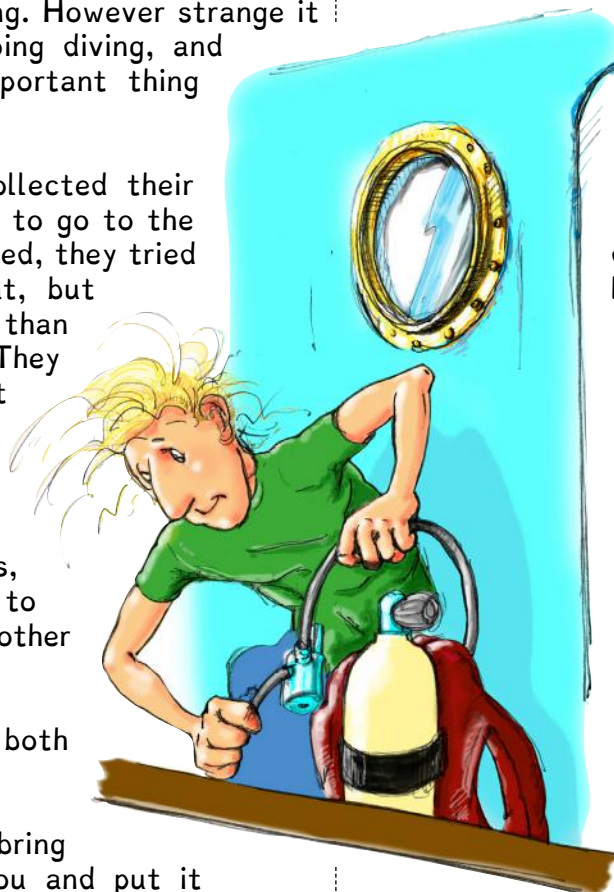
Nella gave all the young divers a guided tour so they would know where everything was on board. The funny thing was the toilet. To flush it, you had to pull a lever. You had to close the tap after

use because if you didn't, the boat would fill with water.

Everyone had their dive gear neatly and safely stowed away. The boat was large, but with all those divers, the deck where you walked, could soon be full of obstacles and become a dangerous place if things aren't put away properly.

The captain suddenly shouted that they had arrived to their dive site. He let the anchor drop and hoisted a white-blue flag. Nella explained that it was the dive flag to warn other boats around there are divers below.

Everyone began to calmly put their equipment on... ready to go diving!



AN OCEAN OF NEED DURING UNCERTAIN TIMES

BY REEF CHECK FOUNDATION PHOTOGRAPHY DON KING



As COVID-19 continues to spread, the future has never felt so unpredictable. These are challenging times for us all, and we hope you're in good spirits and health! We are in uncharted waters. In terms of Reef Check operations, we are following Government advice and have put strict measures in place to protect our staff and volunteers. Right now, we're doing everything possible to sustain our bare-bone daily operations and maintain services locally and internationally. While there's a lot of uncertainty, we know that we need to continue to adapt quickly to our changing reality.

While protecting our community, we must also consider the economic implications of the virus and the potentially damaging financial impact on Reef Check. We have had to cancel several important fundraising events this year, including our auction, depriving us of the financial safety net that allows us to continue our important mission. Now, more than ever, our marine environment needs us, and we need you. In order for us to be able

to sustain our operations, we need to raise \$40,000. If you are able, we are asking that you please make a donation to help sustain us during this critical time. Any amount would be appreciated and would help ensure that we emerge from this difficult period with the ability to jump straight back into the ocean of need that will be waiting for us out there.

Immediately prior to the coronavirus crisis, the State of California approved a grant for Reef Check to conduct the Bull Kelp Restoration Project in Northern California. If the first year of this project is successful, we will expand the effort to other areas to create a North Coast network of bull kelp forest. Without these efforts, kelp forests and the species that they harbour might be lost from California's north coast forever. We are still planning to start this project this summer and have made modifications to ensure the safety of our community and ourselves. In addition, we plan to be ready to restart our reef monitoring programmes around the

globe the moment this becomes feasible and we hope that with your help now, we will be able to get right back into our important work when the time comes.

If you are unable to donate at this time, there are many other ways you can support us! You can advocate for us by sharing our mission with a family member or friend. Even a quick mention on your social media would mean the world to us.

We would also love to hear from you – what have you been up to at home? Have you been able to volunteer in any way? Are you finding creative ways to stay in touch with nature? Let us know through our social media or in an email and maybe we will be able to feature your story on one of our channels.

You can give now by visiting our secure donation page: <https://bit.ly/2LuAHEF>

MANTANANI REEF DAY

ORGANISED IN MALAYSIA TO HIGHLIGHT ISLAND'S CORAL REEFS

BY **REEF CHECK MALAYSIA**

Mantanani is a remote island in the South China Sea, an hour off the West coast of Sabah. Home to a traditional fishing community of a thousand or so people, in recent years it has become a popular tourism destination. Reef Check Malaysia has been working with the local community since 2014 to address various conservation issues including fish bombing and tourism impacts.

Our goal is to establish a community-run marine managed area at the island, in which local stakeholders have a say in the management of the island and its resources, and we are working with both local stakeholders and government agencies to achieve this. In addition, we are helping local islanders to develop new livelihoods, and we have conducted a variety of training and capacity building programmes, including marketing and entrepreneurial skills and snorkel guiding skills. We have also improved waste management on the island – our recycling system has saved thousands of plastic bottles from ending up in the sea.

Our colleagues on the island recently organised the 2020 Mantanani Reef Day, the third annual celebration to highlight and promote coral reef conservation on the island. The two-day event included education and awareness programmes for both school children and islanders, and a reef rehabilitation programme with members of the Mantanani Nature Youth Club and resort operators, which saw the deployment of some new coral frames for coral reef restoration.



FEATURE CREATURE

BASKING SHARK (*CETORHINUS MAXIMUS*)

FEATURE **IUCN RED LIST 2019** PHOTOGRAPHY **SIMONE CAPRODOSSI**

RED LIST CATEGORY & CRITERIA: **ENDANGERED**

Scientific Name: *Cetorhinus maximus*

Synonyms: *Squalus maximus* Gunnerus, 1765

Common Names:

English: Basking Shark

French: Pelerin

Spanish; Castilian: Peregrino

JUSTIFICATION

The Basking Shark (*Cetorhinus maximus*) is a very large (to ~1,100 cm total length), highly migratory, filter-feeding shark distributed mainly in the Atlantic and Pacific Oceans in coastal and pelagic habitats from the surface to 1,264 m. It occurs near the surface in temperate waters and deeper, below the thermocline, in tropical waters. The species has low biological productivity with limited fecundity and late age-at-maturity. Although no longer targeted, it is still caught as bycatch in trawl, trammel nets, and set-net fisheries, and becomes entangled in pot lines. The large fins are extremely valuable in the fin trade. Across regions, there have been some severe historic decline, however there are indications of some stability and possible slow recovery since

cessation of target fishing and high levels of protection. The global population may now be beginning to stabilise, with signs of that from the Northeast Atlantic, although elsewhere there is little information upon which to assess stability. However, abundances are still estimated to be well below historic levels and there is ongoing demand for the high-value fins, and a global population reduction of 50-79% is suspected over the past three generations (102 years). Therefore, the Basking Shark is assessed as Endangered.

GEOGRAPHIC RANGE

The Basking Shark occurs mainly in the Atlantic and Pacific Oceans; in the Indian Ocean, it is reported only from southern Australia, Indonesia, and South Africa (Ebert et al. 2013, Fahmi and White 2015).

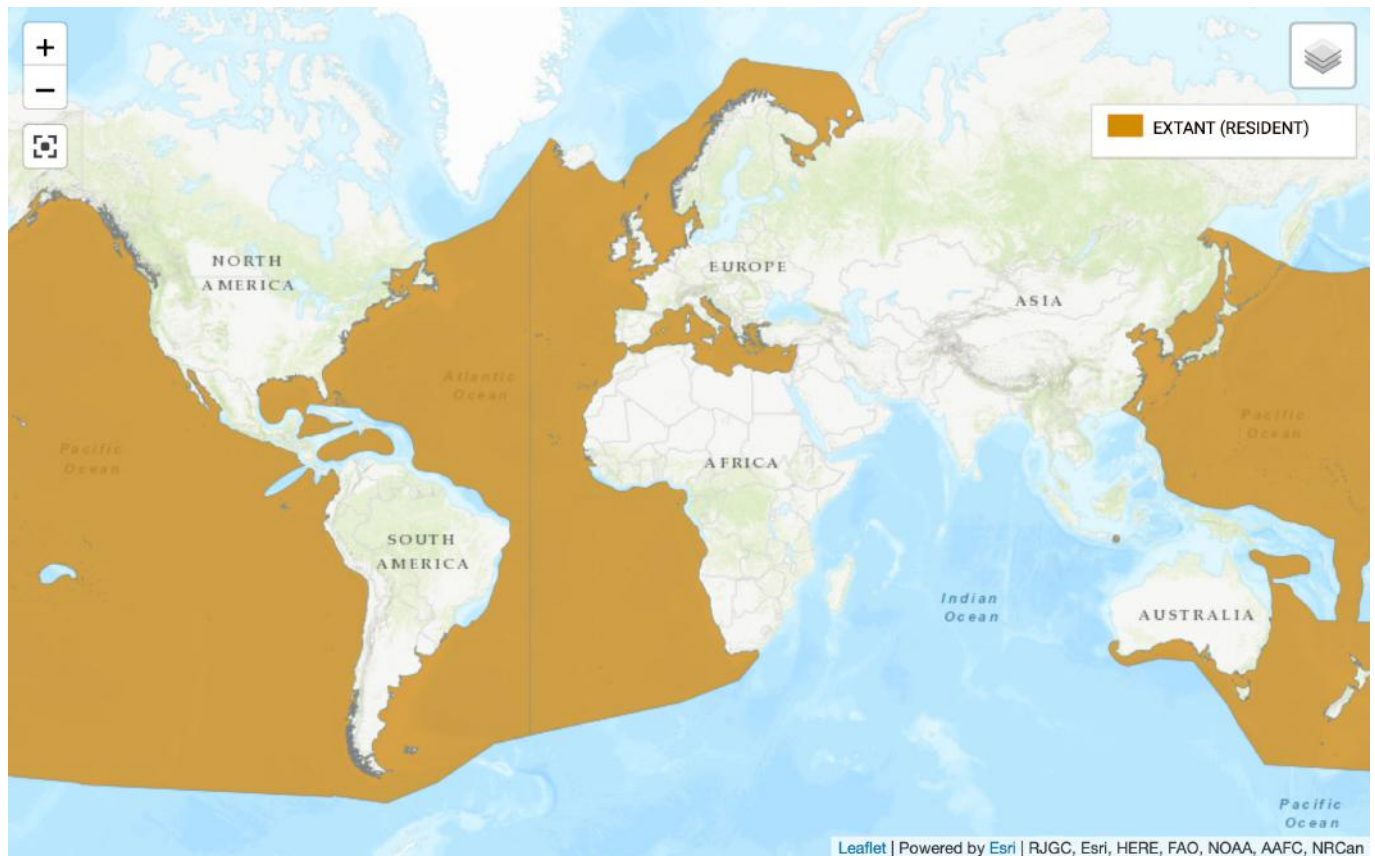
POPULATION

There is no data on the absolute global population size, although it is likely to be greater than 20,000 individuals (and thus not approaching the thresholds for criterion C: small population size and decline). Genetic results indicate one global population (Noble

et al. 2006, Francis 2017). Basking Shark total abundances have been estimated for a number of regions: 4,200 and 632 (CI: 377-1,058) in the Bay of Fundy, Canada in 2007 and 2011, respectively (Campana et al. 2008, Westgate et al. 2014); 10,125 in Canadian Northwest Atlantic waters in 2007 (highly uncertain estimate) (Campana et al. 2008); 6,671-14,925 in New England shelf waters, United States in 1982 (Kenney et al. 1985); 985 on the west coast of Scotland in 2010 (95% CI: 495-1,683) (Gore et al. 2016); and, possibly 19,151 (+/- 10,629) for Scotland and Ireland combined (Gore et al. 2013).

Landings and sightings data are available from the Northeast Atlantic (e.g. CITES 2002, Southall et al. 2005, Speedie et al. 2009, Witt et al. 2012, ICES 2018); landings data are available from Japanese waters (Yokawa 2017); and, sightings-per-unit-effort (SPUE) are available from New Zealand (Francis 2017, M. Francis unpubl. data).

In the Northeast Atlantic, the landings of Basking Sharks declined dramatically during the period 1946-2017 (CITES 2002, ICES



2018). Landings within ICES Subareas 1-14 peaked in the mid-1960s and mid-1970s at around 5,000 tonne (t), declined rapidly during the 1980s to less than 1,000 t annually, after which there was a peak in 1992 of 1,697 t, followed by a rapid decline. There is evidence of serial exploitation and depletion patterns in different ICES Subareas during this fishery. For example, the artisanal Achill Island fishery, which targeted Basking Sharks in a single bay with rowing boats, nets, and hand harpoons, declined rapidly after a decade of high catches during the 1950s and 1960s, and Basking Sharks did not return to this location (CITES 2002). Following the ban on target Basking Shark fisheries in 2006-2007, landings declined to <30 t annually and have been <0.1 t since 2013 (ICES 2018). There is no effort data or catch-per-unit-effort (CPUE) data available for recent years (ICES 2018) which means caution is required in the interpretation of this data for population abundance trends.

However, the large catch declines during the 1960s to 1980s are believed to reflect unsustainable fishing levels and a decline in population abundance (CITES 2002, Sims et al. 2015). Since then, public record sightings and boat surveys in the UK for 1988-2008 suggest population recovery following cessation of targeting in the mid-2000s, based on decreased sightings of small Basking Sharks and increased sightings of medium-sized and large sharks (Witt et al. 2012). However, when current research survey encounter rates are compared with historical target fishery catch rates, the population is estimated to be well below 30% of historical abundance, although it

is suspected to be stable and possibly increasing in European waters (Sims et al. 2015).

In the Japanese target Basking Shark fishery of the 1960s and 1970s, estimates of catches (in numbers) severely declined during the mid-1970s from a high of about 100 individuals per year until the fishery closed in the early 1980s, with catches since then at, or near, zero (Uchida 1995, Yokawa 2017). This data is unusual, having records of the same catch (100 sharks) annually from 1967 to 1974 followed by a 50% increase in 1975 and an 87% decrease in 1976, with no information on effort; hence they must be interpreted with caution. In New Zealand, the SPUE over the period 1985-2015 peaked in 1988-1991, which may have been due to Japanese trawl vessels targeting sharks during that time, but since the mid-2000s catches have been at, or near, zero. The reason for this decline cannot be definitively determined as it may be indicative of changed fishing practices, regional shifts in availability of Basking Sharks, or a real abundance decline (Francis and Sutton 2012, Francis 2017). The Japanese and New Zealand data may not be reliable indices of abundance.

Further to the landings and SPUE data above, there are estimates of population changes from five regions: Northwest Atlantic, Mediterranean Sea, Southwest Atlantic, Northeast Pacific, and Southwest Pacific. In the Canadian Northwest Atlantic, declines were estimated in the Bay of Fundy between 2008 and 2011 based on aerial and boat surveys from different studies, although direct

comparison between the two abundance estimates is constrained by different estimation methods (Campana et al. 2008, Westgate et al. 2014). Furthermore, population models in 2008 suggested a 23% probability that the abundance was decreasing, although there was high uncertainty in the model data (Campana et al. 2008). In United States Atlantic waters, there has been no evidence of decline since 1979 (Campana et al. 2008). Population trends in the Mediterranean Sea are unknown, but it is suspected that the Basking Shark has declined by at least 50% over three generations (Sims et al. 2016). In temperate waters of the Southwest Atlantic, Basking Sharks were historically common and are now rare (Soto 2000, Lucifora et al. 2015). In the Northeast Pacific, the Basking Shark was persecuted as a destructive 'pest' and although targeted fisheries ceased in the 1970s, the abundance is considered to still be at a historic low with fewer than 6 sightings per year off the coast of British Columbia (Wallace and Gisborne 2006, McFarlane et al. 2009, Dewar et al. 2018). In the Southwest Pacific, the New Zealand Threat Classification System found that the Basking Shark was Vulnerable based on the criteria that the population size within New Zealand is likely to be <5,000 mature individuals, with a predicted decline over three generations of 10-50% (Duffy et al. 2018).

Across these regions, there have been some severe historic declines, however, the global population may now be beginning to stabilise, following cessation of target fishing, high levels of protection, and indications of recovery (particularly in the Northeast Atlantic,



although elsewhere we have little information upon which to assess stability). Recovery is expected to take hundreds of years due to the low biological productivity of Basking Shark, exacerbated by the removal of adult females by target fisheries (CITES 2002). Abundances are still estimated to be well below historic levels and there is ongoing demand for their high-value fins, and a 50-79% global population reduction is suspected over the past three generations (102 years). Therefore, the Basking Shark is assessed as Endangered.

HABITAT AND ECOLOGY

The Basking Shark is a planktivorous coastal-pelagic species named for its habit of swimming slowly at the surface but it also vertical migrates to depths of 1,264 m (Gore et al. 2008). It occurs in temperate and tropical waters, but in temperate waters it is present near the surface and in tropical and equatorial waters, it occurs deeper, below the thermocline (Ebert et al. 2013, Dewar et al. 2018). It is the second largest shark after the Whale Shark (*Rhincodon typus*) and reaches a maximum estimated size of 1,276-1,973 cm total length (TL) (Parker and Stott 1965, Holden 1974, Weigmann 2016). The species aggregates in coastal waters, with aggregations of up to

1,398 individuals observed in the northeast United States, and it also undertakes large-scale migrations (Gore et al. 2008, Skomal et al. 2009, Witt et al. 2014, Doherty et al. 2017, Crowe et al. 2018, Dewar et al. 2018). Males mature at 400-750 cm TL, females mature at 690-980 cm TL, and size at birth is estimated at 150-200 cm TL (Matthews and Parker 1950, Parker and Stott 1965, Pauly 1978, Compagno 1984, Sims et al. 1997, Fowler 2005, Ebert et al. 2013, Francis 2017). Reproduction is viviparous and oophagous with an estimated gestation of 12-36 months and a likely resting period of two years between litters (Parker and Stott 1965, Pauly 1978, 2002; Compagno 1984). Only one litter of 6 near-term pups has been reported (Sund 1943). Female age-at-maturity is estimated at 16-20 years (18 years average) and maximum age is estimated at 50 years; generation length is therefore 34 years (Compagno 1984, Pauly 2002, Fowler 2005). Annual rate of population increase is estimated at 0.013-0.023 and natural mortality is low at $M = \sim 0.07$ per year (Pauly 2002, Fowler 2005).

THREATS

Currently there are no target fisheries for the Basking Shark, however it was targeted for

several centuries by harpoon and net fisheries for meat, fins, skin, cartilage, and liver oil (Rose 1996, Dewar et al. 2018, SARA 2019). Surface fisheries have primarily caught large, recently-mated females (CITES 2002). The large fins are extremely valuable in the fin trade being worth up to US\$57,000 for a single, large fin (Clarke et al. 2004, Magnussen et al. 2007). Targeted fisheries were banned in many countries during the 2000s (ICES 2016, Dewar et al. 2018). The species is still taken as bycatch by trawl, trammel nets, and set-net fisheries, and becomes entangled in pot lines (Fowler 2005, Mancusi et al. 2005, COSEWIC 2009, Francis and Smith 2010, Francis and Sutton 2012, Francis and Lyon 2012, Murua et al. 2013, ICES 2018). Many range states across its distribution now have regulations that require release of live individuals (see Conservation section). Strikes from recreational and commercial shipping are a threat due to the species' habit of spending time at the surface (Pirodda et al. 2019). Collisions from recreational boats are relatively frequent in United Kingdom waters (OSPAR 2009).

USE AND TRADE

No utilisation or commercial trade of this species is currently known to exist, although



prior to 2012, meat and fins were exported from Norway and fins from New Zealand. No commercial trade records have been noted in the Convention on International Trade in Endangered Species (CITES) trade database since 2012, although not all trade records may be reported to CITES. However, it is likely that if caught, the meat would still be used fresh for either local consumption or exported internationally along with the fins.

CONSERVATION ACTIONS

The success of actions agreed through international wildlife and fisheries treaties depends on implementation at the domestic level; for sharks, such follow up actions have to date been seriously lacking. The Basking Shark was among the first shark species listed under several wildlife treaties. Many fishing nations worldwide and the European Union protect Basking Sharks through wildlife conservation legislation or apply zero quotas under fisheries management regulations.

In 2002, the Basking Shark was added to Appendix II of CITES, which requires Parties to ensure that exports be accompanied by permits based on findings that parts are sourced from legal and sustainable fisheries.

In 2005, the Basking Shark was listed on Appendix I and II of the Convention on Migratory Species (CMS), which respectively, obligates Parties to strictly protect the species and to work regionally toward conservation, specifically through the CMS Memorandum of Understanding for Migratory Sharks.

In 2005, the North-East Atlantic Fisheries Commission (NEAFC) adopted its first ban on directed Basking Shark fisheries in the Convention Area. This measure has since been regularly renewed; the current ban, adopted in 2015, expires at the end of 2019 and will be reconsidered based on scientific advice (ICES 2016). There are a range of conservation measures in the UK, along with a recommended Basking Shark code of conduct (OSPAR 2009). The Basking Shark is listed on Appendix II of the Bern Convention for the Conservation of European Wildlife and Habitats. In 2012, the General Fisheries Commission for the Mediterranean (GFCM) banned retention and mandated careful release for the Basking Shark and 23 other elasmobranch species listed on the Barcelona Convention Annex II. Implementation by GFCM Parties, however, has been very slow.

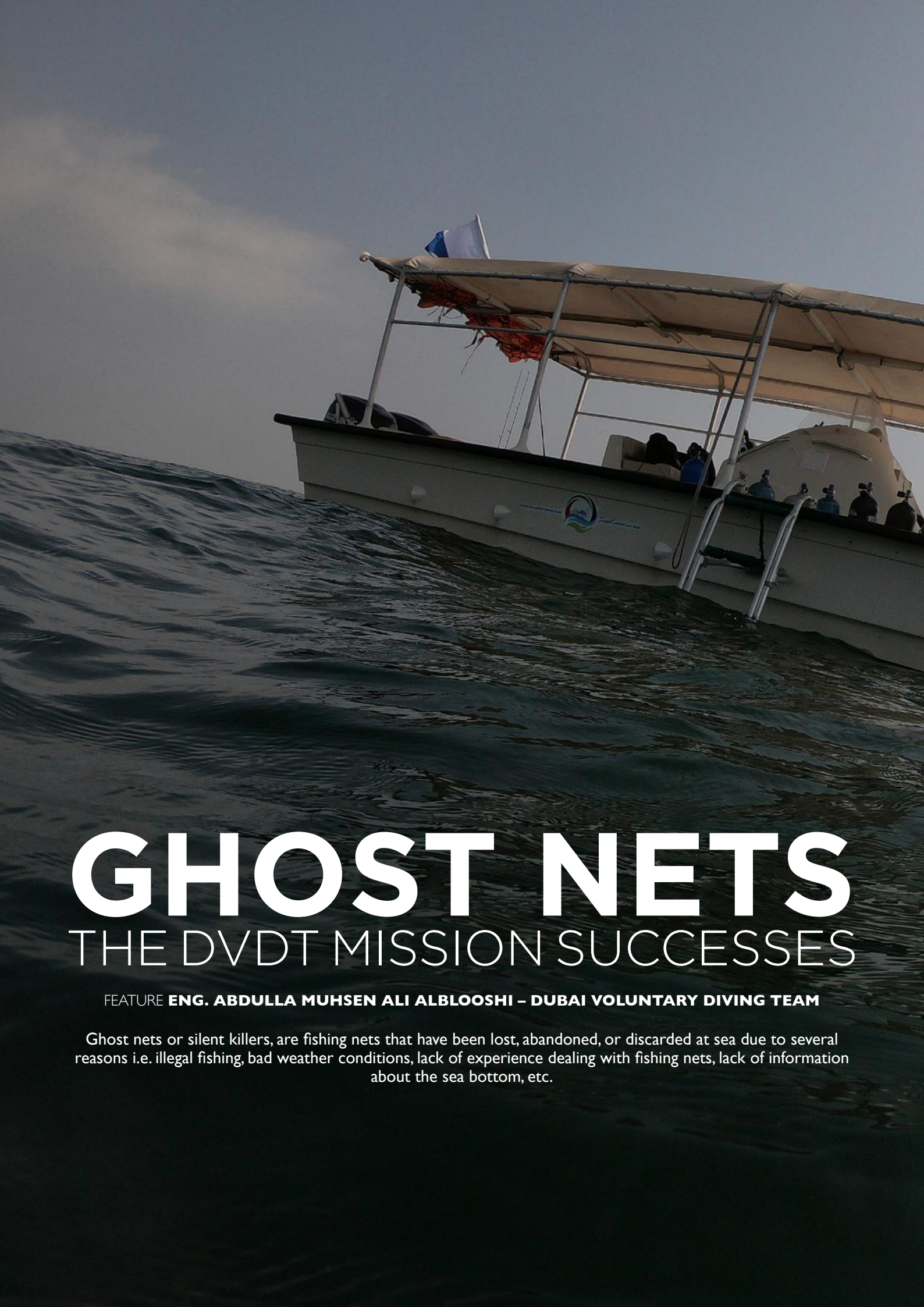
To allow recovery, it is recommended that all Basking Shark retention and landings be prohibited, at least as long as the global population is classified as Endangered. Initiatives to avoid contact, prevent capture, promote safe release, and improve catch (including discard) reporting are also urgently needed, as is full implementation of additional commitments agreed through international treaties (MarLIN 2018).

Basking Shark tourism is managed in some locations but if sustainable tourism industries are indeed to be developed around encounters with these sharks, they should be legislated, continuously monitored, and enforced with permitting systems to make sure operators and tourists are adhering to best practice protocols and codes of conduct.

CITATION

Rigby, C.L., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Marshall, A., Romanov, E. & Kyne, P.M. 2019. *Cetorhinus maximus* (errata version published in 2020). The IUCN Red List of Threatened Species 2019.

www.iucnredlist.org



GHOST NETS

THE DVDT MISSION SUCCESSES

FEATURE **ENG. ABDULLA MUHSEN ALI ALBLOOSHI – DUBAI VOLUNTARY DIVING TEAM**

Ghost nets or silent killers, are fishing nets that have been lost, abandoned, or discarded at sea due to several reasons i.e. illegal fishing, bad weather conditions, lack of experience dealing with fishing nets, lack of information about the sea bottom, etc.

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WHAT IS A GHOST NET?

Ghost nets or silent killers are fishing nets that have been lost, abandoned, or discarded at sea due to several reasons, i.e. illegal fishing, bad weather conditions, lack of experience dealing with fishing nets, lack of information about the sea bottom, etc.

Fishing nets are responsible for trapping and killing millions of marine animals including sharks, rays, bony fish, turtles, dolphins, whales, crustaceans, and birds. Ghost nets cause further damage by entangling live coral, smothering reefs and introducing parasites and invasive species into reef environments.

In general, there are also other types of fishing gear lost or dumped into the ocean which continues to do what it was designed to, trapping marine life. These we all count as silent killers and we take responsibility to remove them from the sea.

WHO WE ARE

We are a volunteering diving team dedicated to protecting the marine environment against fishing gear and other harmful substances that have negative impacts on marine life.

We carry out weekly dive trips specially to search for fishing nets and to inspect the dive and fishing sites in the United Arab Emirates. We search at depth and long distances throughout the year. Our quest began in the mid 1990s.

To know more about our team, please visit our links in the info box.

HOW & WHERE TO FIND GHOST NETS

The search and recovery of ghost nets underwater is very different from searching for objects on land whereas on land we can see visible signs or hints to guide us. However, it becomes much harder when we search underwater, and it becomes more difficult when it is at deeper depths and long distances from the shore.

Here are some of the points we have been asked most on how we find fishing nets. The answers that follow are purely from our team's experiences throughout the years we have done our dive recovery trips, whether during day or night, and winter or summer seasons.

1. Being an Experienced Local Fisherman:

Our team initially started out with four local fishermen who wanted to find out why fish were disappearing from specific locations for long periods at a time. This triggered the idea to create the Dubai Voluntary Diving Team. As fishermen, we knew that the best fishing locations could be found at wrecks, reefs or even artificial reefs which is where most fishermen practice fishing activities, so we knew there were possibilities of finding fishing gear in these locations.

Combining fishing experience with scuba diving became extremely useful skills to discover marine environments – in fact it's the most important part of our success.

2. Volunteer Divers with Experience Join the Team and Work with Sincerity and Diligence to Serve their Community:

Volunteers aid the team when anxiety rises and help facilitate the most difficult tasks. Working under difficult climatic conditions such as high and low temperatures in summer and winter, as well as diving to search and recover huge fishing waste with strong currents and poor visibility, night dives and dealing with objects trapped in the nets such



as large and venomous marine life requires competent divers.

In addition to dealing with large fishing nets at various depths, divers have to wrestle with a number of things, such as bottom time, air consumption, focus on how to untie the nets from objects, pay attention to his buddy and himself, and also be prepared for any unexpected risks that may occur at any moment, etc. With competent volunteer divers, the tasks are better accomplished. Volunteers are an asset to our team. We are proud to have them and grateful for all that they do.

3. Independent Availability of all Necessary Diving, Recovery and Boating Equipment:

There is no doubt that the availability of equipment necessary for the team missions is essential. It is critical in the call to action when we respond to the hotline calls made. Each team member must be equipped in his own gear, with services kept up to date in order to ensure safety and avoid unnecessary accidents while professionally performing our activities.

The team currently has:

- Personal dive equipment

- Salvaged equipment for recovering waste weighing more than 8 tons
- Navigation and sonar devices
- 38 foot boat equipped with all the necessary diving gear requirements, dedicated for the search, salvage and rescue missions.

4. Performing Weekly Routine Dive Trips:

We plan our dives on a weekly basis to cover more than 60 dive sites in the emirate of Dubai, and in addition to other sites outside of Dubai where we can cover up to 100 sites. We visit these locations for the sole purpose of inspecting them for any abandoned finishing gear. Among the number of sites stated above, we usually find around 60% of these locations affected by fishing gear and most of them are ghost nets. As normal practice, we keep a record of all the necessary information about each trip as a reference for the concerned authorities whenever requested. This information also tells us how many times these sites are targeted.

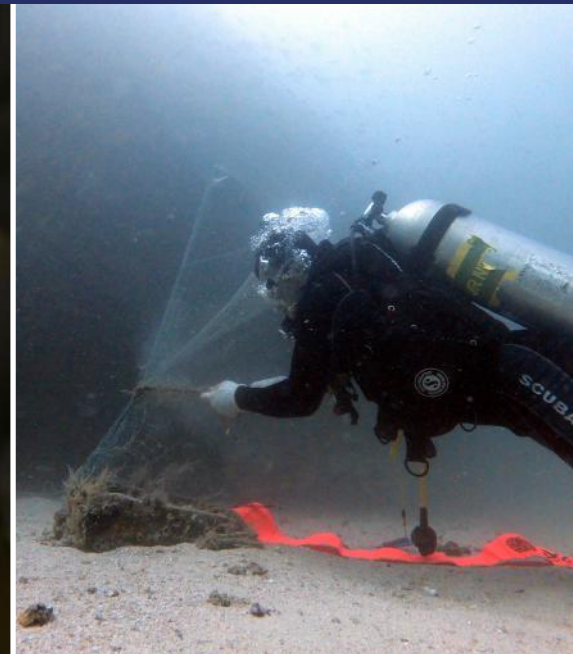
5. Following the DIVE-FOR-PURPOSE on all our Diving Activities:

Being a certified scuba diver has the advantages of gaining confidence while discovering new

sites in difficult diving conditions, i.e. poor visibility, strong currents, cold water, etc. It enables the diver to deal with fishing net recovery at depths without running out of air or losing strength and control, especially while working under stress due to net entanglement with wrecks or different kinds of species that can be aggressive/poisonous. The difference between a diver who is diving for fun and a diver who is diving for a purpose, is that a diver with purpose has a plan and a target to do the specific task at hand and is well prepared for every scenario possible.

6. Understanding Marine Charts, Sonar & GPS:

One very helpful tool to identify ghost net locations is a Marine Map. Nowadays, with the support of modern technologies, marine equipment can easily be found and is used by almost all seafarers. With the DVDVT, we review and receive updated marine maps to try to find areas with net entanglements on seabeds, wrecks or reefs by identifying the symbols, curves and depths. It is not an easy task when taking the coordinate from the map and feeding it through to the GPS manually as some marine maps still have hard copy type. Then the difficult mission comes when performing



a search above water with a sonar device. The final search is done underwater with an inspection to confirm what the object laying on the seabed is and what the condition is.

By using all of the above mentioned tools and techniques, we succeed most of our missions in finding ghost nets.

7. Establish Strong Communication Among Other Fishermen, Divers & Other Seafarers:

The fact that some members of the team are local fishermen, some pleasure fishermen, and all members are divers, it effectively contributes to communicating with the largest number of various seafarers in the country. We consider them one of the most important sources and references to know where the ghost nets are located. In addition, we have an initiative in cooperation with the MOCCA where we have a Hotline Number: 055 666 8070 open for seafarers to call us in case they come across any fishing gear or nets during their journeys, and we then organise a trip to recover them.

We thank all those who contribute in providing us with information to preserve the marine environment. It is important to have mutual trust and cooperation between the team and the seafarers.

8. Establish Strong Communication with Marine Environment Concerned Authorities:

The concerned authorities within the UAE in preserving the marine environment and its security, are represented by:

- Ministry of Climate Change & Environment
- Emirates Diving Association
- Fishery Associations in each emirate
- Dubai Police and other police sectors in the UAE
- Coast Guards
- Environmental Authorities in each emirate
- International Marine Sports Clubs
- Diving Centres
- Other voluntary diving teams in and outside of the UAE

They play an important role in our success

which allows us to officially perform our work to its full capacity. Some dive sites are private or belong to establishments that require permits to get to them, and we rely on these parties above to communicate with these third parties so we can continue our search for ghost nets.

We take this opportunity to extend our sincere thanks and appreciation to them for their support and continued efforts in serving the country.

9. Sponsors Supporting the Team's Activities:

We highlight a fundamental factor by which we are able to reach far offshore sites, prepare well and plan our trips to maximum measures. None of this is possible without financial support.

There are many costs involved in running the Dubai Voluntary Diving Team. Maintenance of the boat and its engines is without a doubt an important factor that enables us to reach



the dive sites safely, and special equipment is required for a search and recovery, lifting heavy nets that can reach up to 500 kg per dive gets very expensive.

Sponsors are an asset and they provide the equipment and services we need for our missions. Our valuable supporters are:

- Emirates Diving Association
- P&O Marinas, DP World UAE Region
- Zayed International Foundation for the Environment
- Al Tayar Team
- Al-Youssef, Suzuki Marine Outboard Engines, Auto Sport
- Bermuda Diving Center

We greatly appreciate and thank you for all your efforts in supporting the team to preserving the marine environment in the UAE.

10. Establishing Sustainable and Cultural Improvements Among the Team Members:

Experience alone may not always be the secret

to success if it does not have a combination of strong willingness, loyalty and faith towards the volunteer work amongst all the team members. It makes everyone withstand difficulties to reach their goals, especially working under tough conditions such as high outdoor temperatures while lifting, cleaning, cutting and weighing nets, as well as working at depths, facing risks, and being out on the boat for up to 12 hours.

All of the team members work hard and they share a culture of volunteerism. They know the true meaning of sustainability which they will pass on to their future generations. This committed team work and dedication leads to our success.

We volunteer to carry out this work to serve our country and commit to our government and to our people. We will continue this path and we will pass it on so that our marine environment is clean and free of waste and fishing gear.

We welcome all those who wish to join and work with us, whether it is to volunteer their time, concerned authorities who want to help in protecting the marine environment, or those who would like to sponsor this voluntary environmental work.

Thank you all!



SOCIAL MEDIA PLATFORMS

www.instagram.com/dubai.v.diving/
www.facebook.com/DVDivingTeam/

CONTACT: +971 55 223 4975
HOTLINE: +971 55 666 8070



WHY CHANGING OUR HABITS WHEN IT COMES TO REDUCING MARINE DEBRIS CAN BE SO DIFFICULT

FEATURE **NATALIE BANKS**

The secret to reducing the impacts of marine debris is to be courageous enough to live your values and your beliefs. It requires you to think about what legacy you wish to leave and realise that you are indeed enough.





If I were to tell you that the number one item that is generally found during a coastal clean-up is cigarette butts, and that they are negatively impacting the marine environment, would it be enough, if you were a smoker, to give up smoking? Probably not. Most smokers already know that smoking is bad for their health, but this generally isn't enough reason to give up the habit. So what is it that can help people to change their behaviours and thinking?

Having a big enough reason on its own will not suffice, what is needed is encouragement to give up and, more importantly, help for when they fall. You see, every one of us has a fear when it comes to changing habits. This could be for example, a fear of failing, of being criticised for trying to do something different or a fear of not being perfect in our attempt. We all have different personalities and react to these fears differently, but no matter what our personality, whenever someone finally gathers the courage to step outside their comfort zone, they will either face criticism or make a mistake, often leading to a setback. It's like dieting. Every now and then, the dieter will sneak a bite of a cake or have a donut or a packet of chips for example. If others are around when that happens, it is really interesting to see who will and won't be there to support you.

The same situation takes place when it comes to decreasing your waste and therefore the issue of marine debris. I have spent a few years now speaking to thousands of people and getting people involved in undertaking marine debris clean-up days, but despite the holistic learning, the impacts have not been high as I would have liked. When I finally took the time to understand the reason why, I realised that I had left out a very large component to my presentation, and that is empowering my audience to have the courage to give it a go. Unfortunately our reliance on plastic has seen this material permeate all aspects of our lives. Right now, I am typing away on keys made up of plastic. So no matter our intentions, we will not be able to give up our reliance in 2020 on this material 100 per cent.

So for those all or nothing personality types, the black or white thinkers, the issue of reducing impacts as a result of marine debris can be extremely difficult when they realise that in order to do so, it will mean doing it imperfectly. Herein lies the issue. Fears of failure or criticism is holding people back, when in reality, what this planet needs is everyone focusing on this issue, imperfectly. There is too much criticism when it comes to the environmental movement and not enough encouragement. We need to

embrace imperfection if we are really going to make enough change to reverse or even stall the destruction that marine debris has had so far.

A lot of the marine debris found during a coastal clean-up is made up of single use plastics. Most items are generally easy to substitute, such as using reusable bags, bamboo or stainless steel straws, reusable coffee cups, and bamboo toothbrushes instead of the plastic version. But the hardest one to avoid, generally, is food packaging. There are some amazing benefits to plastic, which is why it has become so invasive in our lives, and these include how cheap the material is to manufacture, as well as how lightweight it is to transport and when it comes to the fast moving consumer goods industry, plastic is a brilliant material when it comes to sanitisation and giving food and beverages greater shelf life.

The downsides however are quite frightening as we have all started to see and these don't just include the impacts on marine animals. Marine debris found along our coastlines, have the potential to introduce invasive species, impacts on our shipping industry (which we rely heavily on for cargo, food, protection and recreation to name a few) and can also impact the tourism industry as people opt

out of visiting dirty beaches. Additionally, just like cigarettes, the pollutants that plastic attracts, the toxins and chemicals, are bad for our health. These pollutants have been linked to reproduction, developmental, behavioural, neurologic, endocrine and immunologic issues in humans, while the chemicals leached from plastic through heat, such as phthalates and bisphenol have been linked to hormone disruption, heart disease and cancer.

Somewhere along the line however, it has become normal, to introduce this material into or on our bodies and even worse, to those that we love. We now drink from plastic water bottles instead of from the tap, use plastic straws and plastic food containers and our food is substantially wrapped in plastic. To add to this, as we have increasingly used synthetic fibres in our clothing, tiny micro plastic threads have made their way from our washing machines directly into the ocean which is consumed by small fish, which, we then ingest if we consume seafood.

This also goes for T-shirts made from recycled water bottles. While the concept sounds great, the washing machine industry isn't able to cope with filtering the tiny plastic micro-threads and a greater problem is being created. Synthetic fibres are not only creating issues in our oceans, but in some cases they are playing havoc with people's skin. The same goes with glitter, which again, we have somehow normalised in putting in makeup and on our skin. Glitter is also a micro plastic, and when washed from our bodies, enters our oceans and can cause adverse skin issues.

The answer to the concerns that every single person asks themselves when they venture into reducing their single use plastic impact,

is not just whether they can commit to it, but to ascertain where their values lie. Most people generally put their health into the top five categories of things they value. For me personally, my health is my number one priority. I am nothing without it. Therefore knowing the health issues linked to plastic, I feel obliged to reduce my consumption.

That's not to say I haven't ever experienced issues of self-doubt. I too have had my fair share along the road of that small voice in my head telling me I'm a failure, to let others much more experienced than myself take the reins, and have even questioned whether I am enough to take on the role as being a spokesperson for the oceans. I've called myself a hypocrite more times than my loudest critics for not being able to purchase milk in a container without a plastic lining, or for getting plastic wrapping in my deliveries despite the number of times I have called ahead to ensure that there will be none. No matter how hard I try, I cannot seem to avoid plastic.

But here is the secret.

I took those self-critical voices and replaced them with the voices of my support network. I took those small critical voices and made them even smaller. I can still hear them, but I don't let them control me. Because I value my health and I value courage, I continue my journey on reducing my impacts of single use plastic and by doing so, I am completely aligned to my beliefs.

I know I have changed lives, as people have told me so. My friends send me pictures of the actions they have taken to be more environmentally friendly and even started a hashtag called #makeNatproud. Through

Azraq, the marine conservation organisation I founded, I have started a community of volunteers empowered to undertake activities for the benefit of the oceans. The campaign, #stopsucking where we joined hands with Freedom Pizza, saw over 55 outlets undertake measures locally to reduce the use of plastic straws and resulted in stopping millions of straws from entering the oceans or landfill daily. The campaign even empowered high school students from GEMS Academy to petition café and restaurant owners to reduce their single use plastic usage.

The secret to reducing the impacts of marine debris is to be courageous enough to live your values and your beliefs. It requires you to think about what legacy you wish to leave and realise that you are indeed enough. If, for example you have a takeaway coffee every single day, and you decide to change your habit to using a reusable cup instead of a single use one, you're stopping 365 takeaway coffee cups from going to landfill, or into the oceans or being burned and causing atmospheric changes every single year. And if you get your loved ones to do the same, double your impact, then look at tripling and quadrupling it. We are only held back by ourselves. Could we today save millions of takeaway coffee cups from entering oceans or landfill? Of course we can. We just need the courage to step outside our comfort zone. So are you courageous enough? Come join me in the campaign to reduce single use plastics. Head to www.azraqme.org to get involved or start advising others on social media of your new steps of reducing your marine debris impact using the hashtags #azraqme or #marinedebrisencourage. By doing so, I'll find you and join your support network.

Together, we are stronger.



HOW TO LIMIT YOUR EXPOSURE TO CHEMICALS IN FOOD:

- Eat fresh fruits and vegetables when possible and avoid plastic storage containers & wrappers with chemicals that can leach into your food.
- Don't microwave food or drinks (including formula and pumped milk) in plastic; use glass instead.
- Choose glass or stainless steel to store food.
- Avoid plastics with the recycling codes: 3 (which means it contains phthalates), 6 (styrene), and 7 (bisphenols).

ADVENTURES IN THE ARABIAN GULF

A DIVE INTO MARINE CONSERVATION IN THE HOTTEST SEA IN THE WORLD
GREEN TURTLE TAGGING IN ABU DHABI, UAE

FEATURE **WINSTON COWIE**

In Abu Dhabi you can find two of the world's species of sea turtles. The critically endangered Hawksbill turtles, population around 1,500 which nest on 11 offshore islands, and the giant Green Turtles, a population of around 3,500.







Fancy a dive in a living climate change laboratory? Come to Abu Dhabi, the capital of the United Arab Emirates, nestled on the shores of the Arabian Gulf. There is plenty to do and see, both above and below water.

A FASCINATING MARINE ECOSYSTEM

Home to turtles, dugongs, dolphins, seabirds, and critical habitats – including coral reefs, seagrass and mangroves, the Arabian Gulf is the hottest sea in the world. It's a place where we can study and see these unique sea creatures and habitats living on the edge, and they show us what is possible.

Imagine a sea where the temperatures change by 20°C with the seasons, from 16°C in winter, to 36°C in summer. The coral has a special thermotolerant symbiotic algae, *Symbiodinium thermophilus*, enabling it to live in this extreme environment, many degrees above its normal range.

The bright lights of Dubai are only an hour down the road, and two hours further on, after a drive through the stunning Hajar Mountains, you are on the shores of the Arabian Sea, another unique and very different marine ecosystem facing the Indian Ocean.

The Arabian Gulf is a long way from the other Gulf most Kiwis know – the Hauraki Gulf and

beaches of Tawharanui where I grew up. Yet for me, it is the Arabian Gulf where I spend most of my work-life and spare time. I have been living here for over 10 years now – working for one of the pioneering marine science and policy organisations in the region, the Environment Agency - Abu Dhabi.

What do I do? I am the Marine Policy Manager at the agency – a portfolio that covers a sea area of around 48,000 square kilometres, equivalent to an area just under half the size of the North Island of New Zealand. This includes 2,000 km of coastline across 215 islands; globally significant biodiversity; industries such as oil, gas and shipping; a traditionally important fisheries sector; a burgeoning aquaculture sector; and a population of around 9.5 million from the wider UAE interacting with it.

Our organisation is 25 years old and we act as the referees between nature and the development needs of society. Our mission is to protect and conserve the environment for people's well-being and a better life for all.

Contrary to the perception that, in the UAE 'there is development everywhere', with coastal developments popping up wherever it likes, in Abu Dhabi and the wider UAE, we have a 20 year old Environment Impact Assessment procedure. For any coastal

development, marine baseline surveys need to be completed, impacts assessed and mitigation measures put in place. As an example, critical habitats – coral, seagrass and mangroves – are protected from development with an exception for critical national infrastructure projects. If this is the case, we have a mitigation hierarchy of assessing relocation options; redesign; rehabilitation and finally environmental compensation. To give an example, when Khalifa Port was first designed – Abu Dhabi's deep-water port – it would have detrimentally affected one of Abu Dhabi's finest coral reefs, Ras Ghanada. When the marine baseline survey established that this was the case, the port's location was moved 2 kilometres further down the coast so there was no impact on the reef.

In addition, representative marine habitat is protected in 13.9% of Abu Dhabi's waters across six marine protected areas. This is well ahead of the 10 year old 10% of marine area global target that will expire this year, and a target that will likely be increased.

Having dived in New Zealand's Goat Island a couple of months back while on holiday in New Zealand, I was struck by how successful and how well run it was, but I also reflected that only 0.37% of New Zealand's marine environment is protected. But I digress.



Winston Cowie dives to capture a Green turtle using the rodeo method.



Releasing a tagged Green turtle.

OUR TURTLES

In Abu Dhabi you can find two of the world's species of sea turtles. The critically endangered Hawksbill turtles, population around 1,500 which nest on 11 offshore islands, and the giant Green Turtles, a population of around 3,500. Green turtles are known to forage on the seagrass rich waters of Abu Dhabi's Al Dhafra region, but were never known to nest there. In partnership with our local NGO, Emirates Nature-WWF, we established a project called the Gulf Green Turtle Project. We headed to Butinah Atoll, a stunning biodiversity hotspot with coral formations, extensive seagrass beds and mangroves. There were lots of Green turtles foraging on the nutritious seagrass in the shallow (less than 3 m) waters of the archipelago.

To catch the turtles – because they have never been recorded to nest on the beaches – we use the 'turtle rodeo' method. This involves slowly manoeuvring the boat up behind a turtle, taking a deep breath and jumping on top of them. These turtles are between 90 and 100 kg – that is about the same size as me. Rugby practice certainly came in handy. Typically, the turtles are about half a metre below the surface when you jump, so once you are in, you make sure to grab for the carapace. The turtle stops, and you have about half a

second to manoeuvre your hands around the shell and put the turtle in an upright position.

Think a rugby tackle; being winded from hitting the ocean surface; a long breath hold; underwater; grab the turtle with instinct; not being able to see anything; adrenaline pumping; two front flippers slapping you in the face; seagrass; breathe. Quite the combo.

And the Green Turtles are strong – when they go, they go, and if they have the opportunity to pump those front flippers forward, they are gone. Your window to catch them is literally a couple of seconds.

Once you have them in the vertical position – easier said than done and a fair bit of exertion – we put the turtles onto the boat, assess if they are going to breed and nest that season, and if so, we put a satellite tag on them.

The results were mind blowing. Two of them – named Wisdom and Respect, after the values of His Highness Sheikh Zayed, the Founder of the UAE, and another called Yas, after the local Yas Mall (a valued sponsor) – travelled over 1,000 km all the way from Abu Dhabi, past Dubai, around the Straits of Hormuz, past Pakistan, then across the 3,000 km deep Sea of Oman, to Ras Al Hadd where they finally

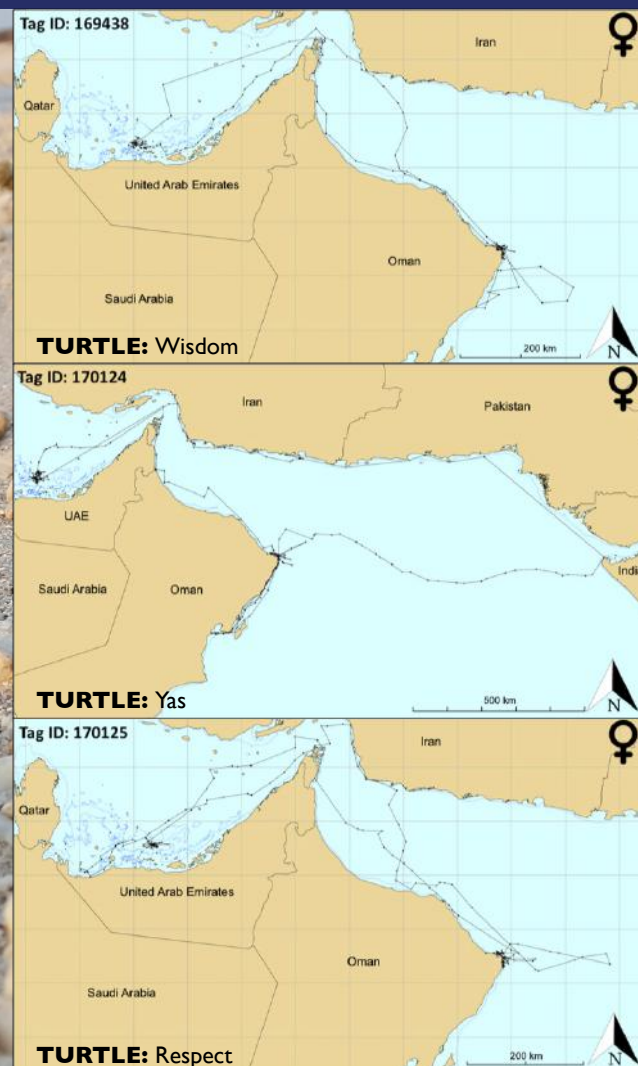
nested. Unbelievable. Over the six to eight months that the turtles were 'at large', they travelled an average of 7,000 km, including the return voyage to Butinah!

The findings were a first for science in the region with the policy implication that regional partners work together to ensure protection of Green Turtles, key habitat, foraging grounds and nesting beaches.

A proud team too!

The big picture takeaway – all biodiversity is connected. What is happening in one part of the world, will have an implication somewhere else. From our turtles in the sea, to the sky, the Arctic Tern for example, flies from its breeding grounds each year in the Arctic, to the Antarctic and back again. That is a 90,000 km return ticket and ensures that these creatures see more sunshine than any other on the planet. Anthropogenic impacts such as climate change and plastics – it doesn't matter which part of the planet – it will affect people and biodiversity, particularly our migratory species.

We need to get the local marine policy challenges right in our neck of the woods, which in turn will support global efforts. More marine reserves would help too!



An increase in Hawksbill turtle nests was recorded on Saadiyat Island. Maps recording the satellite tags from some of the turtles trips after their releases.

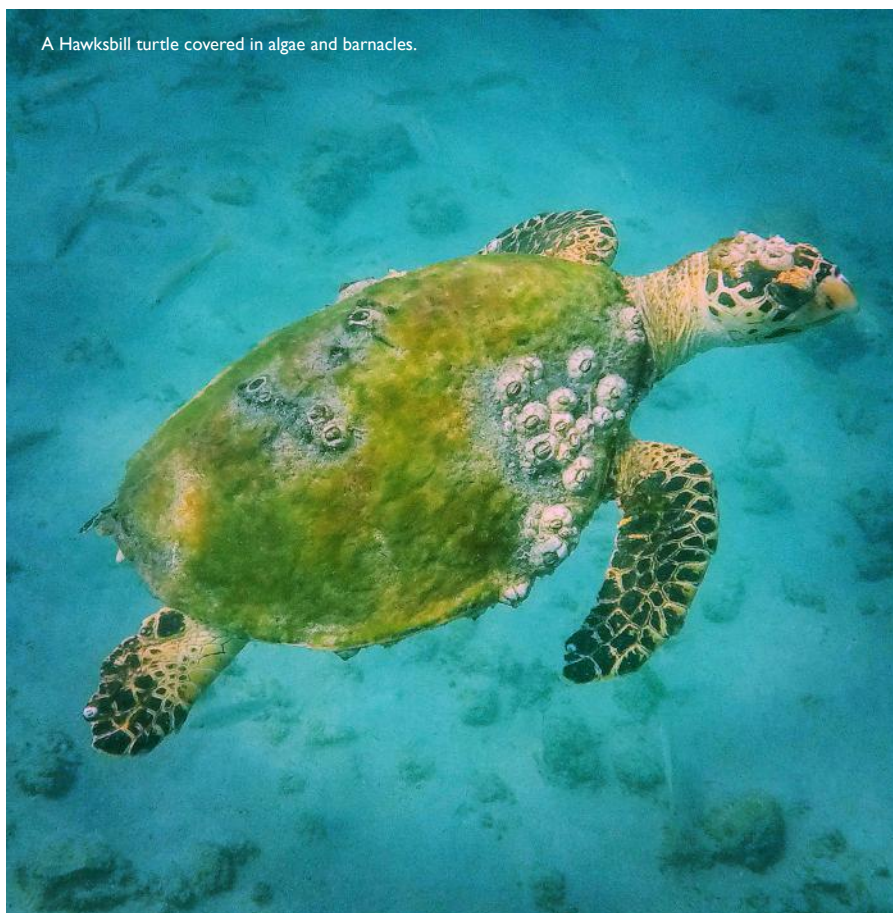
WINSTON COWIE



Winston Cowie is an award winning environmental policy manager, author and film maker from New Zealand, 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 travelled to the seven continents and over 40 countries where he seeks to have a positive impact on nature and society through environmental policy, writing and film. He also has an interest in history having written the New Zealand Land Wars historical fiction series, and recently, the 'Conquistador Puzzle Trail' that proposes that the Portuguese and Spanish voyaged to Australia and New Zealand pre-Tasman.

www.winstoncowie.com

A Hawksbill turtle covered in algae and barnacles.



ALARMING AMOUNTS OF MARINE DEBRIS FOUND IN THE GUTS OF GREEN TURTLES

FROM THE GULF OF OMAN COAST OF THE UNITED ARAB EMIRATES

FEATURE **FADI YAGHMOUR – SCIENTIFIC RESEARCHER (EPAA)**

Green sea turtles are only one of five species of sea turtles in the region and ingestion is but one of many potential harmful interactions with marine debris. Further research is needed to better understand the broader implications of rising levels of marine debris on marine turtles found here.







TOP: EPAA researchers responding to a stranded turtle. **BOTTOM LEFT:** Stranded green sea turtle. **BOTTOM RIGHT:** Fish hook puncturing green sea turtle esophagus.

At first glance, it appears that plastics and other synthetic materials are primarily consumed by humans and only play a role on land. However, when imported into marine environments, these materials can spend the majority of their time interacting with marine species and environments in the form of marine debris. Marine debris is generally defined as any manufactured or processed solid waste product that is discarded, lost or abandoned into the marine environment. Plastics are the principal constituent of marine debris, but other types of marine debris include a wide variety of items ranging from fishing gear, soda cans, clothes, shipwrecks and even cheeseburgers that have been introduced to marine environments.

It was not so long ago when the threat of plastic marine debris to the marine environment was largely dismissed. Plastics were considered to make up a very small part of marine debris. It was also believed that the ocean was so vast that no real impact can be caused by marine debris beyond a minor aesthetic nuisance. As the old saying goes, "the solution to pollution is dilution".

However, empirical data tells a different story. Bakelite, the earliest form of plastic, was first invented in 1907 by Leo Baekeland. Later, in the 1950s, the mass production of plastics had begun. Today, plastics constitute 80-90% of all marine debris. This is expected to increase with the increasing rate of plastic production,

which is driven by both an increase in the number of consumers and consumer behaviour. As a result, it is projected that by the year 2050, the mass of plastic marine debris will outweigh all the fish in the world's oceans. Once in the ocean, plastic marine debris can persist for several decades. One of the main ways marine animals are believed to be impacted by marine debris is through intentional or incidental ingestion.

In a recent study published in the Marine Pollution Bulletin, researchers from the Environment and Protected Areas Authority (EPAA) of Sharjah have investigated the prevalence and magnitude of marine debris ingested by green sea turtles from the Gulf



TOP LEFT: Green turtle post-mortem. **TOP RIGHT:** Stranded green sea turtle. **BOTTOM LEFT & RIGHT:** Items found in the guts of individual green sea turtles.

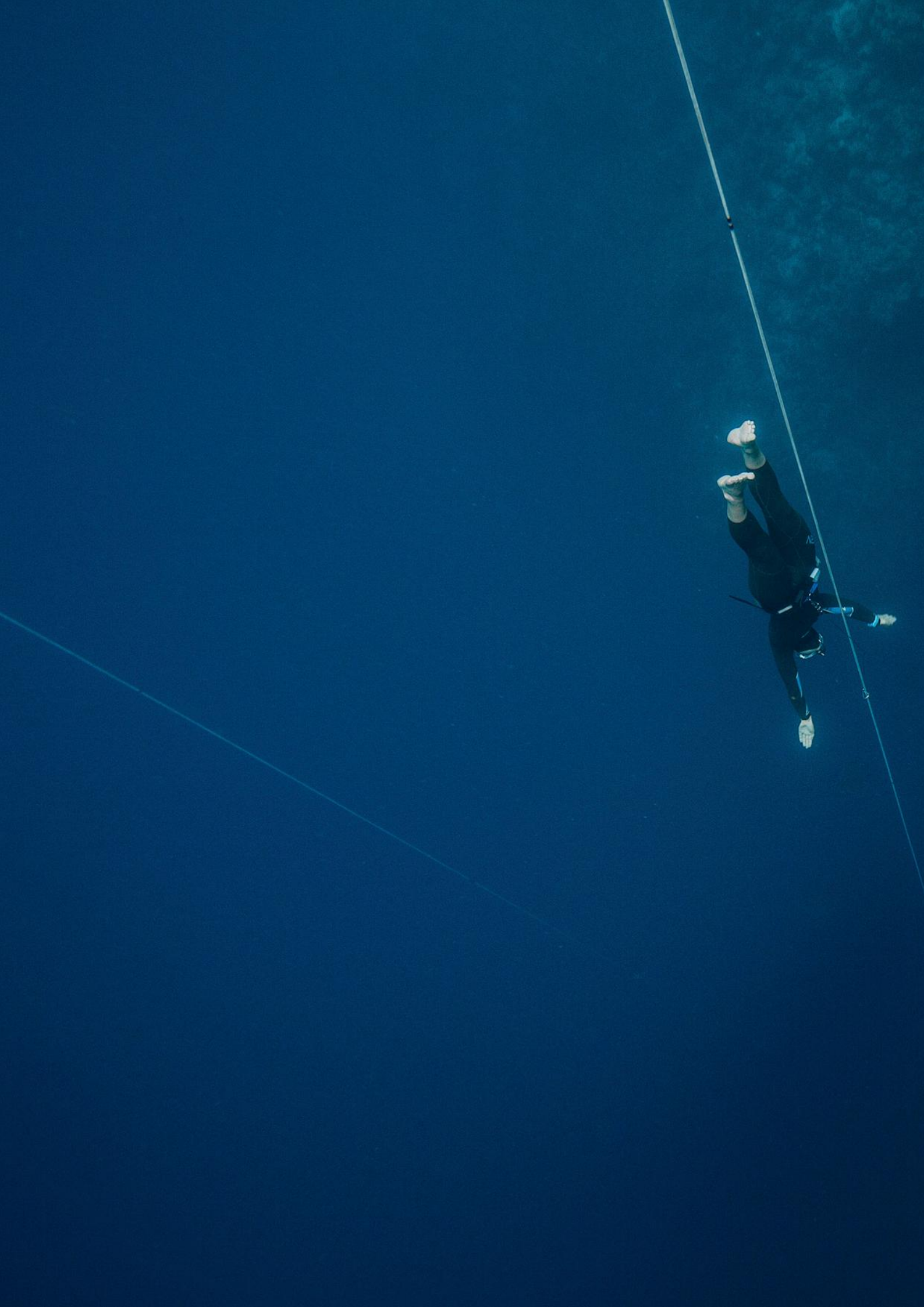
of Oman Coast of Sharjah, UAE. In this study, dead green sea turtles were salvaged from the coast of Kalba and Khor Fakkan along two years (2016 and 2017). The results showed that approximately 86% of turtles had ingested marine debris, a much higher value than most similar studies from other regions. The quantities of debris ingested were also alarming with debris item numbers ranging from 1-189 items. Out of the items found, plastics made up approximately 90% of marine debris items and 75% of the mass of marine debris items. Overall, thread-like and sheet-like plastics of white and transparent colour made up the majority of items. It is difficult to speculate if this is driven as a result of any colour preferences by green sea turtles or if

this is a reflection of the proportions of items locally available to turtles. Items ingested included cloth fabrics, plastic ropes, cotton buds, plastic bags, fishing nets and fishing lines. Dangerous items such as fishing hooks and metallic gargoyle fragments were also detected.

Overall, this study suggests that a high portion of green sea turtles on the Gulf of Oman coast of the UAE interact with large quantities of marine debris. This is the first study of this kind to be conducted anywhere in the GCC. However, in the late 1970's, Dr. John Perran Ross investigated the diet component of green sea turtles in Oman and has not observed evidence of marine debris ingestion in any of his samples. This suggests that marine debris is

a growing hazard to sea turtles in the region.

Green sea turtles are only one of five species of sea turtles in the region and ingestion is but one of many potential harmful interactions with marine debris. Further research is needed to better understand the broader implications of rising levels of marine debris on marine turtles found here. Further work is also needed by the general public to reduce the amount of marine debris that enters the ocean. We can all make a difference by reducing the use of single-use plastics and other single-use items, reusing and recycling whenever possible, participating in beach and marine clean-ups and most importantly – NOT LITTERING!

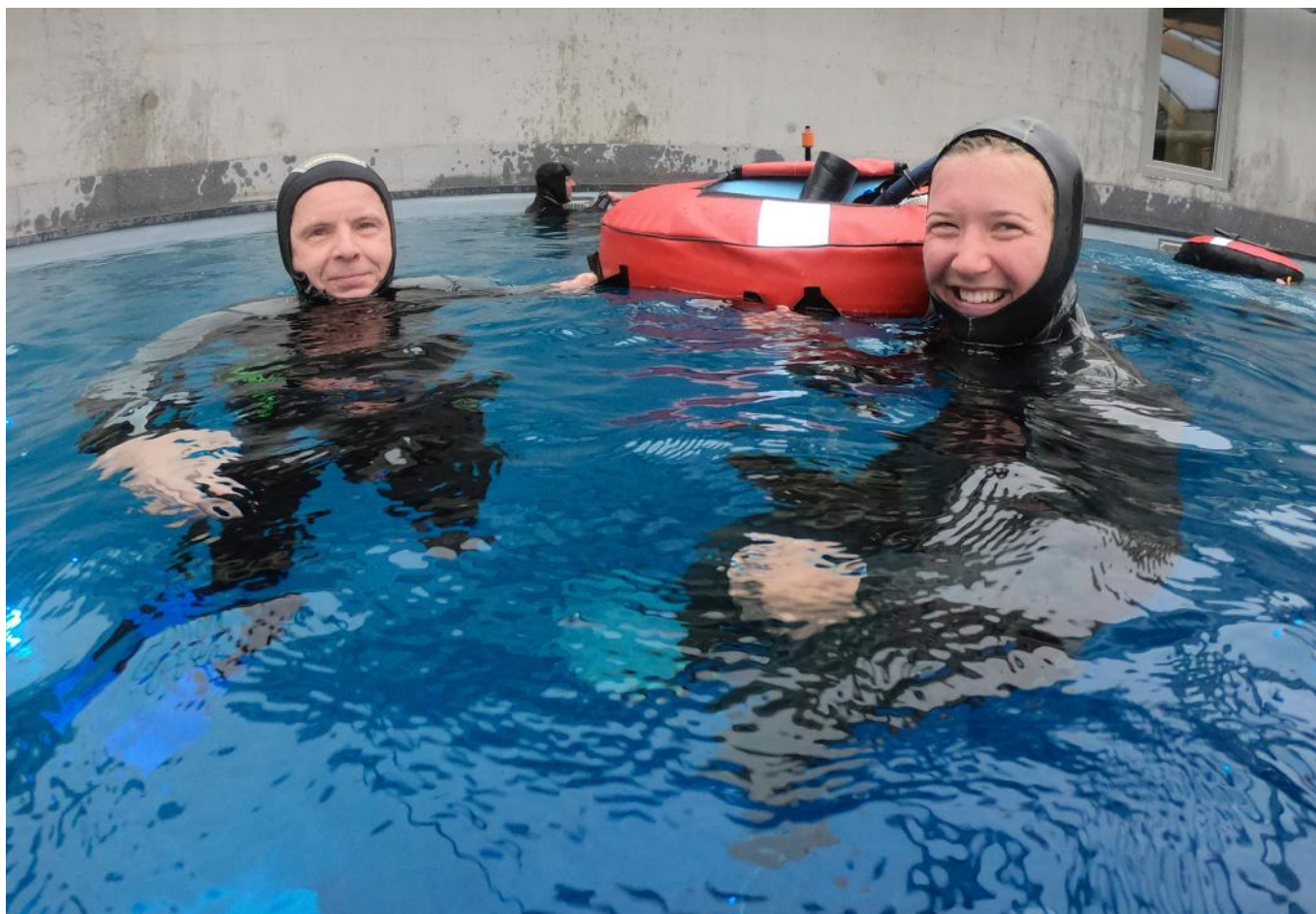


MY BUDDY

THE FINLESS DIVER

FEATURE **PATRICK VAN HOESERLANDE**

Today I'm meeting with Linde Muyshondt, the Belgian record holder in the no fins discipline, referred to as 'constant weight no fins' or CNF.



On the morning of my next dive appointment, I feel a bit like the weather today: grey. Not that I have suddenly aged, but I don't like where I'm headed. Firstly, it has been a while since I participated in a free dive pool training. Secondly, I am very bad at swimming breaststroke. Why am I so worried about it? Well, today I'm meeting with Linde Muyschondt, the Belgian record holder in the no fins discipline, referred to as 'constant weight no fins' or CNF.

Google her name combined with the word AIDA, and you will understand why I feel uncomfortable. In line with the concept of this series, I will indeed dive with her, in her preferred style, which means diving vertically in breaststroke. A disaster scenario takes place before my mind's eye. When I enter the cafeteria of the dive tank Transfo in Zwevegem (Belgium), I receive news that does not improve my mood: she and I are to be a team. Only us two! That means a lot of diving. Apnea diving, assuring safety, interviewing and taking photos – that involves multitasking.

How did I get to know Linde? By attending a freediving course, I sometimes find myself in environments outside those frequented by scuba divers. Contrary to what I thought, our federation has a patchwork of various branches of the underwater sport. From time to time, you meet divers specialised in different underwater activities from your own. During a meeting with apnea divers,

Linde was congratulated for her record and this immediately caused an alarm to go off in my mind. Not that I was aware of her Belgian record – I have no excuse for that lack of knowledge – but by breaking that record, she became a prime candidate for this series. Who else would be better suited to lead readers into the world of CNF? In hindsight, I recalled that I had once seen her during a practice session in the deep pool Nemo 33. After that training, I walked up to her to ask her to consider being my buddy for this series.

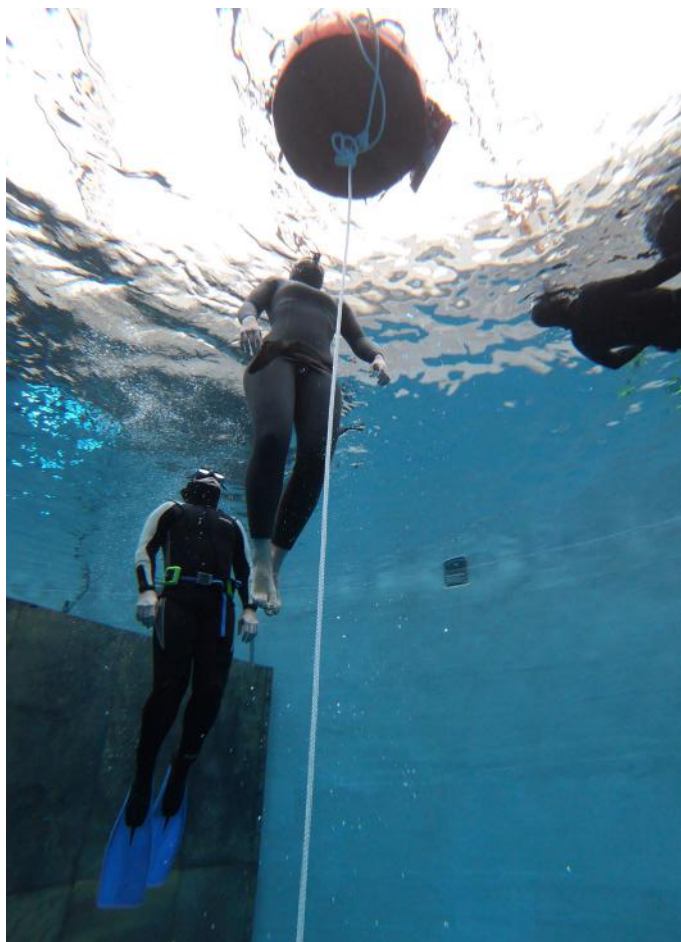
Back to Zwevegem. The moment the dive organiser has told me I am to partner with Linde, I notice she is already diving in the tank. I look through the glass and see her making a turn. To my astonishment, I notice that she slightly descends with every forward arm movement to rise directly a few metres thereafter. CNF is not an evenly smooth movement. My courage fails me, but it is too late to back out. Meekly, I follow the rest of the divers to the changing rooms.

In a few words at the buoy, I explain the idea of our dive. I hear myself saying that the objective is that I dive in her preferred style. Now there is definitely no way out. She smiles and suggests that we warm up by loosely diving several times into free immersion. I like this style, whereby you dive by pulling on the descending line, because of the great control over the descent and ascent speed. This starts out well. My confidence grows.

During the recovery breaks, I ask her why she likes diving without fins so much. She gives me several reasons. It is the freediving discipline that demands the most muscular effort. After all, you must swim down and up without tools such as fins or a shot line. Besides, you don't need much to practice it. A nose clip in your dive box is enough. You don't even need a descent line with a buoy, and without any equipment, the direct contact with the water is intensified. I wonder if I will have this same experience.

From diving with the help of a cable, we switch to vertical swimming. Before I descend to the bottom in this way for the first time, I ask my buddy for some tips. She does not provide any, because she first wants to see how I would do it. For obtaining good lift – the final stage of freediving in which you as a diver feel you are lifted by the slightly positive buoyancy – I prefer being a little too light. This results in a difficult start because I must think about too many things at the same time. After three strokes I succeed and head for the bottom in breaststroke. I flip at the turning point and swim back up until Archimedes' hand lifts me up. I break the surface and perform the safety protocol to finish the dive.

It went better than expected, but I'm not sure how to feel about the dive as I had too much to think about. I put my fins back on because it's Linde's turn and I must assure her safety. I get some tips on my performance while we change roles. Equalise your ears



preventively before diving and repeat this in the middle of every stroke. She tells me to do this by stretching one arm forward after a full breaststroke cycle while pinching the nose with the other hand. In the meantime, thrust with your legs. My mental 'to do' list gets longer.

After Linde demonstrates it perfectly, it's back to me. My second attempt is much more successful and the alternation of arm movement and equalisation goes better than expected. We dive a few more times. Thanks to the improved equalisation technique, I can reach greater depths. But we are not yet using the nose pin. That is the next step.

Masks off and clip on. Now the strokes may follow each other without interruptions. After all, I do not need a free hand for equalisation anymore. It feels unnatural. The view is also reduced to a blurred "pool view" without the mask. Automatically you become more aware of your body and less of your surroundings. After a few immersions, I have the feeling that I'm getting better. I'm starting to enjoy it. Linde has already observed this change in my state of mind and claims that this will become my favourite style of freediving, something I do not admit.

We go into our last 30 minutes when she proposes I get rid of my socks. I wear them in order to more easily get in and out of my pool fins. I do not object to her suggestion. This improves the contact with the cold water.

Then she proposes I also remove my hood. This increases further connection with the water. Now she unzips the surface buoy and takes the lanyard off. Because the water in the Transfo is clear and not deep, the use of a personal connection with the descending line, (the lanyard) is not required and so we decide to not use them. She says that diving without a hood increases the risk of disorientation. An extra aid to find your way up is therefore recommended. The experience promises to be more intense. And that is indeed the case!

After a few dives, we hear the stop signal. Because it is her turn, we agree that she will perform a last CNF dive and that I will meet her directly as she starts the ascent. When she emerges, she is all smiles. I have rarely met someone who enjoys a good dive as much as this, let alone an apnea dive. She fully enjoys this discipline and it fits her perfectly. If she combines this pleasure for the discipline with the tenacity to improve through training, her current record will quickly be broken again. We will certainly see her name appear more than once. And this time, I'll pay attention.

After a BBQ, I drive back home. The sun starts fluttering through the clouds. The dive was much nicer than I had expected. I am smiling behind the wheel. Thank you Linde, for letting me be a part of your team and introducing me to the no fins diving discipline. I check off another dive aspect from my list and read up on what my next buddy will teach me.

Aha, that one I'm looking forward to. That will be nice.

Do you know someone who could teach me something new with regards to a niche in diving? Send me an email at patrick.vanhoeserlande@nelos.be.



Diver: Linde Muyshondt

First Year: 2016

Total Dives: I don't know the total number of dives, because these are not logged (during a 2 hour free diving session, you can easily dive 15 times).

Club: Scylla Diving Aarschot

Certification: CMAS 4* Apnea Diver

Other Certs: SSI Instructor

Special Equipment: No Fins

Favourite Dive Site: Put van Ekeren

Favourite Dive Site Abroad: Too many to list.

Preferred Type of Dive: Finless free diving.



Kyra, a member of the restoration team cementing a coral fragment back onto the reef.

A full-page background image showing a diver in a black wetsuit and mask swimming over a coral reef. The diver's hand is visible in the foreground, reaching towards the camera. The water is a deep blue, and the coral reef is dark and textured.

CORAL GARDENERS

FEATURE **ALLY LANDES** PHOTOGRAPHY **KELSEY WILLIAMSON & RYAN BORNE**

"The islanders of Moorea are surfers, fishermen, and freedivers. Everything from the mountains to the sea is connected. These coral reefs have given them everything in their lives, including the endless joys and adventures, the food they eat, and the oxygen they breathe. The ocean is their school. It gives them humility, love and respect for all forms of life."



ABOVE: The island of Mo'orea. **OPPOSITE PAGE:** Maoritai, a member of the restoration team checking to see if the coral fragments are ready to be replanted.

Mo'orea is a South Pacific island and the pride and joy of French Polynesia. Considered Tahiti's little sister, the island is said to be shaped like a heart when it is seen from above, making it one of the top destinations for romance in Tahiti – after Bora Bora. Known for its jagged volcanic mountains and sandy beaches, the coastal environment of Mo'orea offers ample opportunities for the study of coral reef ecosystems. Examples of every type of coral reef can be found in the 60 kms of coastline surrounding the island.

However, an alarming change is taking place. The reef is dying, and corals are going extinct.

Titouan Bernicot was born on the island where his parent's worked as pearl farmers. Most of his childhood was spent in the water and with that, a deep relationship and virtue was bestowed onto him. The coral reefs have given him everything in life, from the waves he surfs to the food he eats.

His story begins in 2015 when he was out surfing with his friends and they made a most concerning discovery. The corals below their boards had turned bright white, and only a few days later, they had completely perished.

This led to a lot of heartache and not a lot of

understanding. They took it upon themselves to start researching the phenomenon they had witnessed and they quickly realised that if coral reefs were to disappear, the entire balance of the oceans would completely collapse.

A lot of growing up and responsibility came to pass from that day on and they decided to act upon it. They became the Coral Gardeners!



Titouan Bernicot – Coral Gardeners Founder

CORAL GARDENERS

This is a group of young and very motivated surfers and fishermen known as "the children of the ocean", dedicated to making a change and protecting their ecological birthright. The project was born on the 28th of April 2017, led by Titouan – the founder of Coral Gardeners – after they painfully watched the gradual degradation of the reefs of their beloved Moorea island over the years. They tipped off a crowdfunding campaign in 2017 with the support of former world swimming champion, Florent Manaudou (a Coral Gardener Ambassador) and achieved their funding objectives. They received press coverage in some of the top international publications such as Le Parisien, Elle magazine, Le Figaro and Paris Match, to name but a few.

Coral Gardeners is today made up of 15 team members at the HQ, including a few volunteers. They also have thousands of supporters including local students, tourists and people connecting from all around the world.

Their mission is to tell the story of reefs worldwide, and launch a global movement by raising awareness. They want everyone on the planet to know what a coral is, and how important it is to our oceans. They give conferences, school lectures, and run ecotours.





ABOVE: 1. Chelsea Kauai, one of Coral Gardeners ambassadors helping the team. 2. Tehaps, a member of the restoration team monitoring the growth of the corals. 3. Maoritai, checking which coral fragments are ready to be replanted. **OPPOSITE PAGE:** Titouan Bernicot inspecting a coral fragment.

They harvest and plant corals back onto damaged reefs with much success! To date, more than 7,000 corals have been adopted and transplanted to the lagoon. Their vision is to fix one broken coral at a time. "Save the reef, save the ocean, save the world."

WHAT ARE CORALS?

Corals are unique and complex living structures known as marine invertebrates. They typically live in compact colonies of many identical individual polyps which are tiny, soft-bodied organisms which are related to sea anemones and jellyfish. Their base has a hard, calcareous protective skeleton called a calicle, which forms the structure of coral reefs. Reefs are given life when a polyp attaches itself to a rock on the sea floor and then divides itself into thousands of clones.

Polyps are translucent animals, but the reefs get their colours from the algae which the polyps host in their cells, called zooxanthellae. Both these organisms live in symbiosis – the corals provide protection and nutrients to the algae, and the algae provides the source of energy and oxygen.

CORAL BLEACHING

Corals become stressed by temperature changes and pollution and in doing so, they will evict their symbiosis partnership (the polyp and the algae) which causes the bleaching and can in turn, permanently kill the colony if the stress factor is not controlled.

WHY IS IT SO IMPORTANT TO SAVE THE CORAL REEFS?

75% of the world's coral reefs suffer threats

from pollution, overfishing, human activities or global warming. Coral reef coverage has already declined by 30-50% since the 1980s (M.Gaskill).

Without proper action put into place, all coral reefs are at risk of disappearing by 2050 with disastrous consequences for all marine life.

THE REEF RESTORATION SYSTEM

The first stage in the project is to seek out super corals and take clippings of no more than 10% from them. Then those clippings are taken to the nursery where they attach them to a rope transect for 12-18 months.

In the second stage, new clippings are taken from the nursery and cemented onto degraded areas of the reef to monitoring quadrants (1x1m). The corals grow, they then spawn and repopulate the reef with healthy, resilient corals.

THEIR TERRITORY

France is the only country in the world with coral reefs in all three oceans. Eight French communities are home to 10% of coral reefs in the world (Coral Guardian).

In French Polynesia, almost all of the 118 islands have coral coastal marine ecosystems, with the exception of the Marquesas Islands.

Although their islands are not located amongst the famous "coral triangle", they have nearly 200 species of corals, 1,200 species of fish and 1,000 species of crustaceans. Coral reefs are, along with the world's tropical forests, the richest and most productive ecosystems on the planet.

AMBASSADORS

They have a strong force of ambassadors represented by photographers Paul Nicklen, Cristina Mittermeier, and Tim Mckenna; freedivers Guillaume Néry and Kimi Werner; and marine influencer Madison Stewart, to name a few.

By engaging the general public in their project, they call to all citizens to become reef ambassadors around the world through the various platforms of social media.

CORAL REEF FACTS

- While covering less than 1% of our oceans, coral reefs host a 1/4 of known marine life (IUCN).
- Marine plants, including coral's symbiotic algae, produce up to 70% of the oxygen we breathe (National Geographic).
- Corals are estimated to directly support over 500 million people worldwide. (IUCN).
- Coral reefs generate \$36 billion in tourism each year (ZME Science).
- Coral reefs provide a protective barrier against storms and erosion (IPCC).
- Worldwide coral reefs cover an estimated 284,300 km² (UNEP).
- French Polynesian reefs cover about 15,000 km², which makes up 5% of the world's coral reefs.

ADOPT A CORAL: €25/\$29

- Name it.
- They plant it for you.
- You will receive your adoption certificate with GPS coordinates, the name of your coral, and a photo ID.

www.coralgardeners.org





STEVEN SURINA

DIVING INSTRUCTOR, UNDERWATER VIDEOGRAPHER,
LECTURER AND NATURALIST GUIDE

FEATURE **STEVEN SURINA** TRANSLATED FROM FRENCH **ALLY LANDES**

FEATURED PHOTOGRAPHERS **GREG LECOEUR, SYLVIE AYER, FABRICE BOISSIER, DAVID GUILLEMET,
THOMAS BAECHTOLD AND FABRICE DUDENHOFER**

In addition to the awareness needed to defend sharks, more and more initiatives are being implemented, even if some seem very delayed for the conservation of certain endangered species. Even while there is still a long way to go and the preservation objectives are still insufficient, the observations seem less dramatic than those from the early 2000s.





Tiger shark (*Galeocerdo cuvier*) by © Greg Lecoeur.

BIOGRAPHY

Born in the Parisian suburbs in 1988, Steven Surina expatriated to Egypt in 2002. Born into diving from the age of six, he grew up in a dive club run by his family where the Red Sea opened the gates of exploration into Djibouti, Sudan, Eritrea and Saudi Arabia. He has travelled the world in developing his career and has been diving with sharks more than 500 times a year since 2008.

CAREER

His many varied trips have led him to dive with thousands of sharks, and in doing so, instilled a deep fascination to study their behaviours.

He has experienced dozens of cage-free dives with the great white shark, has spent hundreds of hours alongside tiger and bull sharks, and has had over a thousand dives in daily contact with the oceanic whitetip shark.

Steven is a scuba diving instructor, underwater videographer, lecturer and naturalist guide, and the founder and manager of 'Shark Education', founded in 2011, where he specialises in shark ethology (the interactions between divers and sharks). He is very active in his conservation work and shark eco-tourism, in which he regularly organises conferences and seminars in France.

To share his experiences, Steven offers specially tailored dive excursions for divers to meet with different shark species from a selection of fifteen destinations around the world (Egypt, Sudan, Djibouti, Maldives, Philippines, Mozambique, South Africa, Bahamas, Mexico etc.).

With 'Shark Education', Steven works in partnerships with scientists and experts from around the world and also collaborates with various organisations such as the 'Bimini SharkLab' in the Bahamas, 'Ichtoconsult' of the IRD, 'Saving our Sharks' in Mexico, and takes part in the population monitoring shark programmes in Sudan after having joined the



Both top right photos of Bull sharks (*Carcharhinus leucas*) by © Sylvie Ayer and bottom photo of a Blue shark (*Prionace glauca*) by © Fabrice Boissier.

'Divers Aware of Sharks' network from the Cousteau Society.

Steven is one of the few French divers to have mastered tonic immobility on several species of sharks in the wild, using various techniques in order to remove fish hooks.

A scientist in the making, he also conducts his own research by following an EPHE diploma supported by Shark Specialist, Dr Eric Clua, a professor of Marine Biology.

Steven has published three books on human-shark interactions (currently only available in

French):

1. Comprendre et Plonger Avec les Requins (Turtle Prod: 2015)
2. REQUINS – Guide de L'interaction – Avec le Photographe Greg Lecoeur (Turtle Prod: 2017)
3. Rencontres Avec Les Requins – Avec le Dessinateur Cyril Girard (Turtle Prod: 2019)

In 2016, he created the first study on the behaviour of Red Sea and Indian Ocean sharks, and with Dr Seret in 2017, created the first International Charter for Responsible Shark Ecotourism.

In 2018, he took part in the filming of 'Shark Wave', a documentary produced by Patrick Metzlé where he took famous French director Jan Kounen out to dive with oceanic sharks of the Red Sea. In 2019, in the film 'Au Nom Du Requin' commissioned by the Salon International de La Plongée Sous-Marine, he took François Sarano diving alongside the bull sharks of Playa Del Carmen in Mexico.

Steven was asked to showcase and present this year's dive show theme, the "New Generation of Divers" at the 22nd Salon International de La Plongée Sous-Marine in Paris from the 10-13 of January.



Photos by © Greg Lecoeur. **ABOVE:** Blue Shark (*Prionace glauca*). **OPPOSITE PAGE:** Great hammerhead (*Sphyrna mokarran*).

HIS OBJECTIVES

To demonstrate that it is possible to interact with sharks by promoting responsible ecotourism and above all, train divers to protecting sharks by converting them into ambassadors.

HOW?

By demystifying peoples' misunderstandings and fears by offering a new outlook and experience of diving with sharks, combining practice and theory thanks to daily conferences presented during his customised expeditions.

WHY?

Steven grew up amongst a family of divers. At the age of 5, he first discovered great white sharks in a documentary by Jacques Cousteau. He was as terrified as he was fascinated. Over time, his fear and curiosity became an inquisitive mix of emotions that developed his true passion for sharks today. As soon as he was given his first opportunity to enter into their environment at the age of 9, his one and only motivation was to come face to face with them. His excitement and ecstasy was followed with admiration, wonder, enthusiasm and the trance in which each encounter put him in, was incredible! He was the luckiest kid.

However, becoming a professional diver with the vocation to protect sharks was not his

initial calling. As he was growing up, it was the ignorance of other divers surrounding this species that caught his attention. It was easier to get away from sharks than it was to attract them. What I noticed from my interactions with people, was divers' awkwardness when they were in shark territories. They did not have the right codes of conduct, and their interactions were mostly stealthy.

In the earlier years, his studies weren't entirely successful and he felt he needed to emancipate himself and fast. He was 18 when he first became a diving instructor on liveboard cruises in Egypt. An opportunity that allowed Steven to be in regular contact with sharks in order to study them.

Over time, those experiences and the enrichment he got from his daily life shared with them, he found the essential need to show sharks in a completely different angle than that of them depicted as dangerous animals. Steven was clearly inspired by the film 'Shark Water' (2006) by Rob Stewart, and the genesis of 'Shark Education' took shape.

COMBINING SHARK PROTECTION AND UNDERWATER ENCOUNTERS

What he found to most suit his principles was conservation, education and interaction. It was

a positive move forwards and these were the founding pillars of Shark Education.

With the growing development of ecotourism, it became clear that his commitment was to encourage as many people as possible to interact with sharks, by discovering new observation methods, and combining both theory and practice. There are two types of environmentalists: the passive and the active. Steven believes that when someone is moved by a gift from nature, the question no longer hangs on whether to act or not, because that desire to share this affection with others and future generations surpasses the strongest ecological commitments.

When a shark approaches you and grants you 30 seconds or 30 minutes of its time, it is also observing you, and perhaps trying to communicate with you. This immense gift made to you by this wild, untamed animal reminds you that if it were not for this experience, such an interaction with a terrestrial predator would otherwise be impossible. I love to dive with sharks because you can't cheat. It's always when we least expect them that they put us back in our place and bring arrogance back to humanity. The mirror effect is immediate and the only words that come to mind are respect, love and humility.





ABOVE: Steven using a technique of tonic immobility. Photo by © David Guillemet. **BELOW:** Grey reef shark (*Carcharhinus amblyrhynchos*). Photo by © Thomas Baechtold.

Everything I have today, everything that has shaped my personality, everything that allows me to live the life I have chosen, I owe to sharks. Without them, I would not have the lifestyle I have to date. Protecting them is more than a commitment, it is a necessity. On a larger scale, it is the salvation of life on Earth that depends on it. The legend of the hummingbird (a Native American legend) always remains more effective than not taking any action at all. Things don't get worse by the people who do us harm, but by those who do nothing.

FACTS

Today, sharks are a fashionable phenomenon. Endlessly feared by man, they continuously inspire fascination. Thanks to social networks, television or sensitised media personalities, more and more people are helping to restore sharks' reputations.

More countries are protecting them by creating sanctuaries. Science is becoming more and more interested in them, and sharks have turned into business and tourist

attractions where the plight is now to save them from disappearing. The popular craze surrounding these so-called "man-eaters" has taken a setback which probably linked to their decline in numbers, and has finally changed mentalities in the interest of the urgent need to protecting them. It's a good thing to want to change their image from monsters. It should not however be forgotten that sharks remain wild, and unpredictable predators. To dive alongside them is accessible to anyone, as long as you are accompanied by professionals and



ABOVE: Broadnose sevengill shark (*Notorynchus cepedianus*). Photo by © Fabrice Boissier. **BELOW:** Steven Surina, selfie and portrait by © Fabrice Dudenhofer.

respect the strict safety instructions. Above all, the ocean must not turn into a zoo where sharks become a fairground phenomena.

"I am thrilled to see we no longer "fight" alone and that this enthusiasm affects all generations, but I am disappointed to see certain practices are taken to extremes, or that certain images of reality are completely distorted."

HOPES

The disappearance of sharks is becoming

more and more apparent, but Steven has been lucky enough to witness few changes in the quantity/density of sharks he has seen. The populations of sharks living in the areas where he frequently dives seems to be less affected by fishing, even for migratory animals. There are of course certain regions or seasons more prolific than others over time, but he has never had the misfortune to see a significant or progressive disappearance in those areas familiar to him. Which in twenty years, is rather encouraging.

In addition to the awareness needed to defend sharks, more and more initiatives are being implemented, even if some seem very delayed for the conservation of certain endangered species. Even while there is still a long way to go and the preservation objectives are still insufficient, the observations seem less dramatic than those from the early 2000s. It is important not to lose hope, know that resources are not inexhaustible, that the situation remains critical, and the urgency is very much absolute!



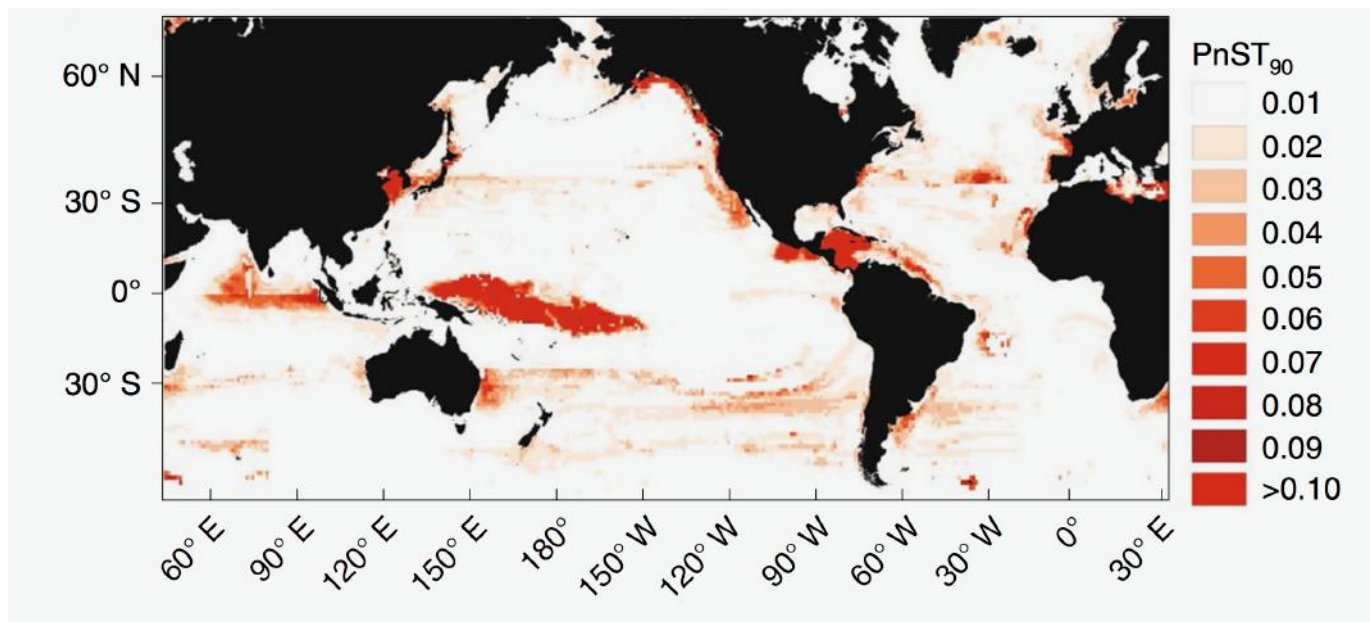
Photos are of Small-spotted Catshark embryo/egg (*Scyliorhinus canicula*) recovered from discarded females – Madrid 2020.



SHARKS AND CLIMATE CHANGE

FEATURE **FERNANDO REIS** PHOTOGRAPHY **PABLO GARCIA**

Today, more than ever, we must reflect on the consequences of our actions. It is time to change our ways in nature. We must be aware that we are part of it, and not against it.



Proportion of species beyond their 90% species thermal range – PnST90 (Smale et al, 2019).

SENTINEL SPECIES

More than a third of the currently known shark and ray species are, according to the IUCN (International Union for Conservation of Nature) Red List, threatened or nearly threatened with extinction. And rising water temperatures could be their worst enemy.

Every year, between 63 and 273 million sharks die in the oceans solely for their fins. The exact numbers remain as estimates, as there is a huge lack of reliable data (www.iucnssg.org/faqs.html). The truth is that by the number of fins commercialised, it is known that the worldwide number of unreported cases of illegal fishing is extremely high. More so, the incidental catches usually known as bycatch, are nowadays very significant in commercial fishing activities worldwide, and illegal fishing is of course undeclared which derives from the international trade in demand for fins and shark meat. There are many pressures that threaten the survival of many of the species of rays and sharks. These factors make ray, skates and shark fishing a totally unsustainable economic activity today.

As apex predators of each ecosystem or trophic network they control, elasmobranchs (1) are considered sentinel species and main regulators of the entire balance of marine biodiversity. Without them the global fish economy and marine life as we know it, would change significantly. Sentinel species can provide us insights about each ecosystem function, identify hidden risks to human health, and predict future change. As sentinels, many shark species offer a unique perspective into ocean processes, given that they can move across ocean basins and amplify trophic information across multiple spatiotemporal scales (Hazen et al, 2019). It is expectable that the use of marine predators as ecosystem sentinels will enable humans a better and faster response and adaptation to each ecosystem variability and change.

WHAT'S HAPPENING NOW?

But, there are also many other indirect threats to the survival of shark and ray species, which are undoubtedly the result of human action and which must be considered: the loss of habitats, the climate change and, in particular, the warming of ocean waters, with the consequent increase in acidification of the waters due to excess carbon dioxide. In reality, the oceans are the main source of thermal inertia in the climate system (Resplandy et al, 2019), vital for life on the planet. And this is so significant that the absorption of heat and carbon dioxide by the oceans represent more than 90% of the excess energy obtained by the Earth.

In fact, water temperature is one of the most important factors of environmental balance that regulates the distribution of different species by each different habitat. When we study sharks, the most important question we should always ask is what is that animal doing there at that moment. It is known that the oceans have warmed up substantially over the past century, with far-reaching implications for all marine ecosystems. No one can forget the repeated phenomena such as “El Niño” responsible for the deaths of so many large areas of coral habitats in the Indian Ocean. Unfortunately, we are aware that anthropogenic climate change (2) has redistributed species and reorganised natural systems, posing a great threat to global biodiversity as we know it. The marine biosphere has become so heated in recent decades that its implications for the integrity of ecosystems pose a real threat to the sustainability of the economy of goods and services they provide to different populations around the world.

A group of Australian scientists led by Dan Smale from the Marine Biological Association of the United Kingdom, compared the areas where heat waves have increased the most,

in places that harbour a lot of biodiversity, looking towards where the species are already near their temperature limit, compared to those where additional stresses occur, such as pollution or overfishing (Smale et al, 2019). This study reveals critical points of environmental damage from the Caribbean Gulf, to the western Pacific, and even to the northeastern Indian Ocean, just between Maldivian waters and the western coasts of Indonesia (see the map of the proportion of species beyond their 90% species thermal range – PnST90 – Smale et al, 2019).

PUFFADDER SHYSHARKS

Another thing we know is that the skin of sharks is covered with denticles (3) that provide each animal with a layer of resistant and protective dentin, and that saves them a lot of energy when swimming, but they are also very vulnerable to ocean acidification. In South Africa, another team of scientists last year presented conclusions from the negative consequences resulting from the acidification of the waters in the corrosion of these denticles. Dentin corrosion appeared on the skin of a group of three Puffadder Shysharks (*Haploblepharus edwardsii*) after an experimental exposure of 9 weeks of hypercapnia (4) concluding that its result increase in denticles renewal can potentially compromise hydrodynamics and skin protection. As shark teeth and denticles are structurally and materially identical, the chemical dissolution of teeth can also be expected at a similar rate (Dziergwa et al, 2019). The combination of these multiple effects will most probably cause a negative affect to the survival of many species of top predators, making sharks and rays particularly susceptible to ocean acidification.

PORT JACKSON SHARKS

Two years ago, a different group of Australian researchers hatched 24 eggs of the Port Jackson shark (*Heterodontus portusjacksoni*).

Half of these eggs were placed in water that was maintained at current temperature averages, and the rest were placed in slightly heated tanks to simulate projected temperature changes towards the end of the century. Five of the sharks in the highest temperature tank had died the first month, and the survivors were placed in a long tank with a Y-shaped partition with food on each end. Sharks incubated at high temperature showed a stronger absolute laterality and leaned significantly to the right in relation to sharks reared at the current temperature (Catarina Vila Pouca et al, 2019). This lateralisation is the tendency of one or the other half of the brain to automatically control certain behaviours. It is one of the fundamental patterns of the organisation of the brain not only of animals, but also of humans. It is believed that sharks born in warmer waters may be forced to develop faster, which would lead to smaller brains than those that develop under current conditions. With less mental energy, sharks tend to follow certain "autopilot" behaviours, such as always turn right.

SMALL-SPOTTED CATSHARKS AND BLACKMOUTH CATSHARKS

On another side of the planet, in Spain, since March of this year, the Oceanogràfic Foundation and the scientific Lamna Association started working together on the Valencian coast, to present the results obtained in a project to recover Small-spotted Catshark eggs (*Scyliorhinus canicula*) from the discarded fishing females. The research work conducted by the Professor Pablo Garcia with the high school students allowed them to see how temperatures affected the speed of the embryos development.

They had two aquariums, one with the sea temperature and the other with the sea temperature in a supposed climate change scenario. In addition, they had females obtained from fishing discards, provided by a local fisherman. From each female they hatched two eggs, one for each aquarium, and observed how long development took in each scenario. In addition, they also controlled the survival rate. In the end they concluded that growth at higher temperatures was faster in warmer water, but mortality was much higher during growth. Cold-water animals grew slower, but mortality was much lower. They blamed it on increased bacterial growth in the hotter water and yolk shedding for lack of consistency.

Similar results, were obtained with the deep-sea species Blackmouth Catshark (*Galeus melastomus*) developed at a higher temperature than normal. At 14°C the eggs develop with a survival of more than 80%. But, just by raising them to 16°C, survival dropped to 60%. With this, the research students and professors have been able to confirm that with warmer water, the shark eggs develop faster, but they also have a higher risk of mortality and therefore there is less reproduction.

THE CONFIRMATION

As we have been able to confirm, more and more scientists are investigating how climate change is affecting biodiversity and assessing the vulnerability of species under these global warming phenomena. It is also known that sharks and rays that can live in fresh water in estuaries and reefs are known today to be the most vulnerable to climate change. Increasing water temperatures and excessive concentrations of carbon dioxide in the oceans are affecting the development of the sharks' brains. This not only represents a serious threat to marine ecosystems, but also to the animals that inhabit them, including its main predators without which we cannot survive.

Sometimes it seems, we can only have hope for the generations to come. For example when we see public statements by teenagers like Greta Thunberg, in this case those published in Rolling Stone magazine last April, "It seems like the people in power have given up. They say fighting climate change is too hard, it's too much of a challenge." (Stephen Rodrick, 2020) But, as Greta said in Davos, Switzerland, in the 2020 World Economic Forum, this is a matter of life and death for the future of our species, we cannot give up. "If we are to be in-line with the carbon-dioxide budget, we need to focus on doing things now instead of making commitments like 10, or 20, 30 years from now."

FOR THIS NOT TO HAPPEN AGAIN

The oceans are really what gives us this urgent alarm of how fast the Earth is warming up. Unfortunately, today the link between the unbridled consumption of many species of wildlife, climate change, the destruction of natural systems worldwide and the appearance of COVID-19 are also undeniable. The truth is that everything that our generations have produced, the good and the bad, have transformed current living conditions and especially those that will come. And many of these transformations are already irreversible.

Today, more than ever, we must reflect on the consequences of our actions. It is time to change our ways in nature. We must be aware that we are part of it, and not against it. After dealing with the current coronavirus crisis, each of us will have to take time to change attitudes, and to undertake new protection and recovery measures for large areas of land and ocean. This is, if we want to work together so that pandemics like COVID-19 do not happen again. And consequently that we can make room for the environmental reconstruction of the planet, and that we can prevent key species such as sharks and rays from extinction.

FOR MORE INFO:

EMAIL: info@sharksinstitute.org

WEBSITE: www.sharksinstitute.org



- (1) Elasmobranchs – Cartilage skeleton animal subclass consisting of rays and sharks.
- (2) Anthropogenic – Resulting from the impact of human activity.
- (3) Denticles – Small, tooth-like scales that cover the skin of rays and sharks.
- (4) Hypercapnia – condition of abnormally elevated bicarbonate.

ACKNOWLEDGEMENTS:

Jaime Penadés Suay and Pablo García – Spanish researchers from the Lamna Association of the Valencian coast and the IES Gonzalo Chacón de Arroyomolinos in Madrid, respectively.

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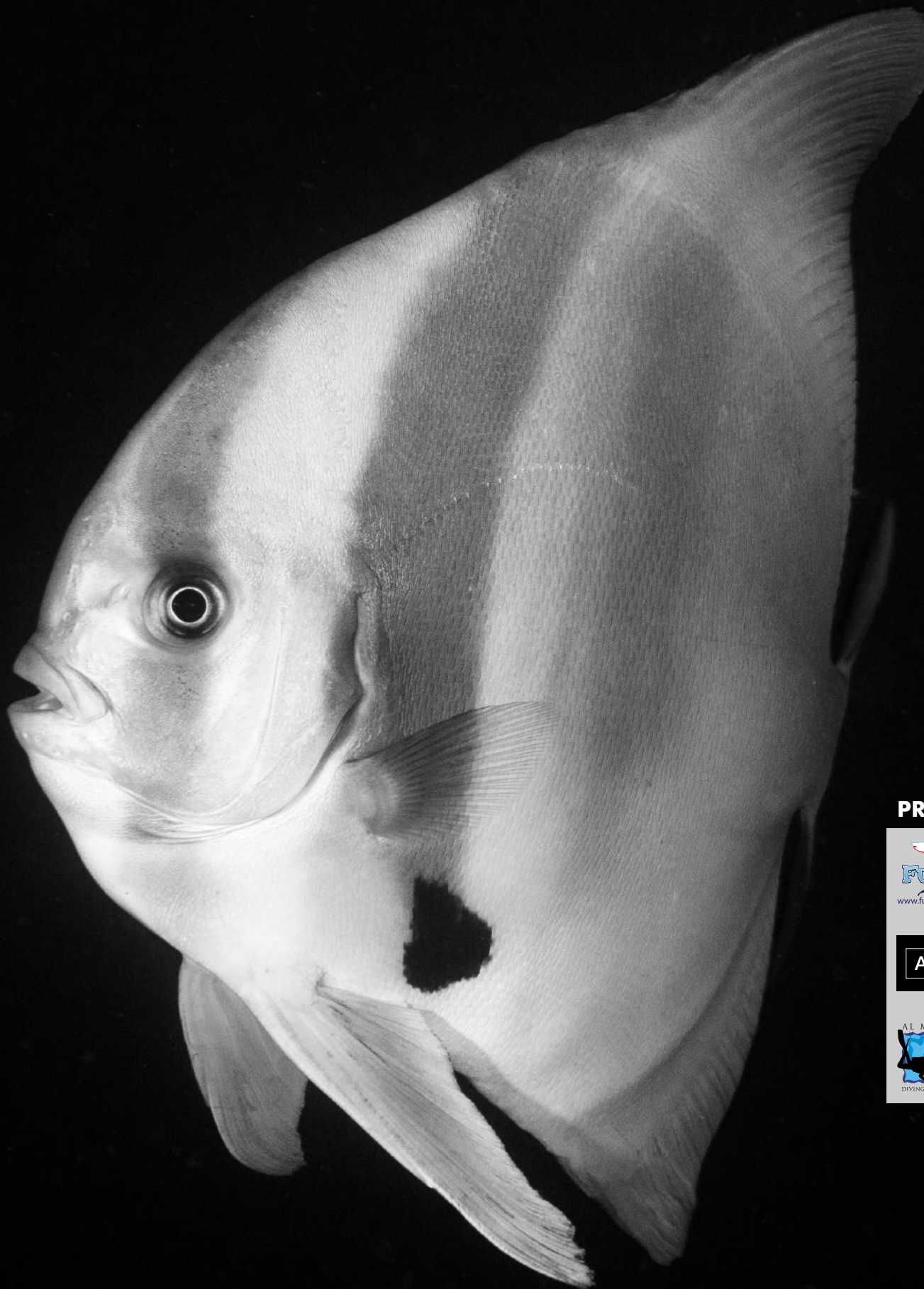
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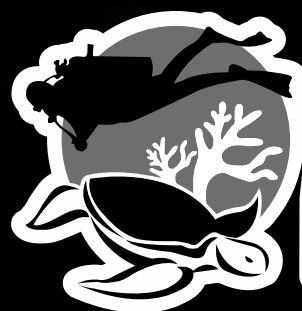
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Digital Online 2019 was a much cosier affair held at the American University in Dubai (AUD) with the winning prints on exhibition by Print Works.

DIGITAL ONLINE 2009-2020

Digital Online has just celebrated its 11th Anniversary under these very surreal circumstances of our time during COVID-19, but we have discovered that nothing can stop us as a community! We regret that with the social distancing, we have not been able to host our annual Awards Night and Exhibition Opening at the American University in Dubai (AUD), and because of that, we have also not been able to have all the winning images printed by our long-time partner since 2009, Print Works. Things will pick up again next year and we'll all come back stronger.

Despite the pandemic, we have received some very impressive underwater imagery from our dedicated members and we're also very honoured to introduce the works of some new and enthusiastic members this year.

In order to announce this year's photography and video winners, we crafted a virtual awards screening from multiple Zoom calls we had with our winners and prize sponsors on the 20th of May in order to share the announcements with everyone who would have normally attended the event at AUD. The benefit is that this way, we get to share it with everyone else who is not located in Dubai. We were also able to chat with our judges who are spread out around the world (with very different time zones) and catch up with them.

ABOUT DIGITAL ONLINE

The competition was realised in 2009 as there were no other underwater photography competitions existing in the UAE at the time. Digital Online was introduced by EDA for 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 has seen continuous and steady growth of new underwater photographers taking part and joining many of 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.

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.

HOW THE SCORES WORK

Scoring is on a basis of 100 points: 30 for technical merit, 30 for composition and 40 for impact from each of the judges. Based on these criteria, each judge is free to give a total score from 0 to 100.

As guidelines for judging, an entry with a total score of 300 points means that the image does not have any major faults but at the same time does not have any significant strengths and has little or no impact. Entries with less than 300 points indicates that these images have serious technical and/or compositional flaws and have no impact. (Impact is the viewer's initial response to a stimulating image and is the WOW! factor of an image.) Photographs with more than 400 points means that these images have impact based on various factors

such as mood, imaginative work, subject matter and are above average in terms of technical merit and composition.

HOW PRIZES ARE AWARDED

A photographer cannot win more than once in a section. If the scores tie the winner in any of the categories, the prize will move on to the next candidate with the highest score in order to give others a chance, provided there are enough entries in that category.

THE PRIZE SPONSORS

We would like to thank all our devoted and new sponsors for taking part in Digital Online 2020's event, for without them, the competition would not take place.

A big shout-out to our international prize sponsors, Fun & Sun Dive & Travel in the Philippines, Sundive Byron Bay in Australia, Steve Woods in Canada and Ocean Realm Images in the UK, and to all our local prize sponsors, Al Marsa Musandam, XR Hub Dive Center, Grand Stores, Bermuda Diving Center, Ali Bin Thalith, Emma Skinner Art, Al Mahara Diving Center, Divers Down, Sandy Beach Dive Centre, Freestyle Divers, and Al Boom Diving.

THE JUDGES

We would also like to thank Steve Woods, David Diley, Dr. Richard Smith, Mohamed Abdulla and Simone Caprodossi for being Digital Online's asset guest judges. We are privileged to have such talented photographers and filmmakers volunteer their time to take part in this event.

EDA CHAIRMAN'S MESSAGE

I want to thank all our partners and prize sponsors who give so generously and really do make this a very inspiring competition to take part in. The collection of images and videos we have received over the years are a reminder of the precious underwater life we must protect if we want our future generations to benefit from the same treasures we are still fortunate to see through our own eyes today. And most importantly, we are able to share the beauty with everyone else who has not yet ventured below the surface!

ESSA ABDULLA AL GHURAIR – CHAIRMAN

OVERALL WINNERS 2019

Overall Video: Noémie Stroh (560)

Overall DSLR/MILC: Michael Rall (2014)

Overall Compact: Donovan Hastings (1865)

Overall Local: Khaled AA Alhonsani (1761)



PRINT WORKS

THE PHOTOGRAPHY AND VIDEO RESULTS

Photographers had the opportunity to enter one photo per category (4 in total) under DSLR/MILC cameras and/or under Compact cameras. Videographers were allowed to enter one film under this year's title, A Blue Voyage, no longer than 5 minutes, including credits.

The total scores are added up to show the strongest entrants first.

	DSLR/MILC	BW	MACRO	UAE	WA	TOTAL
1	Michael Rall	493	521	484	516	2014
2	Philippe Lecomte	487	479	470	449	1885
3	Khaled AA Alhonsani	480	461	428	392	1761
4	Sunjay Keshup	403	420	392	465	1680
5	Yousef Alshekaili	469	473	398	300	1640
6	Abdulla Alali	310	452	461	370	1593
7	Chris Combes	342	385	395	351	1473
8	Oliver Farrell	394	322	404	342	1462
9	Marisa Engelbrecht	366	396	383	293	1438
10	Ola Khalaf	414	475	438		1327
11	Nassim Miri	369	263	250	318	1200
12	Ahmed Alkaabi	342		370	384	1096
13	Francis Uy	388			404	792
14	Marwan Enezi	291			305	596
15	Maisa Al Hooti		473			473
16	Ahmed Ramadan		275			275

	COMPACT	BW	COMPACT	UAE	WA	TOTAL
1	Donavan Hastings	449	445	494	477	1865
2	Ola Khalaf	384	418	447	455	1704
3	Mohamed Hayek	404	380	404	420	1608
4	Sunjay Keshup	444	396	329	373	1542
5	Ahmed Ramadan	369	365	372	336	1442
6	João Menezes	414	480		522	1416
7	Nassim Miri	386	350	245	355	1336
8	Mike Thirlwall	330	313	301	363	1307
9	Ruba Husari	414	415		380	1209
10	Angela Manthorpe	406	440	318		1164
11	Lara El Lakkis	356	408	393		1157
12	Lynette Ferreira	376	354	316		1046
13	Marwan Enezi	352	311		277	940
14	Bassem Yousri	383	284		265	932
15	Winston Cowie	286	294	287		867
16	Adnane Seffar			406	367	773
17	Khalid Alrazooqi		350		410	760
18	Oliver Farrell		399			399
19	Suretta Venter		367			367

	VIDEO	TOTAL
1	Noémie Stroh	560
2	Mark Denton	501
3	Marwan Enezi	444
4	Abdulla Alali	346
5	Mathieu Noe	324
6	Ruba Husari	319
7	Ahmed Ramadan	298

THE SPONSORS AND PRIZES

Digital Online's 16 Prize Sponsors have given this year's 27 winners the following prizes to choose from!

NOTE: Participants are only able to win one prize each. Entrants with multiple winning entries will be given priority in the points awarded.



1. **SPONSOR:** FUN & SUN DIVE & TRAVEL | www.funsundivetravel.com
PRIZE: **Destination Package** – Dauin package for 2 pax at Fun & Sun Dauin, Negros Island, Philippines.
WINNER: **Michael Rall** | 1st Place DSLR/MILC Macro (521)
2. **SPONSOR:** SUNDIVE BYRON BAY | www.sundive.com.au
PRIZE: **Destination Package** – 3 days diving package for one person (up to 3 dives per day) at Julian Rocks Marine Park, Australia.
WINNER: **Abdulla Alali** | 1st Place DSLR/MILC UAE (461)
3. **SPONSOR:** AL MARSA MUSANDAM | www.almarsamusandam.com
PRIZE: **Day Trip for 10 divers**
The winner can enjoy a fun day-out on our White Dhow, with 9 buddies. Available any day of the week – depending on availability.
WINNER: **João Menezes** | 1st Place COMPACT WA (522)
4. **SPONSOR:** XR HUB DIVE CENTER | www.puretech.me
PRIZE: **Paralenz® Dive Camera+**
WINNER: **Noémie Stroh** | 1st Place Video (560)
5. **SPONSOR:** GRAND STORES | www.grandstores.com
2 PRIZES: **Rollei Actioncam 425**
WINNER: **Khaled AA Alhonsani** | 2nd Place DSLR/MILC BW (480)
WINNER: **Ola Khalaf** | 2nd Place DSLR/MILC Macro (475)
6. **SPONSOR:** BERMUDA DIVING CENTER | www.scubadiving.ae
PRIZE: **MARES Smart Dive Computer**
WINNER: **Sunjay Keshup** | 1st Place DSLR/MILC WA (465)
7. **SPONSOR:** ALI BIN THALITH | www.alibinthalith.com
6 PRIZES: **A Signed Copy of Truly, Madly, Deeply**
WINNER: **Maisa Al Hooti** | 3rd Place DSLR/MILC Macro (473)
WINNER: **Yousef Alshekaili** | 3rd Place DSLR/MILC BW (469)
WINNER: **Chris Combes** | 3rd Place DSLR/MILC UAE (395)
WINNER: **Bassem Yousri** | 3rd Place COMPACT BW (383)
WINNER: **Ahmed Ramadan** | 3rd Place COMPACT UAE (372)
WINNER: **Suretta Venter** | 3rd Place COMPACT (367)
8. **SPONSOR:** STEVE WOODS | www.stevewoodsphotography.com
PRIZE: **Choose an Original Steve Woods Print**
WINNER: **Marwan Enezi** | 3rd Place Video (444)
9. **SPONSOR:** DR RICHARD SMITH | www.oceanrealmimages.com
PRIZE: **A Signed Copy of The World Beneath**
WINNER: **Ruba Husari** | 1st Place COMPACT BW (414)

10. **SPONSOR:** EMMA SKINNER ART | www.emmaskinnerart.com
PRIZE 1: Framed print 'With Brave Wings She Flies' (60 cm x 40 cm)
WINNER: **Adnane Seffar** | 2nd Place COMPACT UAE (406)
PRIZE 2: Unframed print 'Break Free at Butterfly Reef' (60 cm x 40 cm)
WINNER: **Frans Uy** | 2nd Place DSLR/MILC WA (404)
11. **SPONSOR:** EDA | www.emiratesdiving.com
3 PRIZES: A copy of the beautiful hardcover photography book: The Best of Digital Online – EDA's Underwater Photography & Film Competition.
WINNER: **Oliver Farrell** | 2nd Place DSLR/MILC UAE (404)
WINNER: **Nassim Miri** | 2nd Place COMPACT BW (386)
WINNER: **Ahmed Alkaabi** | 3rd Place DSLR/MILC WA (384)
12. **SPONSOR:** AL MAHARA DIVING CENTER | www.divemahara.com
PRIZE: 2 persons dive trip in Abu Dhabi to Al Mahara's Zone One Dive Sites, plus all day non-motorised watersports on same day booking.
WINNER: **Angela Manthorpe** | 1st Place COMPACT (440)
13. **SPONSOR:** DIVERS DOWN | www.diversdownuae.com
PRIZE: 6 Dives Package on East Coast, including equipment.
WINNER: **Philippe Lecomte** | 1st Place DSLR/MILC BW (487)
14. **SPONSOR:** SANDY BEACH DIVE CENTRE | www.divesandybeach.com
2 PRIZES: Double tank dive trip with or without equipment, including tanks and weights.
WINNER: **Lara El Lakkis** | 2nd Place COMPACT (408)
WINNER: **Khalid Alrazooqi** | 3rd Place COMPACT WA (410)
15. **SPONSOR:** FREESTYLE DIVERS | www.freestyledivers.me
PRIZE: A black water dive photo session, including the dive and gear.
WINNER: **Mohamed Hayek** | 2nd Place COMPACT WA (420)
16. **SPONSOR:** AL BOOM DIVING (2 Prizes) | www.alboomdiving.com
2 PRIZES: 2 dives in Fujairah with full equipment for 2 persons.
WINNER: **Donavan Hastings** | 1st Place COMPACT UAE (494)
WINNER: **Mark Denton** | 2nd Place Video (501)



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

THE DIGITAL ONLINE JUDGES

STEVE WOODS

Adventure and Wildlife Photographer



Steve is a British adventure and wildlife photographer, based in Vancouver, Canada. His aim is to photograph the natural world to show people how beautiful and awe-inspiring it is as well as trying to highlight the danger we are inflicting on the very ecosystems we revere so much, by photographing and documenting the issues at hand. Steve has worked for many years as a photographer in the

UK and abroad, firstly as a newspaper and sport photographer, then moving into commercial, advertising and wildlife/adventure photography. With his passion for the natural world, he uses his skills as a photographer to work in marine conservation.

WEBSITE: www.stevewoodsunderwater.com

FACEBOOK: @SteveWoodsPhotographer

INSTAGRAM: @steve_woods_photography

DAVID DILEY | SCARLET VIEW MEDIA

Filmmaker, Underwater Cinematographer and Digital Colourist



David Diley is a multi-award winning Film-maker, Underwater Cinematographer and Digital Colourist from the UK best known for his work with sharks and large marine megafauna as well as his multi-award winning feature documentary, "Of Shark and Man". His profile has increased rapidly thanks to his work on a wide variety of projects for film and television, alongside his

commercial work for a number of household brands.

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

WEBSITE: www.scarletviewmedia.com

FACEBOOK: @daviddileymaker

DR RICHARD SMITH | OCEAN REALM IMAGES

Underwater Photographer and Writer



Dr Richard Smith is a British underwater photographer and writer who aspires to promote an appreciation for the ocean's inhabitants and raises awareness of marine conservation issues through his images.

A marine biologist by training, Richard's pioneering research on the biology and conservation of pygmy seahorses, led to the first PhD on

these enigmatic fish. Over the past decade, Richard's photographs and marine life focused features have appeared in a wide variety of publications around the world. Richard organises and leads marine life expeditions where the aim is for participants to get more from their diving and photography by learning about the marine environment.

His book 'The World Beneath: The Life and Times of Unknown Sea Creatures and Coral Reefs' is now available on Amazon.

WEBSITE: www.oceanrealmimages.com

FACEBOOK: @OceanRealmImages

INSTAGRAM: @dr:richardsmith

TWITTER: @Rich_Underwater

MOHAMED ABDULLA

Underwater Photographer and Marine Scientist



Mohamed is a son of the Arabian Gulf. Coming from a long line of legendary pearl divers and fishermen, a strong bond ties him to the deep blue. Born in Dubai on a stormy night in November of 1989, he started his passion as a free diver and a spear-fisherman at an early age and naturally fell in love with the beauty of the underwater world. Mohamed started his underwater

photography in 2008 which won him several awards and to which he has been published internationally since. His eye-catching and distinctive style is aimed at pushing the limits of how photographers represent life below the waves. Mohamed has dedicated himself to conservation and to the Art of Underwater Photography, putting forth the message, "the Ocean has given our ancestors everything, now it is our turn to give back". As a marine scientist with a masters degree in Environmental Science, he works closely with sea turtles, dugongs, dolphins, sharks and all other exotic species, as well as being responsible for many rare scientific discoveries in the Arabian Gulf region. Mohamed is also a PADI Instructor, the lead scientific diver for UAE University, as well as a research collaborator with many other universities in the UAE.

INSTAGRAM: @b47r

SIMONE CAPRODOSSI | SUNDIVE BYRON BAY

Underwater Photographer



Simone is an Italian underwater photographer, who has been awarded in several prestigious competitions and published internationally. After over 10 years of corporate life in Dubai, he recently moved to Australia where he now co-owns and manages Sundive Byron Bay, a PADI 5 Star Dive Centre offering dives at the amazing Julian Rocks in Byron Bay. After travelling to and photographing many

unique diving destinations worldwide, he also runs expeditions with Sundive to help others experience and photograph his favourite ones such as the Sardine Run and Djibouti. Simone was the Overall Winner of Digital Online for two consecutive years until he became a judge for the competition and has been a main feature contributor to the EDA magazine, 'Divers for the Environment'.

FACEBOOK: @SimoneCaprodossiPhotography

INSTAGRAM: @scaprodossi

ALLY LANDES | EMIRATES DIVING ASSOCIATION

Project Manager, Editor, Graphic Designer, Photographer & Videographer



Ally has worked with EDA since December 2004 when she created and introduced the quarterly magazine, 'Divers for the Environment', as magazine Editor and Graphic Designer. She branded and helped foresee the development of Digital Online – EDA's Underwater Photography and Film Competition from its launch in 2009 and has since managed the event. Ally also coordinates the Dive MENA Expo with the Dubai World Trade Centre Exhibitions and Events Management team for the Dubai International Boat Show.

She keeps busy within her fields of passion, managing the EDA team, developing EDA's brand, running the events and social media, and FAM trips.

WEBSITE: www.emiratesdiving.com

FACEBOOK: @emiratesdivingassociation

1st **PLACE:** Michael Rall | DSLR/MILC Macro – 521
Anilao, Philippines



1st PLACE: Philippe Lecomte | DSLR/MILC Black and White – 487
Bahamas



1st PLACE: Abdulla Alali | DSLR/MILC Best of the UAE – 461
Khor Fakkan, UAE



1st PLACE: Sunjay Keshup | DSLR/MILC Wide Angle – 466
Daedalus, Red Sea



1st PLACE: João Menezes | COMPACT Wide Angle – 522
San Diego, California



1st PLACE: Donovan Hastings | COMPACT Best of the UAE – 494
MV Dara, Dubai

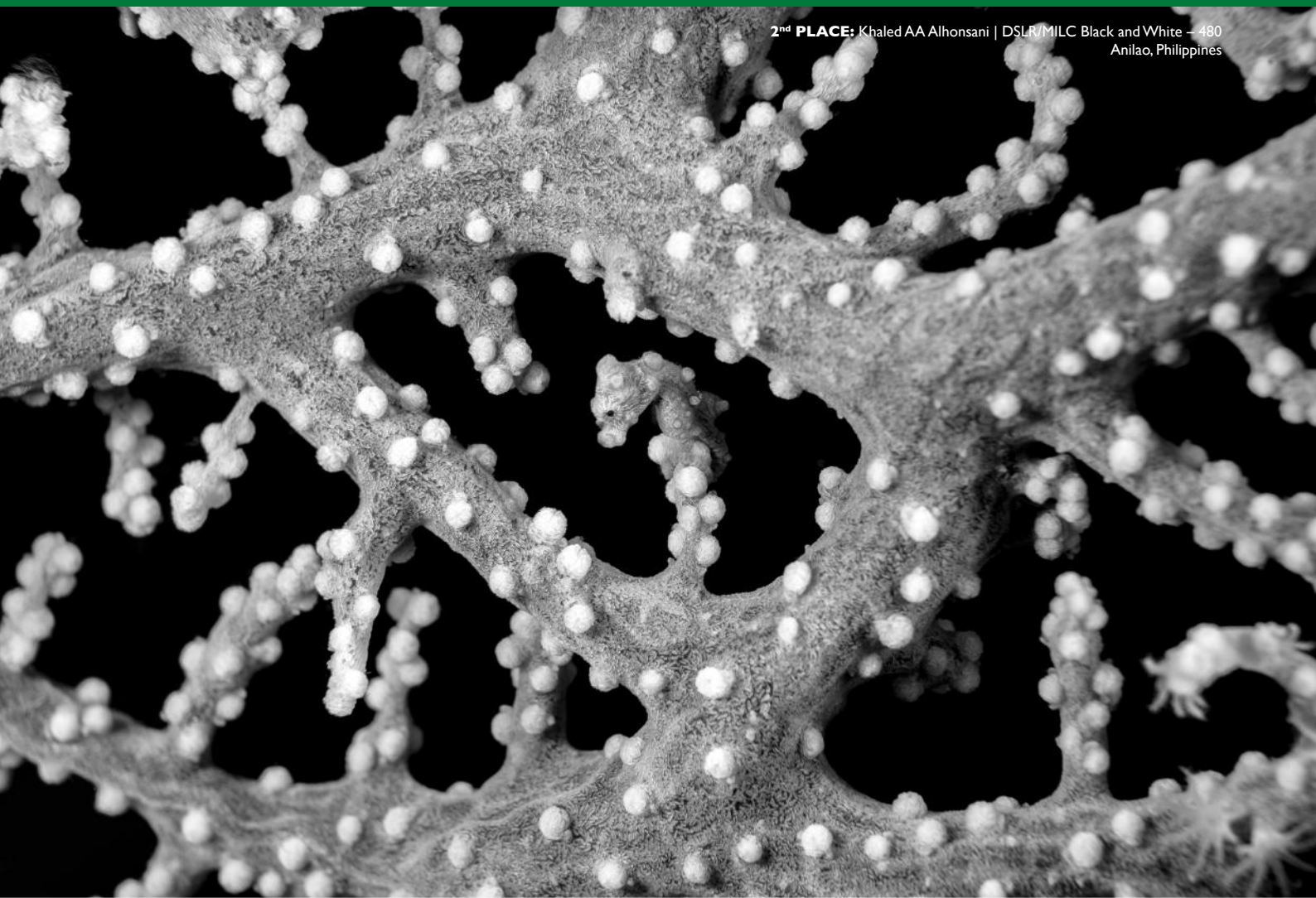


1st PLACE: Angela Manthorpe | COMPACT – 440
Sandy Beach, Fujairah, UAE



1st PLACE: Ruba Husari | COMPACT Black and White – 414
Moal Boal, Philippines





2nd PLACE: Khaled AA Alhonsani | DSLR/MILC Black and White – 480
Anilao, Philippines



2nd PLACE: Ola Khalaf | DSLR/MILC Macro – 475
Tulamben, Bali, Indonesia

UW PHOTOGRAPHY

2nd PLACE: Francis Uy | DSLR/MILC Wide Angle – 404
Philippines



2nd PLACE: Oliver Farrell | DSLR/MILC Best of the UAE – 404
Dibba Rock, UAE



2nd PLACE: Mohamed Hayek | COMPACT Wide Angle – 420
Ari Atoll, Maldives



2nd PLACE: Lara El Lakkis | COMPACT – 408
Tulamben, Bali, Indonesia



2nd PLACE: Adnane Seffar | COMPACT Best of the UAE – 406
Fujairah, UAE



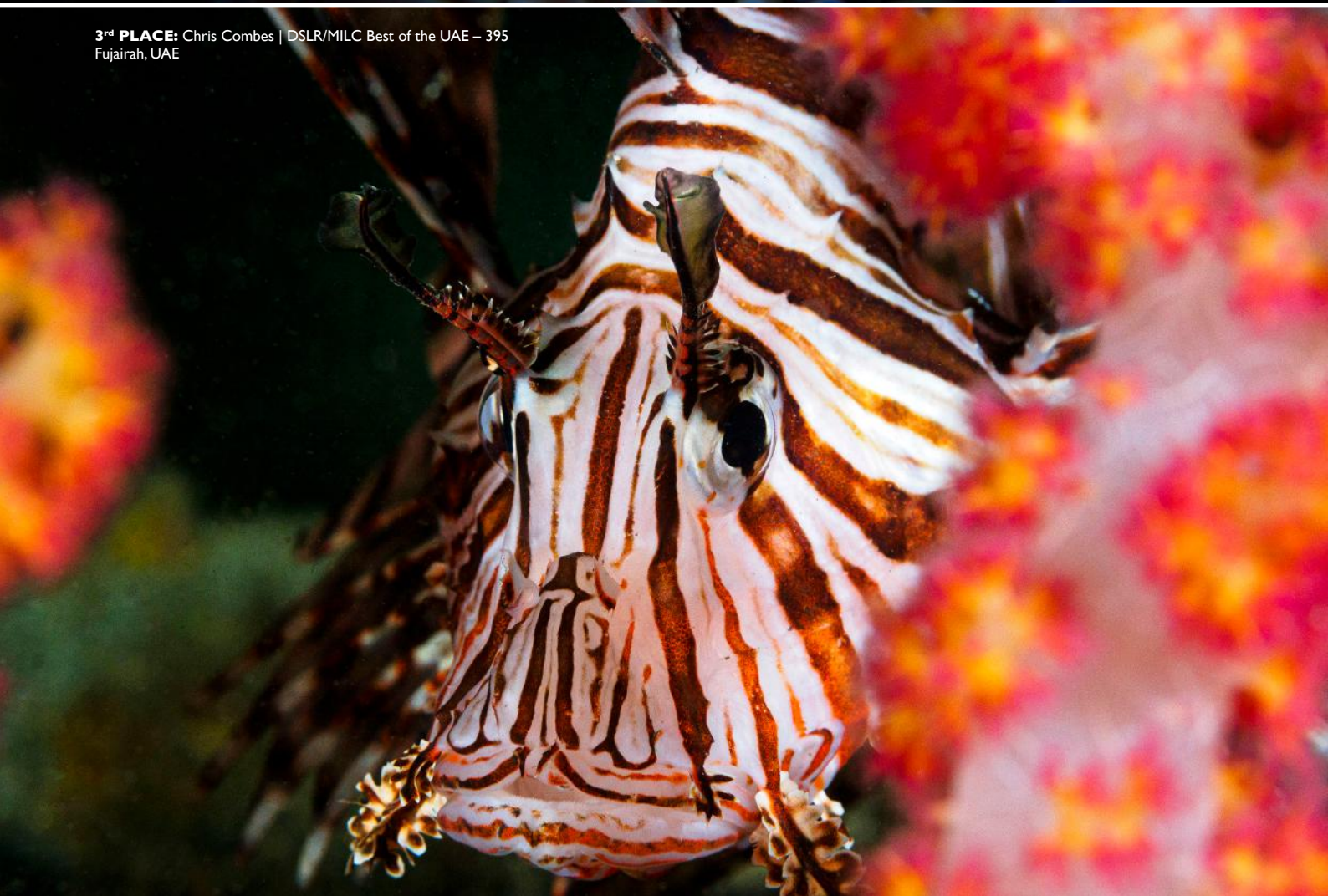
2nd PLACE: Nassim Miri | COMPACT Black and White – 386
Salem Express Wreck, Safaga, Red Sea, Egypt



3rd PLACE: Maisa Al Hooti | DSLR/MILC Macro – 473
Sipadan, Malaysia



3rd PLACE: Chris Combes | DSLR/MILC Best of the UAE – 395
Fujairah, UAE





UW PHOTOGRAPHY

3rd PLACE: Ahmed Alkaabi | DSLR/MILC Wide Angle – 384
Musandam, Oman



3rd PLACE: Khalid Alrazooqi | COMPACT Wide Angle – 410
Raja Ampat



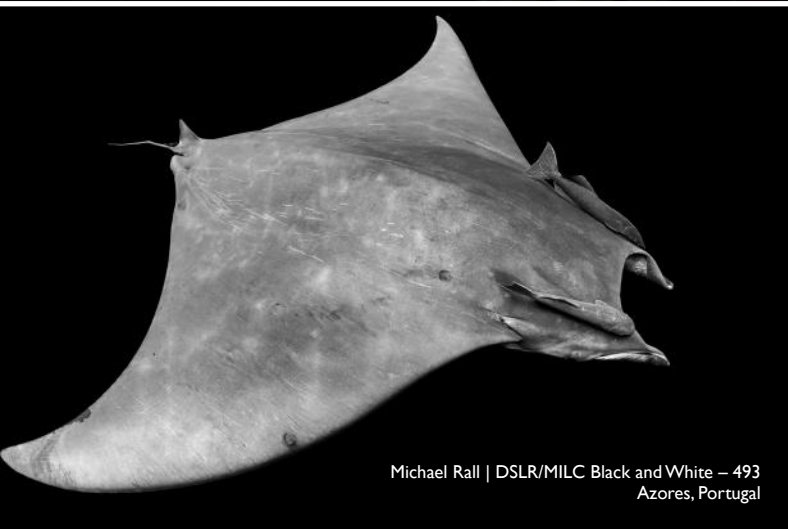
3rd PLACE: Suretta Venter | COMPACT – 367
Al Aqah, UAE



3rd PLACE: Bassem Yousri | COMPACT Black and White – 383
Marsa Alam, Elphinstone, Egypt



3rd PLACE: Ahmed Ramadan | COMPACT Best of the UAE – 372
Fujairah, UAE



Michael Rall | DSLR/MILC Black and White – 493
Azores, Portugal



Ola Khalaf | DSLR/MILC Black and White – 414
Inchcape 10, Fujairah, UAE



Sunjay Keshap | DSLR/MILC Black and White – 403
Bimini, Bahamas

UW PHOTOGRAPHY

Sunjay Keshap | DSLR/MILC Black and White – 403
Bimini, Bahamas



Francis Uy | DSLR/MILC Black and White – 388
Philippines



Nassim Miri | DSLR/MILC Black and White – 369
Salem Express Wreck, Safaga, Red Sea, Egypt

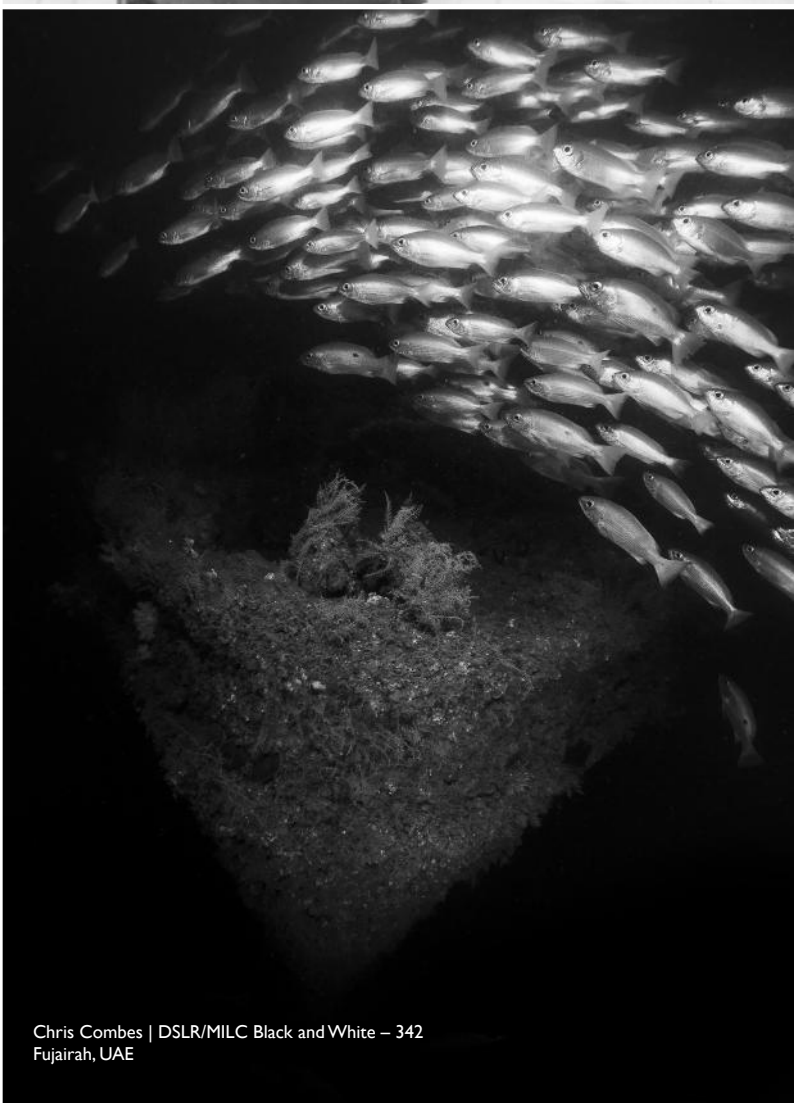


Marisa Engelbrecht | DSLR/MILC Black and White – 366
Hopkins Island, Port Lincoln, Australia

Ahmed Alkaabi | DSLR/MILC Black and White – 342
Mabul Island, Malaysia



Abdulla Alali | DSLR/MILC Black and White – 310
Fujairah, UAE



Chris Combes | DSLR/MILC Black and White – 342
Fujairah, UAE

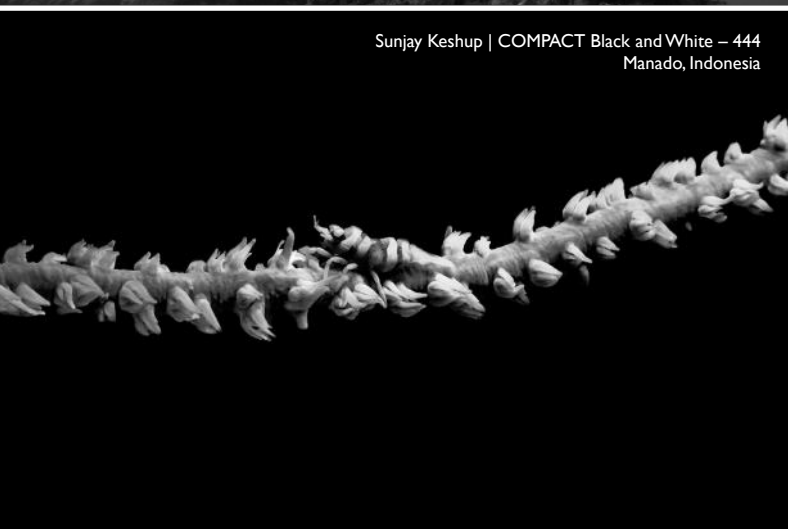
Marwan Enezi | DSLR/MILC Black and White – 291
Sharm El Sheikh, Egypt



Donavan Hastings | COMPACT Black and White – 449
Azores, Portugal



Sunjay Keshup | COMPACT Black and White – 444
Manado, Indonesia



João Menezes | COMPACT Black and White – #14
San Diego, California, USA



Angela Manthorpe | COMPACT Black and White – 406
Daymaniyat Islands, Oman



Mohamed Hayek | COMPACT Black and White – 404
Canyon, Dahab, Egypt



Ola Khalaf | COMPACT Black and White – 384
Fujairah, UAE





Lynette Ferreira | COMPACT Black and White – 376
Sharm Rocks, UAE



Mike Thirlwall | COMPACT Black and White – 330
Octopus Rock, Musandam, Oman



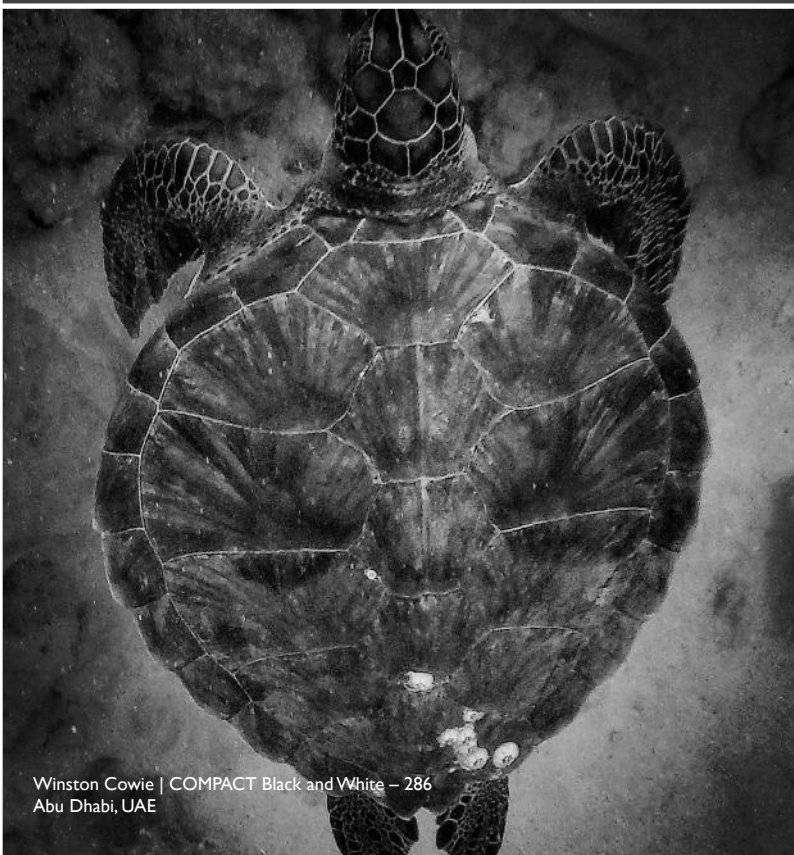
Lara El Lakkis | COMPACT Black and White – 356
Amed, Bali



Marwan Enezi | COMPACT Black and White – 352
Bahamas



Ahmed Ramadan | COMPACT Black and White – 369
Fujairah, UAE



Winston Cowie | COMPACT Black and White – 286
Abu Dhabi, UAE

Philippe Lecomte | DSLR/MILC Macro – 479
Philippines



Yousef Alshekaili | DSLR/MILC Macro – 473
Lembeh, Indonesia



Khaled AA Alhonsani | DSLR/MILC Macro – 461
Anilao, Philippines



Abdulla Alali | DSLR/MILC Macro – 452
Bali, Indonesia

Marisa Engelbrecht | DSLR/MILC Macro – 396
Padangbai, Bali, Indonesia



Oliver Farrell | DSLR/MILC Macro – 322
Dibba Rock, UAE



UW PHOTOGRAPHY

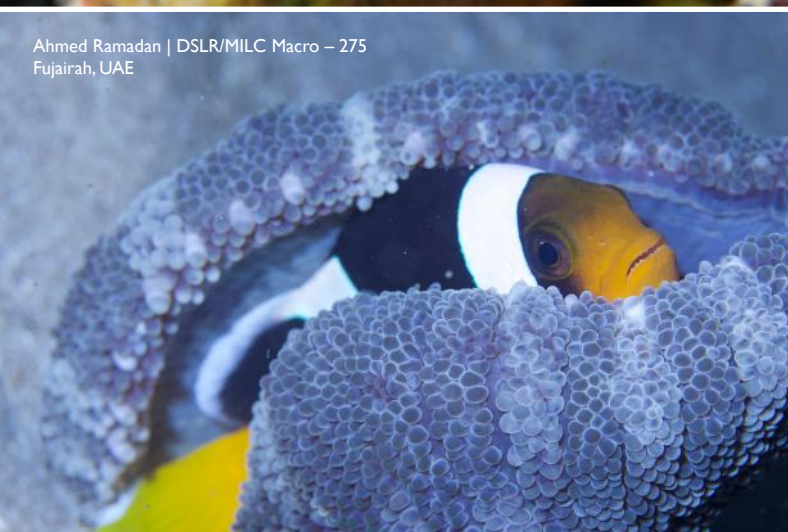
Sunjay Keshup | DSLR/MILC Macro – 420
Baa Atoll, Maldives



Chris Combes | DSLR/MILC Macro – 385
Fujairah, UAE



Ahmed Ramadan | DSLR/MILC Macro – 275
Fujairah, UAE



Nassim Miri | DSLR/MILC Macro – 263
Dunn Raven Wreck, Red Sea, Egypt



João Menezes | COMPACT – 480
San Diego, California, USA



Donavan Hastings | COMPACT – 445
MV Dara, Dubai, UAE





Ola Khalaf | COMPACT – 418
Dubai, UAE



Ruba Husari | COMPACT – 415
Mabul Island, Malaysia



Oliver Farrell | COMPACT – 399
Dibba, Fujairah, UAE



Sunjay Keshup | COMPACT – 396
Lembeh, Indonesia



Mohamed Hayek | COMPACT – 380
Daymaniyat Islands, Oman



Ahmed Ramadan | COMPACT – 365
Bali



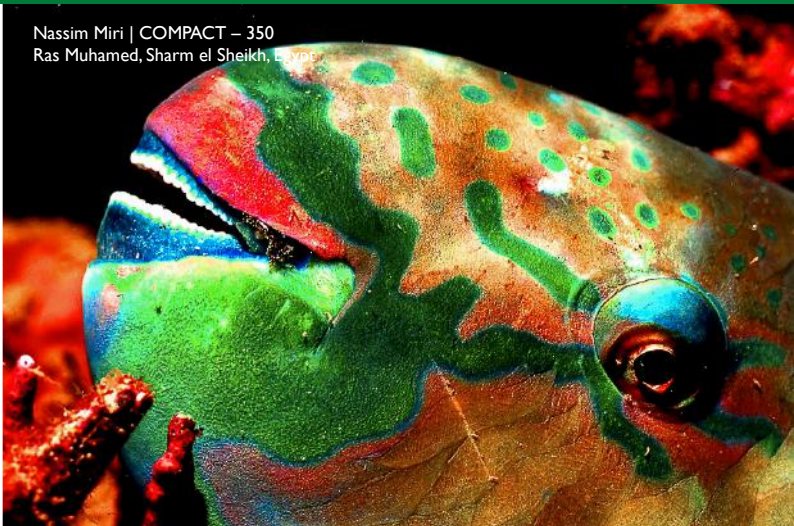
Khalid Alrazooqi | COMPACT – 350
Raja Ampat

UW PHOTOGRAPHY

Lynette Ferreira | COMPACT – 354
Artificial Reef, UAE



Nassim Miri | COMPACT – 350
Ras Muhamed, Sharm el Sheikh, Egypt



Mike Thirlwall | COMPACT – 313
Coral Gardens, Daymaniyat Islands, Oman



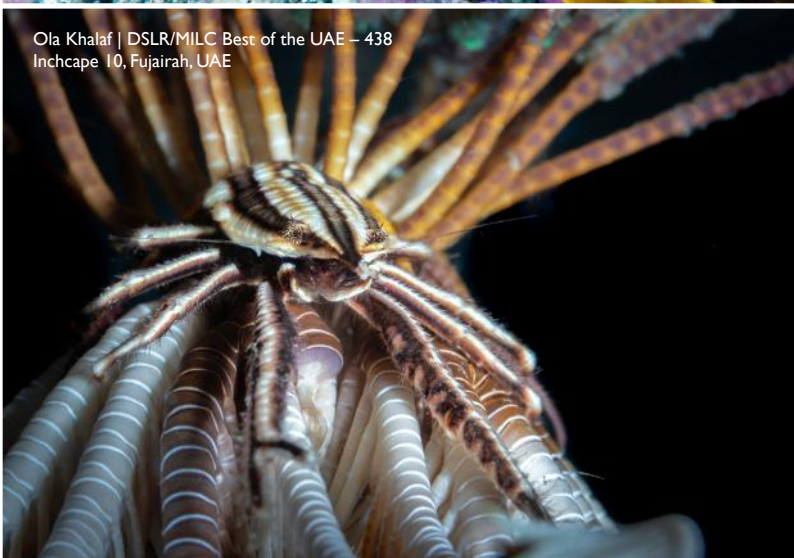
Marwan Enezi | COMPACT – 311
Ras Mohammad, Egypt



Bassem Yousri | COMPACT – 284
Daymaniyat Islands, Oman



Ola Khalaf | DSLR/MILC Best of the UAE – 438
Inchcape 10, Fujairah, UAE



Michael Rall | DSLR/MILC Best of the UAE – 484
MV Dara, Sharjah, UAE



Philippe Lecomte | DSLR/MILC Best of the UAE – 470
East Coast, UAE



Khaled AA Alhonsani | DSLR/MILC Best of the UAE – 428
Musandam



Yousef Alshekaili | DSLR/MILC Best of the UAE – 398
Fujairah, UAE



Sunjay Keshup | DSLR/MILC Best of the UAE – 392
Dibba, UAE



UW PHOTOGRAPHY

Marisa Engelbrecht | DSLR/MILC Best of the UAE – 383
Inchcape 2, Fujairah, UAE



Ahmed Alkaabi | DSLR/MILC Best of the UAE – 370
Khor Fakkan, UAE



Nassim Miri | DSLR/MILC Best of the UAE – 250
Musandam



Ola Khalaf | COMPACT Best of the UAE – 447
Dibba, UAE



Mohamed Hayek | COMPACT Best of the UAE – 404
Ras Al Khaimah, UAE



Lara El Lakkis | COMPACT Best of the UAE – 393
Fujairah, UAE





Sunjay Keshup | COMPACT Best of the UAE – 329
Dibba, UAE



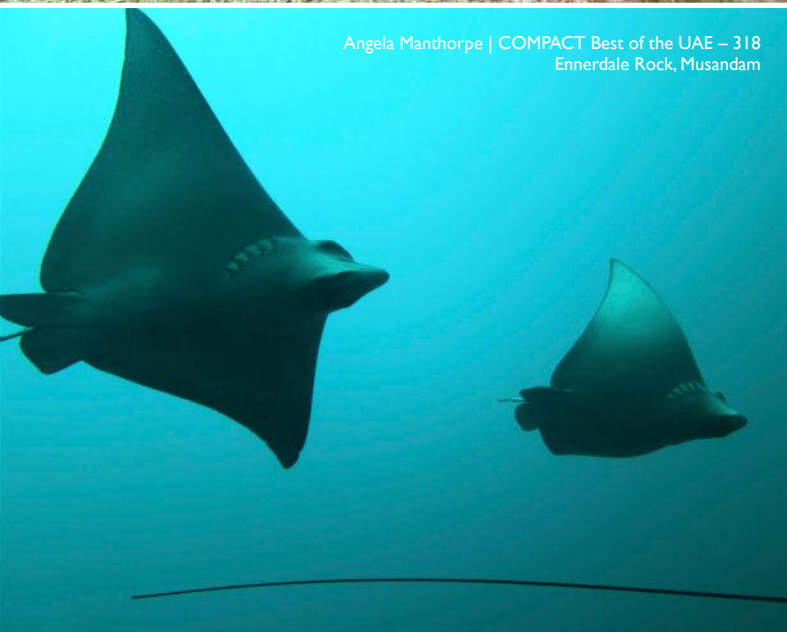
Winston Cowie | COMPACT Best of the UAE – 287
Offshore Islands, Abu Dhabi, UAE



Lynette Ferreira | COMPACT Best of the UAE – 316
Sharm Rocks, UAE



Mike Thirlwall | COMPACT Best of the UAE – 301
Octopus Rock, Musandam



Angela Manthorpe | COMPACT Best of the UAE – 318
Ennerdale Rock, Musandam



Nassim Miri | COMPACT Best of the UAE – 245
Lima Rock, Musandam

UW PHOTOGRAPHY



Michael Rall | DSLR/MILC Wide Angle – 516
Andaman, India



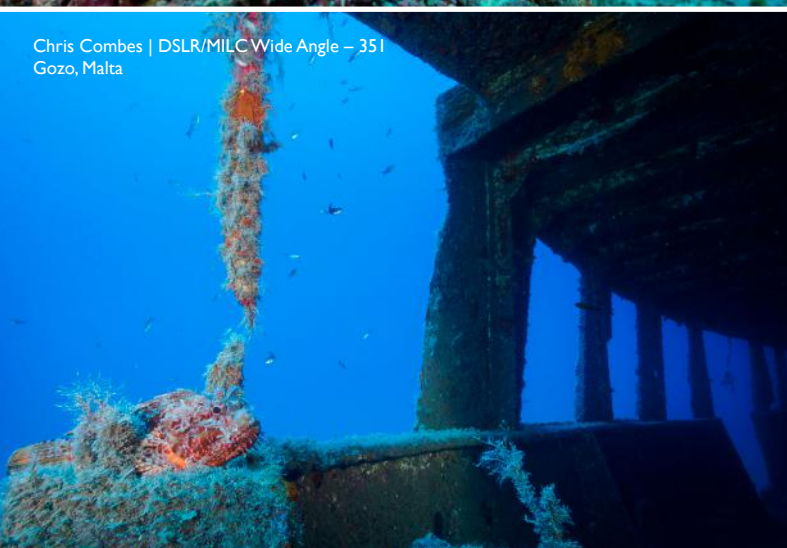
Philippe Lecomte | DSLR/MILC Wide Angle – 449
Egypt



Khaled AA Alhonsani | DSLR/MILC Wide Angle – 392
Zanzibar



Abdulla Alali | DSLR/MILC Wide Angle – 370
Bohol, Phillipines



Chris Combes | DSLR/MILC Wide Angle – 351
Gozo, Malta



Oliver Farrell | DSLR/MILC Wide Angle – 342
Baa Atoll, Maldives



Nassim Miri | DSLR/MILC Wide Angle – 318
Salem Express Wreck, Safaga, Red Sea, Egypt

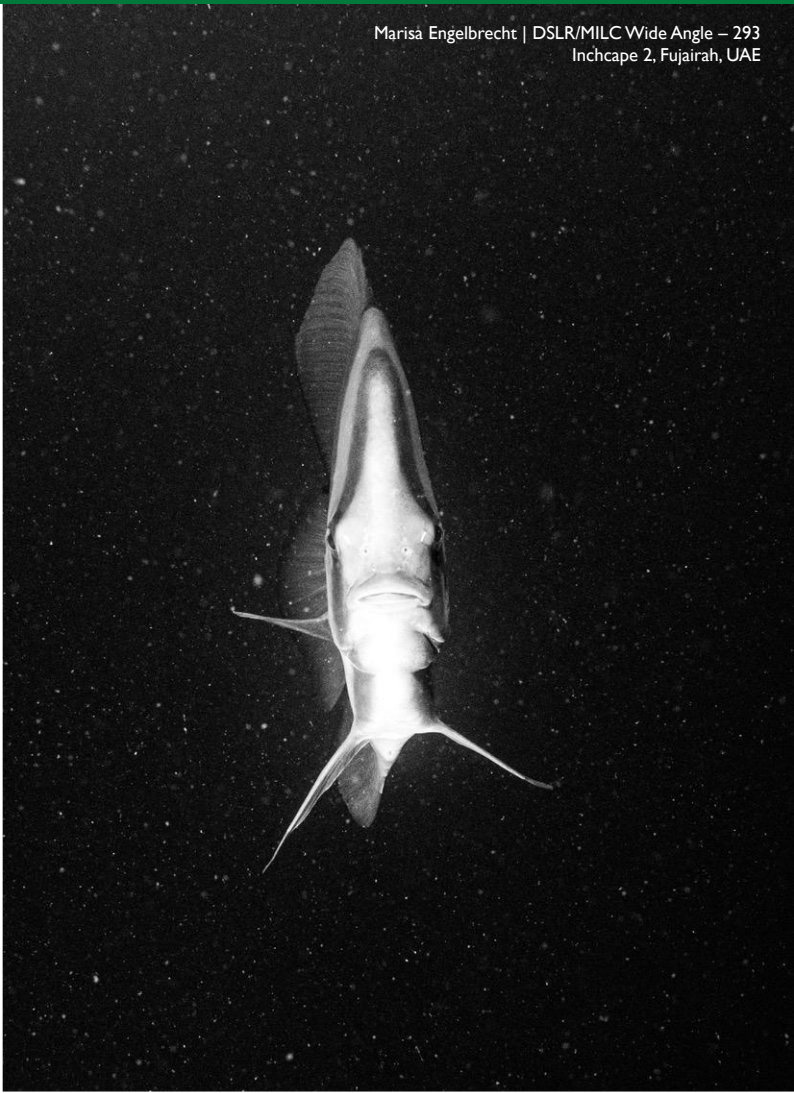


Marwan Enezi | DSLR/MILC Wide Angle – 305
Tiran Island, Sharm El Sheikh, Egypt

Yousef Alshekaili | DSLR/MILC Wide Angle – 300
Cebu, Philippines



Marisa Engelbrecht | DSLR/MILC Wide Angle – 293
Inchcape 2, Fujairah, UAE



Donavan Hastings | COMPACT Wide Angle – 477
Catalina, Los Angeles, USA



Ruba Husari | COMPACT Wide Angle – 380
Sipadan, Malaysia

Ola Khalaf | COMPACT Wide Angle – 455
Car Cemetery, Khor Fakkan, UAE



UW PHOTOGRAPHY

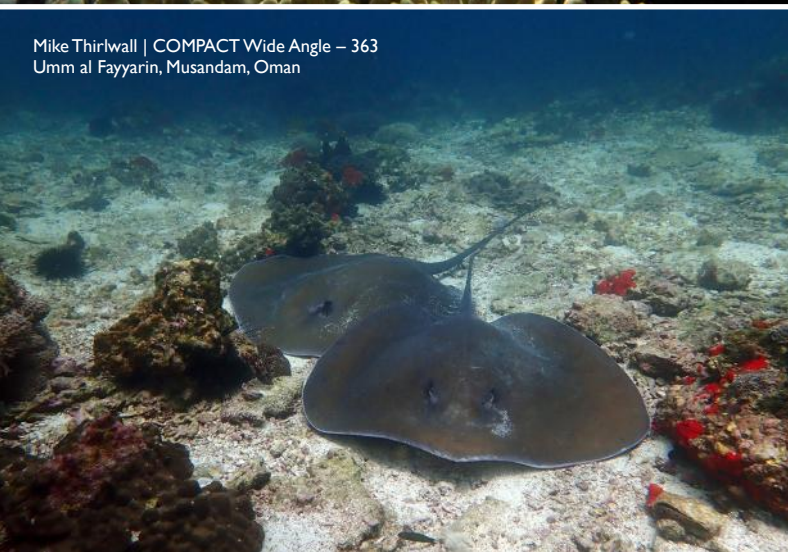
Sunjay Keshup | COMPACT Wide Angle – 373
Bunaken Island, North Sulawesi, Indonesia



Adnane Seffar | COMPACT Wide Angle – 367
Fujairah, UAE



Mike Thirlwall | COMPACT Wide Angle – 363
Umm al Fayyarin, Musandam, Oman



Ahmed Ramadan | COMPACT Wide Angle – 336
Egypt



Marwan Enezi | COMPACT Wide Angle – 277
Tiran Island, Egypt



Nassim Miri | COMPACT Wide Angle – 355
Red Sea, Egypt



Bassem Yousri | COMPACT Wide Angle – 265
Marsa Alam, Elphinstone, Egypt



OUR PRIZE ANNOUNCEMENTS ON ZOOM

We may not have been able to hold our Digital Online Awards Night and Exhibition Opening for 2020, but in order to announce our winners with our prize sponsors and judges, we successfully held 7 different Zoom calls for each of the winning categories. On the 20th of May, we were able to connect with those spread out around the world and catch up with everyone on a very personal level.



A BLUE VOYAGE VIDEO WINNERS | L-F: Mark Denton 2nd Place; Ally Landes – EDA's Project Manager; Marwan Enezi 3rd Place joining from Kuwait; Ibrahim Al-Zu'bi – EDA's Executive Director; Noémi Stroh 1st Place joining from France; and Steve Woods – Prize Sponsor and Digital Online's 2020 Judge joining from Vancouver, Canada.



1st PLACE DSLR/MILC WINNERS | L-R: Prize Sponsor JC Cergneux from Fun Sun Dive Travel, Philippines; Ally Landes; Abdulla Alali (Best of the UAE); Michael Rall (Macro); Prize Sponsor Sito Ugarte from Fun Sun Dive Travel, Philippines; Prize Sponsor Michela Collela from Divers Down UAE; Ibrahim Al-Zu'bi; Prize Sponsor Simone Caprodossi from Sundive and a Digital Online Judge 2020; Sunjay Keshup (Wide Angle); and Philippe Lecomte (Black and White).



1st PLACE COMPACT WINNERS | L-R: Prize Sponsor Dr Richard Smith and Digital Online Judge 2020 joining from the UK; Ally Landes; Prize Sponsor Paul Emous from Al Marsa Musandam; João Menezes (Wide Angle); Ibrahim Al-Zu'bi; Ruba Husari (Black and White); Angela Manthorpe (Compact); Prize Sponsor Kathleen Russell from Al Mahara Diving Center; and Donovan Hastings (Best of the UAE).



2nd PLACE DSLR/MILC WINNERS | L-R: Prize Sponsor Gopal Sudhakaran from Grand Stores; Ally Landes; Khaled AA Alhonsani (Black and White); Ola Khalaf (Macro); Francis Uy (Wide Angle); and Ibrahim Al-Zu'bi.



2nd PLACE COMPACT WINNERS | L-R: Lara El Lakkis (Compact); Ally Landes; Nassim Miri (Black and White) joining from Egypt; Mohamed Hayek (Wide Angle); Ibrahim Al-Zu'bi; and Adnane Seffar (Best of the UAE).

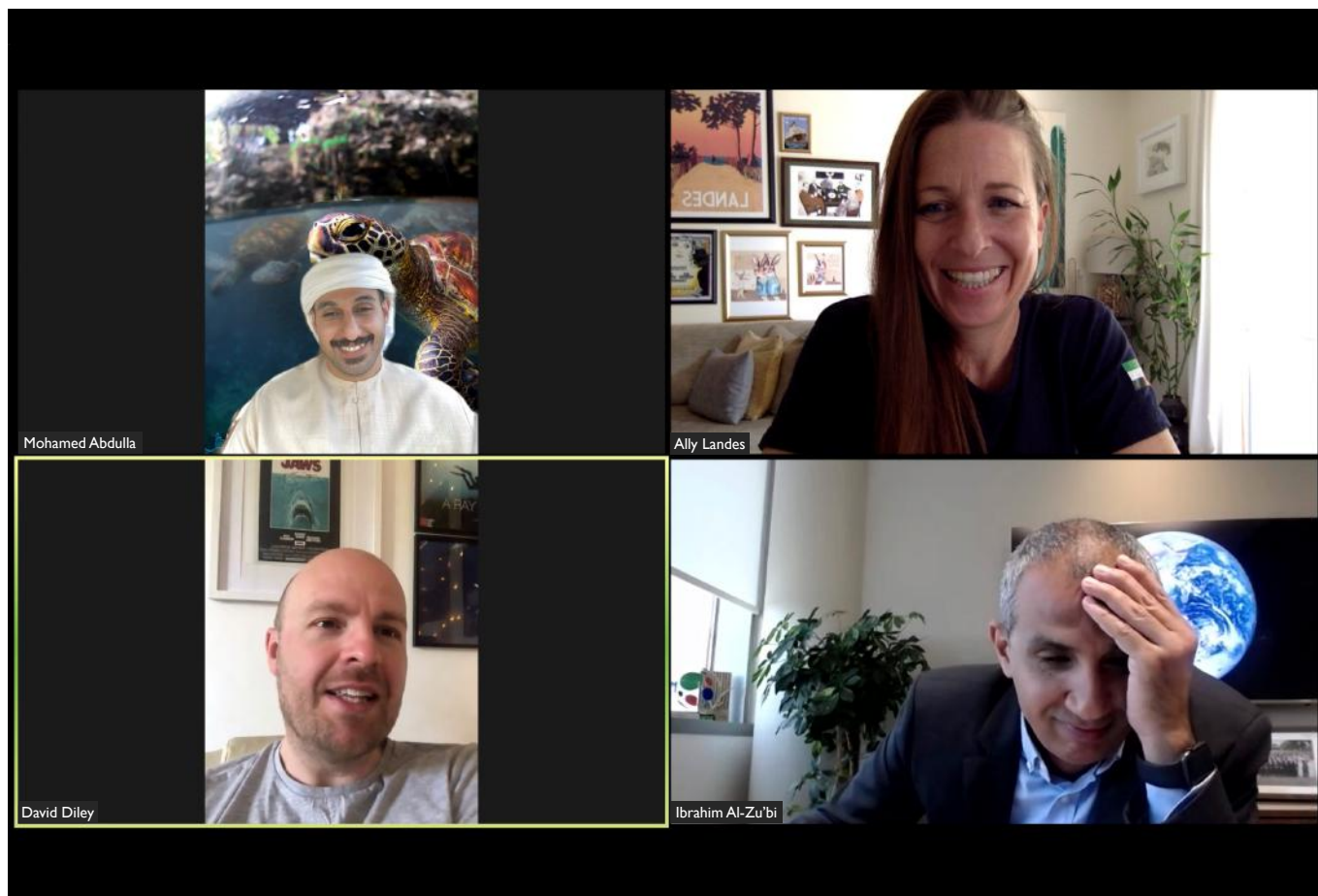


3rd PLACE DSLR/MILC WINNERS | L-R: Yousef Alshekaili (Black and White); Ally Landes; Ibrahim Al-Zu'bi; Prize Sponsor Ali Bin Thalith – Truly, Madly, Deeply; Ahmed Alkaabi (Wide Angle); and Maisa Al Hooti joining from Muscat, Oman.



3rd PLACE COMPACT WINNERS | L-R: Ibrahim Al-Zu'bi; Ally Landes; Suretta Venter (Compact); Khalid Alrazooqi (Wide Angle); Ahmed Ramadan (Best of the UAE); Prize Sponsor Ali Bin Thalith – Truly, Madly, Deeply; and Bassem Yousri (Black and White).

AND LAST, BUT NOT LEAST, CATCHING UP WITH THE LAST 2 OF OUR 5 DIGITAL ONLINE JUDGES 2020:



DIGITAL ONLINE JUDGES | L-R: Mohamed Abdulla – Underwater Photographer and Marine Scientist; Ally Landes – EDA's Project Manager; David Diley – Award Winning Filmmaker, underwater cinematographer and digital colourist joining from the UK; and Ibrahim Al-Zu'bi – EDA's Executive Director.

OUR PRIZE SPONSORS WHO JOINED US ONLINE



JC Cergneux from Fun & Sun Dive & Travel, Philippines



Sito Ugarte from Fun & Sun Dive & Travel, Philippines



Simone Caprodossi from Sundive Byron Bay, Australia – Digital Online 2020 Judge



Paul Emous from Al Marsa Musandam



Ali Bin Thalith



Gopal Sudhakaran from Grand Stores



Kathleen Russell from Al Mahara Diving Center



Michela Collola from Divers Down



Dr Richard Smith, UK – Digital Online 2020 Judge



Steve Woods, Canada – Digital Online 2020 Judge

THE BLUES & MAKOS

AT THE CAPE OF GOOD HOPE

FEATURE AND PHOTOGRAPHY **STEVE WOODS**

Once we were in the water, more sharks turned up and we ended up with 3 Mako sharks and 5 Blue sharks swimming around us in warm blue waters with 40 m visibility. This is every divers dream.







ABOVE: Blue shark (*Prionace glauca*) **BELOW:** Mako shark on the left, and Blue shark on the right. **OPPOSITE PAGE:** An arial view of a Shortfin Mako shark (*Isurus oxyrinchus*).

Breathtakingly dramatic and steeped in history, the Cape of Good Hope, or Cape of Storms as it was originally called, looks like it is straight out of a Hollywood movie or an enchanting children's story book. The Cape of Good Hope is situated very nearly at the southern most tip of Africa (the real southernmost tip being a short ride away). Africa being the huge size that she is, separates the globe and its oceans into two hemispheres. On one side you have the Atlantic Ocean which connects Europe to the Americas, and on the other side, you have the warm Indian Ocean, connecting Africa with Asia. The possibility of a

shipping route between Europe and Asia was such a momentous discovery that the Dutch East India Company (DEIC) instantly built a fortress and renamed the peninsula from Cape of Storms, to the Cape of Good Hope to make it more appealing to sailors.

The drama continues as you move off the land and into the waters surrounding the Cape as two giant oceans collide. The Atlantic and the Indian oceans meet at this point with two ocean currents. The warm Agulhas, and the cold Benguela converge creating dramatic microclimates above and underwater. This also

draws in an immense amount of sea life from Cetaceans of all kinds, game fish and large schools of sardines.

If you are patient, every once in a while, the conditions on the cape die down just enough to safely venture out to the open ocean. There are a few operators based in Simons Town that have the capability of operating safely in the open ocean, this time I was out with the great team at Pisces Divers. We set out just after sunrise and even with the best of conditions, we were ready for a very bumpy ride. Holding on tight, we motored out for







OPPOSITE PAGE: Shortfin Mako shark (*Isurus oxyrinchus*). **ABOVE:** Blue shark (*Prionace glauca*) **BELOW:** Mako shark.

a couple of hours and slowly started to see the cold green waters of the cape, turn warm, clear and blue. Around 30 nm offshore we killed the motors and got the coffee on.

Using Anchovy oil, we gradually built up a fishy oil slick to attract any sharks that may be in the area. Pelagic sharks are very inquisitive and will come and investigate pretty much anything, especially if it smells of dead fish. Having said that, pelagic sharks like Blues and Makos have been hit by the industrial fishing boats as by-catch, so hard that their numbers have dropped drastically. Roughly 20 million blue sharks are slaughtered every year and the Mako shark is listed as endangered by the IUCN. Having such low shark populations means that sometimes after a number of hours chumming the water, no sharks appear.

On this day we were lucky. We started to see the bright blue and yellow flashes of huge yellowfin tuna that had been attracted by the bait which was a good sign that there was life in the area and that our chum slick had started working. Not long after the tuna, one of the oceans most incredible animals turned up to investigate. A short-fin Mako shark. The fastest shark in the water! It can swim in bursts of over 70 km an hour and this incredible animal is on most divers must see lists. Shortly after that, two sleek blue sharks turned up to see what the commotion was all about as well. Once we had a number of sharks swimming around the boat, we started to kit up and get in the water.

Being so far from shore, safety is a huge concern, especially when you are in water that is thousands of metres deep. One wrong

move, one small mistake, can lead to disaster very quickly. Trailing a rope behind the boat, 4 of us entered at the same time, making sure we were ready and moving as one group for our own safety. This is also critical for the sharks as we don't want to scare them. Keeping as tight a group as possible allows them to have their space and come and investigate as they wish.

Once we were in the water, more sharks turned up and we ended up with 3 Mako sharks and 5 Blue sharks swimming around us in warm blue waters with 40 m visibility. This is every divers dream. The blue sharks behaviour and body shape is totally different to that of the Mako. They are much longer and slender. They swim almost like a ribbon through the water, and they will come up and use their nose to investigate you. Mako sharks on the other hand are shorter and have a much

thicker girth which allows them to swim at great speeds. They are visibly more active, they swim fast and dart around the divers moving quickly and confidently.

After 60 minutes in the water, we all made the signal to ascend, completed our safety stop and then got back up onto the boat. Cruising the bumpy ride back to Simons town, we all shared some memories and stories of the epic adventure we had just embarked on. I would highly recommend heading out to do this kind of diving, especially if you're in the Cape Town area, though blues and makos live in other oceans around the world. It is possible to dive with them in the UK, France, Spain, Portugal, as well as East and West coast USA, Mexico, and Canada to name a few. Safety is of upmost importance though and being an advanced diver is necessary to complete a trip like this.





The stern is relatively intact, so the collision with the reef was likely somewhere else.

MYSTERY STEAMSHIP

NEW SHIPWRECK IN THE RED SEA

FEATURE AND PHOTOGRAPHY **JESPER KJØLLER**

Imagine the thrill we experienced when we reached the bottom at almost 80 metres and discovered that the shot line was just a few metres away from a structure that turned out to be the wreck of a large steamship.





ABOVE: Some of the plating on the port side is gone revealing the ribs of the hull. **OPPOSITE PAGE:** Daniel Schelvis posing above a winch of some sort.

A few years ago, using a combination of advanced diving technologies and trusty old wreck finding methods, I was part of a dive team for the Red Sea Explorers that successfully discovered a virgin shipwreck in the Strait of Gubal. It would take another two years before conditions allowed us to go back to shoot good images from the 80-metre-deep wreck believed to be the Brazilian corvette, SC Almirante Barroso.

Wow! I can't believe our luck. We anticipated a ripping current, but the thick rope that was dropped by the crew on our mothership M/V Nouran is falling straight down into the unusually clear water. Did we really break the code and figure out how to time the dive in relation to the tidal charts and weather forecasts? Filled with anticipation, I let myself fall through the water column a few metres away from the rope, and for a moment I even contemplate preparing my camera and unfold the strobe arms in the tranquil environment on the way down. But then, at around 50 metres, I notice that the rope begins to shiver and shake. I look down and discover a sharp bend on the rope below me, indicating that the current is picking up further down. I realise that I've drifted too far away from the rope now, so I keep the scooter at full speed and I fin as hard as I can. I tuck my head in-between my arms to make me more streamlined, but I'm not moving any closer, and

the current is really powerful now. I remind myself to be careful not to overexert myself to avoid carbon dioxide build-up – hypercapnia is the rebreather diver's number one enemy. Now I can see the contours of the wreck below me. I realise that down on the seafloor, the hull of the wreckage will create a shelter from the current.

My buddy Daniel is smarter than me and has been holding on to the rope during the entire descent. Also, he does not have the added drag of my big camera. I am confident that he is in control and that he will continue his descent along the rope, so I decide to scooter straight down towards the ocean floor at 80 metres rather than fight against the unforgiving current. As soon as I am sheltered behind the wreck, I can quickly make my way to the ship with the scooter at full speed along the ocean floor to reunite with Daniel. We arrive at the wreck at the same time but through different means. Lesson learned: Do not let go of the rope!

SMOKING GUN

The downline from our mothership, MV Nouran is situated just a few metres in front of the bow of the wreck, where the two large anchors are lying. It's a perfect drop! Daniel immediately positions the video lights to illuminate the bow and the anchors, and he assumes a good position for modelling. We have had a couple of days to practice

the technique and communication on easy wreck dives in the region (Abu Nuhas and Thistlethorn), so we can work fast and efficiently. The visibility is excellent and the ambient light is good even if we are deep, and it is only around 10 am. The current is a small price to pay for clear water.

After the shots at the bow, we venture inside the open hull to explore and shoot more images. The other half of our four-person dive team, prominent Italian GUE instructors and wreck explorers Mario Arena and Stefano Gualtieri, are already immersed in looking for clues that can support a 100 percent positive identification. We believe that the wreck is the Brazilian steam-powered sailing corvette Almirante Barroso, but we still need the smoking gun to prove it.

Mario Arena, being one of the most experienced wreck explorers on the planet, knows where to look and he is searching for clues. A boilerplate with the name, a serial number on an engine part, or a ship's bell would be the typical things to look for. But Mario draws a blank and is not able to find anything conclusive.

OCCAM'S RAZOR

Scientists often refer to a problem-solving principle called Occam's Razor when trying





ABOVE: The Italians looking for clues around the engine. **OPPOSITE PAGE FROM TOP RIGHT:** 1. What cargo the ship carried is still unknown. The holds seem empty.

to figure out complex problems. This principle suggests that the simplest solution to a problem is most likely the right one. Occam's Razor declares that when presented with competing hypotheses, one should select the one that is based on the fewest assumptions.

The Almirante Barroso went down in 1893, and we have found a wreck that looks like her from that period. If it is not the Almirante, there must be another similar ship missing, and at the same time, the Almirante must lie somewhere else in the vicinity. Occam's Razor

suggests that we have found the Almirante Barroso. But we still need to prove it...

I ask Faisal Khalaf from Red Sea Explorers about the identification process. – none of the items found on the wreck thus far provide 100% identification. However, the size, location, and different characteristics of the wreck make us quite confident of its identity, Faisal says.

For example, there is damage to the hull where the rigging used to connect. Items such as pulleys and blocks used in sailing rigs which

are further evidence that she is a tall ship. The question as to where the superstructure has gone is answered by the fact that this is a sailing ship with limited or no superstructure. The missing parts were likely made of wood that has since disintegrated.

Faisal explains that our mission now is to continue to document and catalogue all the parts of the wreck for further research. Using different technologies, such as photogrammetry and video documentation, we aim to keep a thorough record of what



2. The two anchors in front of the impressive stern section. 3. The massive oven and stove where the galley was before the decks collapsed.

was discovered. We will also search for items that might be buried in and around the wreck. This is a long-term project, and lots of dives will be conducted on the wreck as part of the Wreck Exploration Project.

OLD AND NEW METHODS

Without a doubt, the Egyptian Red Sea is one of the planet's most dived oceans. You would think by now that all its secrets have been revealed and that all areas are fully explored. On the other hand, the Red Sea is one of the busiest sailing passages in the world, so it is

no wonder that a lot of ships have ended up on the bottom of the Strait of Gubal since the inauguration of the Suez Canal in 1869. However, most of the lost vessels lie at depths outside the range of recreational diving, and it takes a lot of dedication and effort to locate them. Finding new wrecks in the Red Sea is, therefore, a rare occurrence.

Nowadays, most new wrecks are found with modern technology, but Egyptian law prohibits the use of side-scan sonars. So, Faisal Khalaf reverted to old, trusty methods and teamed

up with a local fisherman, Hamdi. He had a small handheld GPS with hundreds of promising positions where his colleagues had lost trawls or noticed resistance when pulling in their nets. The fishermen were promised 2,000 Euros for every position that turned out to be a virgin wreck, and so far, half a dozen new wrecks have been located.

The fishermen have an impressive knowledge of the positions and can describe details of the wrecks purely based on the pieces of debris pulled up by their angling tools.



ABOVE: Getting ready and being observed by Red Sea Explorers' mascot, Antar the dog. **OPPOSITE PAGE:** 1. 2020 team. 2. Almirante Barroso served as a training vessel for the Brazilian Navy. 3. 2018 team.

The wrecks are found using old methods, but they are dived with new technology. When diving in deep water surrounded by huge container ships in a busy sailing lane, it is essential to use the safest and most reliable gear. We use trimix-based CCRs and powerful underwater scooters – two technologies that have recently reached a level of maturity, and make it possible to do safe exploration of areas that were inaccessible 10-15 years ago.

HAVE PICTURES OR IT DIDN'T HAPPEN

I'm thinking back on our inaugural dive on the wreck in February 2018. The first attempt to reach the wreck was aborted – the current at the bottom made it impossible. After 20 minutes scooting at full throttle against a ripping current, while following a horizontal line of 65 metres, we had to give up. I was desperately holding on to the line with my left hand and operated the scooter with the right. We were moving slowly but with great effort, and it became clear that it was not sustainable, so the dive was aborted. We never reached the wreck, but the sonar image on the bridge of the MV Nouran was so tempting and

alluring that it was decided to make another attempt later the same day, hoping that the current would have lessened, and conditions improved. We still did not know what lay waiting for us. A wreck? A lost container? A hull-shaped reef? Or maybe just MS Sand – the largest wreck in the world.

Imagine the thrill we experienced when we reached the bottom at almost 80 metres and discovered that the shot line was just a few metres away from a structure that turned out to be the wreck of a large steamship. Unfortunately, the visibility was terrible, and because of the difficulties we experienced on the first attempt, I had left my big camera system back on the surface. We only had a scooter-mounted GoPro to document the dive, and you can clearly hear our joyful screams on the video.

The marine life on the wreck was spectacular. There was very little protection against the strong current on the sandy bottom around the site, so the wreck offers a shelter that makes the marine life thrive. The hull was filled with glassfish chaperoned by enormous

groupers and lionfish. Giant trevallies were roaming the area, and they were even visible on the sonar. No wonder the area is an attractive fishing ground!

We were ecstatic with our new discovery, but we only had sparse GoPro-documentation, so we wanted to go back. It would take two years until I had a chance to dive the Almirante again. In the meantime, a few other dives were made, and a handful of artefacts were recovered.

MYSTERY WRECK

Lots of questions need to be answered. Where are the cannons? What was the cargo, and where is it? Maybe the ship was turned upside down before landing upright on the seafloor and everything spilled out? What reef did it hit, and is there a debris field leading to it? And the most essential discovery still remains: the irrevocable proof that the mystery wreck is, in fact, the Almirante Barroso.

All these questions will be answered during the ongoing wreck exploration weeks that are planned each year.



DIVE TEAMS

2018 TEAM

The international explorer's team consisted of Faisal Khalaf (Lebanon), Jesper Kj  ller (Denmark), Sameh Sokar (Egypt), Igor Siryk (Ukraine), and Michel Salsmans (Belgium).

2020 TEAM

Mario Arena, Stefano Gualtieri (Italy), Daniel Schelvis (Spain) and Jesper Kj  ller (Denmark).

FACT FILE

ALMIRANTE BARROSO

The Barroso was built at the Navy Yard in Rio de Janeiro. It was launched on April 17, 1882, under the presence of emperor Dom Pedro II and admiral Francisco Manuel Barroso da Silva. The Almirante Barroso was the second ship in the Brazilian Navy to be named after the war hero Admiral Barroso (September 29, 1804 - August 8, 1882). Later, several other ships would share the name. She was wrecked when she collided with a reef near Ras Zeith in the Northern Red Sea during a circumnavigation voyage. An English gunboat rescued the castaways.

LAUNCHED: 17 April 1882

MATERIAL: Wood and steel

DISPLACEMENT: 2.050 tons

DIMENSIONS:

Length: 71.25 m

Beam: 11.33 m

Draft: 5.10 m

PROPULSION: Mixed sail and steam

Steam Engine: 2.170 HP

Sail Surface: 1.625 m²

CREW: Unknown

SPEED: 12 knots

LOST: 21 May 1893

DIVING THE ALMIRANTE EQUIPMENT

JJ-CCR in GUE Configuration, Suex Scooters

BACK GAS

12/65 BAILOUT 12/65, 50% and 100%

LOCATION

North of Gubal Island, west of the TSS (Traffic Separation Scheme) at the mouth of the Gulf of Suez.

TOPOGRAPHY

The wreck is sitting in a flat sandy area.

DIVE CONDITIONS

Advanced hypoxic trimix dive with lots of currents, both at the surface and on the wreck. Windy surface conditions make it tricky on the surface, and the proximity to a busy sailing lane makes it paramount to ascent on the line.

FACT FILE

THE RED SEA EXPLORERS

WRECK EXPLORATION PROJECT

As the name implies, Red Sea Explorers are dedicated to exploring and protecting the wonders of the Red Sea and have been doing so during the last 15 years as one of Egypt's most popular and successful liveaboard dive operations.

The Wreck Exploration Project is an ongoing project that dedicates a couple of weeks each year to finding and exploring new shipwrecks.

Even if you are not able to do long and demanding decompression dives at great depths, you can still participate in the Exploration Projects as a support diver. That is a great way to learn more about technical diving projects and gain experience as a project diver.

www.redseaexplorers.com

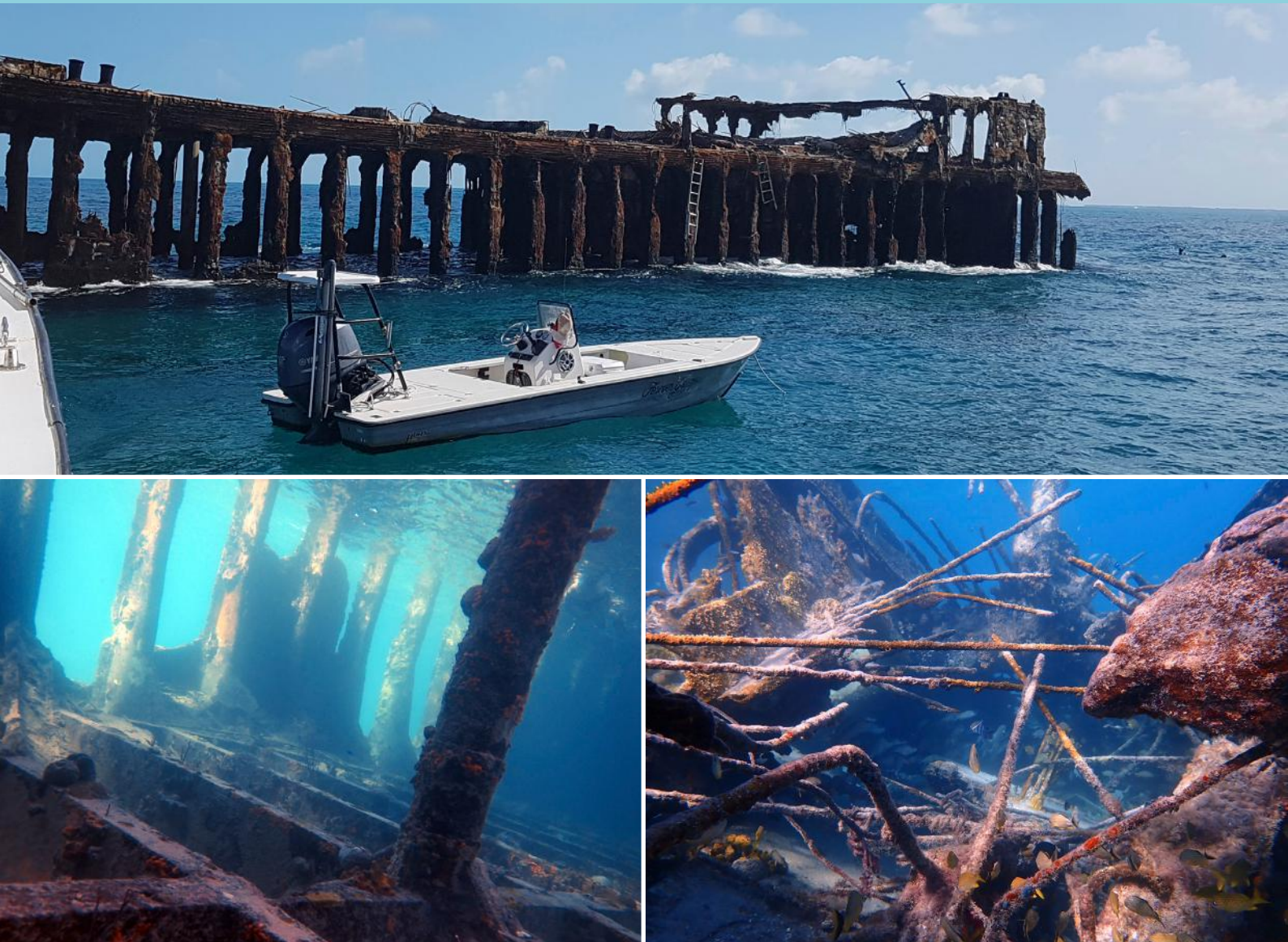


THE ADVENTURES OF A UAE DIVER: **THE MAGNIFICENT SHARKS** OF THE BAHAMAS

FEATURE AND PHOTOGRAPHY **SARAH MESSER**

Occasionally one slows down enough to pause and look you in the eye, and for a moment, a split second, you have a connection with a shark 3 times your size and 100 times more powerful, and in that moment you understand each other.





At the end of my last article in the EDA March magazine issue, I was musing over the year ahead. I had dedicated my 2020 diving trips to a year of sharks – travelling to new salty locations to seek out sharks I'd not yet seen. By the time the magazine had hit our inboxes, I had booked a trip to the Maldives in March and a trip to Sipidan, Malaysia that I should have been flying to as I write this article...

Ho-hum. 2020 had other plans for us.

Little did I know at the time, how grateful I would be today for the call I received from my boss at the end of January. Boss: "What have you got in your diary mid-Feb? Can you cancel it? I need you at a conference in Miami". Me: thinking quickly – got a lot on in Feb, some big deadlines. Ooh Miami, never been there. OH MIAMI, DIVING... "Well I can probably clear some stuff and make it, OK", whilst with the other hand already looking for flights.

I immediately set about googling diving near Miami, and spent some time reading about sites in and around Florida Quays. Then I looked at a map to see where some of them are located, and I saw just how close the Bahamas is. YIKES! A few more searches later,

I realise the islands are just a 45 minute flight from Fort Lauderdale airport, and boom. The first decision is made. Bahamas here I come!

THE BAHAMAS – A SHARK MECCA

The Bahamas is part of the Caribbean, and consists of a chain of islands spread out over some 800 kilometres in the Atlantic Ocean, to the east of Florida, north of Cuba, and west of the Turks and Caicos Islands. Some 700 islands and over 2,000 rocks and cays (of which 30 are inhabited) make up the Bahamas to a total land area of 3,860 square miles.

Around 60% of the Bahamas is underwater, which combined with year round warm temperatures and a tropical climate, makes for an endless supply of spectacular dive sites. The archipelago is an ecological oasis, boasting some of the cleanest, clearest water on the planet. And with conditions like these above and below the ocean, the marine diversity is flourishing. The Bahamas have such wide ranging diversity that there's something for every type of diver, from vibrant healthy coral reefs, to the world's second deepest blue hole, a plethora of large and small marine life, and many ship and plane wrecks. The type of diving you want to do then dictates the Bahamian island you will head to.

But back to the sharks. Shark populations in the Bahamas, because of the protected and tropical conditions, are thriving. Any diving enthusiast will know the area is famous for some of the best shark diving in the world. The most common breeds to be found here are Lemon sharks, Blacktips, and the Caribbean Reef sharks, but there are plenty of others to be found too. Divers seeking a shark experience are more likely to be looking for the Whitetip, Bull, Tiger or Great Hammerhead sharks.

TO BAIT OR NOT TO BAIT

Many of the shark dives you will see in the Bahamas involve shark baiting, a controversial topic. Many of the most influential shark conservationists today are comfortable with shark baiting that is conducted properly, with respect, and has the wellbeing of the shark populations firmly at the core of the activities. The crux of this must be:

- Shark behaviour is not changed – sharks are predators that play a crucial role in keeping smaller fish populations in check. They should not be fed so much that they do not hunt anymore.
- All sharks are wild, and only people who really understand their behaviour and how



to be around them should be feeding them. We are in their territory and need to respect that at all times.

- Conservation is a core part of the activities, it is not just a tourist exercise. The best dive centres will be working with local marine biologists and scientists to improve our understanding of shark behaviour with the aim to protect them.

CHOICES, CHOICES, CHOICES

I now needed to choose which island to go to and at this point two were jumping out at me: Grand Bahama to visit Tiger Beach (unsurprisingly well known for its Tiger sharks), or Bimini to dive with the Great Hammerheads. I kid you not, this decision took over my life for 2 days. How could I choose between these amazing experiences? I dreamt about sharks for those 2 nights. In the end, it was my schedule that answered the question for me (mustn't forget I still need to go to that work conference...).

Both Freeport on Grand Bahama and Bimini islands are available by ferry or direct flight from Fort Lauderdale. Grand Bahama is a little bit further away, and so as I had limited time, I chose to go to Bimini. Plus there were other

dives available so I could see more than just the Hammers.

Bimini is the westernmost district of the Bahamas and comprises 3 small islands in a chain, located about 80 kilometres east of Miami. The largest islands are North Bimini and South Bimini; the latter houses an airstrip. From South Bimini, you take a short minibus ride 5 minutes from the terminal to the ferry (which is more of a large zodiac than a passenger ferry), which takes you to your hotel destination.

THE BLUEST BLUE

As I left the port, it was a beautiful warm bright sunny day. What immediately struck me, was the beauty of the shimmering turquoise ocean, stretching out as far as I could see, the kind of blue you don't believe exists until you actually see it for yourself. And the water was so supremely clear that at times it seemed like there wasn't any water underneath you at all.

The stories and legends that swirl around the history of Bimini only adds to its charm. Known as Ernest Hemingway's favourite escape, Bimini is historically significant as a rum trading post during the prohibition years. You'll be told

stories by the locals of Bimini Road, which they believe is a remnant of the legendary Lost City of Atlantis.

That tingle of happiness and anticipation that you get when you know you're on an epic diving adventure starts...

I chose to stay at the Hilton Resorts World, which wouldn't have been my first choice, preferring the less 'big-chain' accommodation offered close to the dive centres, but as a late booker I had to take what was on offer. Not to do the hotel any disservice, it is beautiful with great rooms and customer service as you would expect from any Hilton.

The trip from Dubai was 24 hours in total, so on arrival I was happy to do nothing for the rest of the day so I could rest and be ready for my dives the next day.

DIVE CENTRES

There are 2 dive centres operating from North Bimini island (I was staying on the South island, they are very easy to get between with a 10 min car or golf buggy ride); Neal Watson's Bimini Scuba Center, located at Bimini Big Game Club (a hotel), and Bimini Undersea



Dive Center: Both had excellent reviews. I chose Neal Watson for 2 reasons; they were mentioned multiple times on the scuba forums I read with many returning divers, and I could clearly see their commitment to shark conservation through their work. Take note – if you don't book in advance, it's likely you won't get the dives you want, they are very popular especially in peak season, with limited space.

S.S. SAPONA AND REEF SHARKS

Day 1 started with a shipwreck called Sapona. The S.S. Sapona has a chequered history. She was one of a fleet of concrete ships built to serve as troop transport during WWI because steel was in short supply. This ship is said to have been designed by Henry Ford himself.

Because the ship was completed after the end of the war, the Sapona was never used for what she was intended and was sold for scrap to a developer. She was then briefly used as a casino, then for oil storage, and eventually as a floating warehouse to store and distribute liquor supply during the Prohibition Era. In 1926 the ship ran aground in a hurricane and was then used as a bombing target for training by U.S. fighter planes during World War II. However, after a group of five torpedo bombers mysteriously disappeared while returning from a run in 1945, all target practice on the Sapona stopped immediately – and the legend of the Bermuda Triangle was born.

The wreck sits in just 15 feet of water and you can see the effects of the bombing clearly on

the dive. I was there at low tide, on occasions I was snorkelling more than diving, but that doesn't take away from the charm of the story or the reef that has grown over the base of the ship.

The best was still to come though, the Reef sharks. This was my first baited dive and I was unsure what to expect. The crew gave very clear instructions about the dive and how we should behave, there was no ambiguity. We were told there would likely be several Reef sharks with us, and sure enough we could see them swimming around the boat during the briefing. We would descend to about 12 metres as the sharks remain near the surface, and rest on the bottom to watch them. It was less of a dive and more of a weighted sinking – in order to not float around and remain still, all divers are kitted up with at least 25 kg of weights.

We descended on a line slowly to the magnificent sight of 10+ adult Reef sharks swimming around us. At this point the boat had lowered a sealed chum box off the back, so it was dangling between the bottom of the boat and the ocean floor. The smell of the chum inside (chunks of fish heads and tails) kept them swimming all around us; up and down, around and around. These were by far the biggest sharks I had ever seen up close; the bigger adults were not much smaller than me. And yet they were not frightening. They were not aggressive or defensive. They could sense we were no danger to them and

we don't smell or look like food. Once I was comfortable with them, I could move around a bit to get closer and see them from different angles. A really magical hour surrounded by grace and majestic beauty.

Once everyone is back on deck, the bait box is pulled out of the water and emptied into the ocean. And then you realise why they didn't do that with us in the water, as the sharks thrash about over each other to get to the chum.

THE GREAT HAMMERHEADS

Day 2 was the one I had been waiting for, the Great Hammerheads. On paper these creatures are something to behold, and I was excited and nervous to see what one would like in real life. The Hammers I have seen before in Egypt were between 1-1.5 metres long. Great Hammers can be up to 6 metres (20 feet) long, and on average 3.5 metres. They also weigh an average of 230 kg. These sharks are not to be messed with.

The Great Hammerhead can be distinguished from other Hammerheads by the shape of its "hammer" (called a cephalofoil) which is wide with an almost straight front margin. The first dorsal fin is also very distinctive, being very tall and strongly sickle-shaped. All of its fins are unusually large which sadly has meant it is highly prized by hunters wanting to fin them for sale in Asia. As a result this species is now critically endangered. They have almost no predators, other than humans, and can prey



themselves on other sharks as big as the Reef sharks I had seen the day before.

Again, we were given a very clear briefing from the dive guides. Twice. There could be no mistaking or misinterpreting the instructions. It's clear from the delivery that this dive has freaked divers out before, and no one wants a panicked diver. Every diver has 2 tanks and the maximum dive time is 1 hour. The feeder goes in first with the bait box and to fix a line. It will be a shallow dive again (12 metres) and again we're weighted up to the max so that we can rest on the sandy bottom without flailing limbs.

With only 10 people on the dive, we get into the water one at a time and quickly descend on the rope, forming a semi-circle around the feeder, the bait box in the middle of us. If the Reef sharks were majestic in their graceful movements, these enormous female Great Hammerheads just emanate power and strength as they glide through the water. They are beautiful!

We settle back onto our heels, and the guides have a routine to make sure everyone can enjoy every position and angle. I had 5 Great Hammers on my dive, circling us and coming in for the bait. The feeder is careful not to let them knock the box away, and slowly takes out one piece of chum at a time when he can see a shark heading towards him. They come from the front, fast, making a beeline for the food with their mouths open. The feeder knows

exactly when to let go of the bait so the shark grabs it and swoops right over our heads or across the front of us, and swims away behind and around in a big circle so she can come in for more, just as another giant beauty is taking her snack.

One after the other, swim, snatch, swoosh, swim, snatch, swoosh. Sometimes 2 come in at the same time, and you can see the pecking order as one shark backs away. They come so close you can count their teeth. They swoop so close over you, their fins graze your sleeve or head. No aggression, no defensiveness. Occasionally one slows down enough to pause and look you in the eye, and for a moment, a split second, you have a connection with a shark 3 times your size and 100 times more powerful, and in that moment you understand each other.

You can feel their intelligence and their curiosity. They know we come in peace, and mainly they want their fish head to eat. You can see the relationship that the feeders and guides have with the Hammers – they know them somehow, they see each other every day, they've gotten to know each other's personalities. There's a deep respect and love I can see clearly from the feeders for these creatures. And boy do they know how to handle them, there is almost playful wrestling going on between man and beast. It's incredible to watch and be a part of.

There is no doubt that to some degree the

baiting has changed the sharks a little, but having seen it for myself, I can see it is not done in a damaging way. These titbits they are given are mere morsels, a mouthful for a creature that size. They still need to hunt as much as if they did not have the bait. They are certainly not tame, they are still wild animals, but they have learned that the humans that come in every day are not a threat and that they will get a 'treat'. Kind of like a cat, but 210 kg of cat with 3 razor sharp layers of teeth. Not your average pet. And with these daily meetings, the shark biologists have been able to tag and monitor their behaviours over the years to see their migration, feeding and birthing patterns. With that knowledge, they can help this species survive humans in the long term.

Would I do it again? In a heartbeat. These were incredibly magical dives, and I feel humbled to have been able to get up close and personal with these magnificent sharks – both the Reefs and the Hammers. I don't yet know how many sharks I will fit into 2020, but I am so grateful that I got to see these sharks before lockdown began 3 weeks later. Until next time, stay home and safe buddies.

THE DIVE CENTRES

NEAL WATSON'S BIMINI SCUBA CENTER:
www.biminiscubacenter.com

BIMINI UNDER SEA DIVE CENTER:
www.biminiundersea.net

DIVING ON THE SEVENTH CONTINENT

FEATURE AND PHOTOGRAPHY **RAF JAH**

Last year, Raf and Francisca Jah dived the chilly waters of Antarctica, the Falkland Islands and South Georgia.
This is what they found.





Our first dive in Antarctica was on an iceberg, Shinle Cove, the South Orkney Islands.



ABOVE: Francisca on our first dive at Carcass Island.

Just getting to the start of an Antarctic dive expedition is a journey in itself. The divers from Dubai had to spend 18 hours on an Emirates Boeing 777 to get to Buenos Aires. Then after a night in the city, a 3½ hour flight on a Boeing 737 brought us to the southern tip of South America and the town of Ushuaia and a mandatory two-night halt in case our baggage had chosen a different route. We were now within 100 miles of Cape Horn and the southernmost tip of South America.

Ushuaia was an over-priced series of ugly hotels and restaurants set on the side of a hill. Most of us wandered around the streets trying to make sure that our legs worked, stopping in cafes to drink real coffee while looking out at the Beagle Channel with Chile as the backdrop.

Boarding the MV Plancius didn't go as planned and we had to wait in town until 4 pm as our departure had been delayed due to a sick crew member. So we hung around Ushuaia, drinking coffee and waiting for news. What we didn't know was that the Argentine health authorities wanted to quarantine the ship for two weeks. Thankfully, the ship's agent managed to negotiate mass inoculation instead. We all

met up to hear the expedition leader and her deputy explain that all was well and we could now be bussed to the ship.

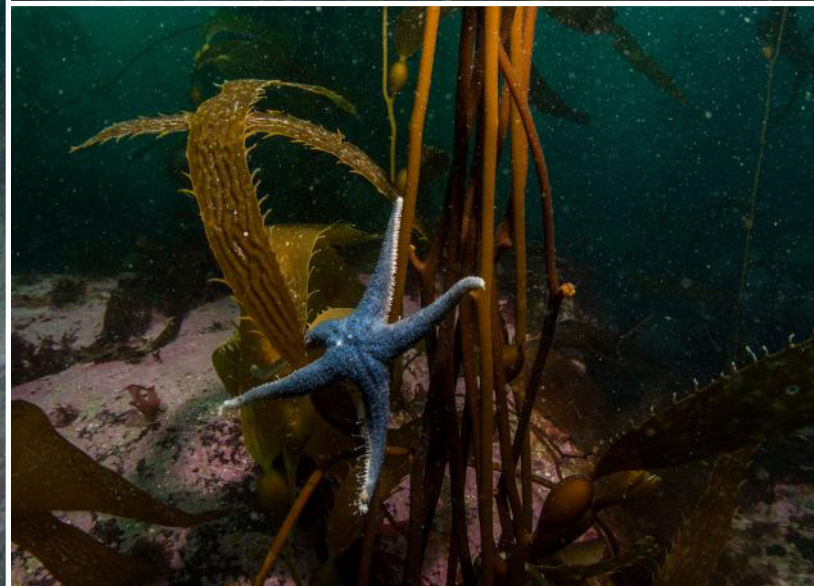
With no idea about what really went on, we felt slightly uneasy, but were soon steaming out of Ushuaia while having our safety briefings and dinner. I later went out on deck and stared at Argentina to the north and Chile to the south: the excitement was palpable as skuas and other sea birds circled the ship in the endless twilight.

Morning unveiled an unbelievably calm south Atlantic Ocean. We prepared our kit and listened to interminable briefings on everything from how to get boots on to boarding a Zodiac. As divers, most of this was old hat, but briefings are vital and compulsory, so we listened closely. More important were the repeated briefings on dive safety procedures. There's so much that could go wrong that nothing could be left to chance – or worse, assumption. We assembled on the ship's bow and thoroughly tested our kit. Check, check, check and check again – then take it apart. And while kitting up, a fin whale breached near the ship, followed by a pod of orcas ambling alongside.

After lunch, we had a series of lectures of varying quality on the Falkland Islands and geology. A good cruising pace brought us to the following morning, and we steamed around the outer edges of the Falkland Islands. We passed through a gap called Wooley Gut at 0645 hrs, and I stood on the bow and stared down at penguins and dolphins on either side of the vessel.

Our first dives were to be check-out dives. Using a procedure that was to become a habit, we loaded our Zodiac with dive gear, and it was then craned over the side, with our dive guide aboard, by a trio of competent and friendly Filipino crewmen. We embarked via the gangway and within 30 minutes, there were fat, black-and-white Comersons dolphins swimming around our Zodiac.

Excited to get wet, we struggled into our kit and rolled into the water with a depth of about 10 metres. Francisca was my dive buddy, and we checked buoyancy, cameras and general movement before winding our way through the kelp and bore right, seeing crabs, fish and an octopus. The water was a pleasant 10°C, and I was able to dive in 3 mm neoprene gloves.



ABOVE LEFT: Stevie Macleod away from his work bench at Al Boom and diving in South Georgia. **ABOVE RIGHT:** Wherever we looked we would see life, no matter how small.

What amazed me about the Falkland Islands was the sheer amount of sea life down amongst the kelp. Everywhere I looked, I saw a crab or nudibranch or a small fish. We descended to 16 metres, played with some seals, and kept looking because there was something to see everywhere. As is often the way, suddenly our allotted 45 minutes of time were up, we surfaced, and Jerry, the Plancius dive team leader picked us up.

With time to spare, we were landed on a slip way on Carcass Island and we walked in our dry suits to a small settlement which, to my surprise, was operated by friendly Chileans. While I sipped on a welcome mug of tea, I was entertained by Gentoo penguins plus an overflying vulture. But sitting there created an unusual problem: we started to overheat in the sun! Our dry suits and "Weezle" under suits coped well with the South Atlantic Ocean. That was easily fixed by jumping in the nearby bay to shed some heat.

Re-boarding the Plancius, we lunched before arriving at the 'neck' of Saunders Island where we were soon back in the water. We had our check dives, we had ironed out any kinks,

this was real expedition diving, no one had been here before, and every buddy team had to make its own decisions. We reached the rocky bottom at 15 metres and found our way through even thicker, but more bunched kelp. The visibility was 4 to 6 metres, and wherever I looked, I saw life. Lobster-krill, fish, starfish and multiple nudibranches, made for an excellent dive.

That night, we steamed to Port Stanley, the capital of the Falkland Islands, a charming small town populated by people from around the world, before departing for South Georgia. We broke down our scuba kit to make sure that it wouldn't be damaged if we hit rough weather.

With 20 knot, then 30 and finally 40 knot winds, I thought the sea swell was under 2 m – but the 3rd officer said it was a 4 metre swell, causing rougher seas. As the Plancius rode the swells, there were yet more lectures, but the weather held as we made good time at a steady 12 knots.

Nearly three days later, we were diving off Tern Island in South Georgia. We had passed

the convergence and the water temperature was down to 2°C. Our thermal layers were fine, but some of us started to suffer cold hands. With fur seals swirling around us and coming up close to say hello, hands were forgotten and we had a magical dive. South Georgia had us alternating diving and landing. Some of the dives were less spectacular than others. Francisca and I went down to enjoy 10-30 cm visibility. We held hands and felt our way along the side of the wall for 10 minutes before binning the dive. The experience was not lost however, as we spent the rest of the time snorkelling with the seals. Later, we landed at coves named Salisbury Plain, Prince Olav's Harbour, and St Andrews Bay. These were packed with penguins and breeding male fur seals, the latter rather snarly and snappy if anyone ventured too close.

Later in the trip, we dived in the afternoon off a site called Quarry Wall. I was without a buddy and so joined Emirates Divers, Elmar Schanz and Stevie Macleod. Stevie was Dubai's veteran dive technician, and the only person carrying more spare parts than me. He blew a wrist seal on the dive deck. He replaced it quickly and we thought that all was well until we rolled

DIVING DESTINATIONS

With a glacier in the background, St Andrews Bay, South Georgia, is one of the most impressive penguin colonies on earth.







ABOVE: The south shetland islands were our last stop and had the clearest water in Antarctica.

in off the zodiac. Stevie Surfaced suddenly and shouted: "I've water in my suit!". He swam quickly back to the zodiac and continued, "You two dive together". There was no time to debate the matter as with 2°C water in his suit, he had to get out of the water fast.

Elmar and I had never dived together before, but needs must. So we dropped down to 20 metres and moved along the rock wall. We wound our way through the kelp with an occasional communicative nod, and were treated to a plethora of sea stars and small molluscs. We ended the dive after 31 minutes, with seals playing around us in 7 metres of water – all very nice but my video was annoyingly out of focus.

After an evening halt in Grytviken, our last day in South Georgia loomed. The non-divers were offered a Zodiac cruise, but I opted for a gamble dive. If the dive was rubbish, I would snorkel; if it was good, it would be worth it. Francisca decided she just wanted to snorkel, so I ended up diving with Gavin Walker in Coopers Bay.

We descended off a small unknown islet and hit the bottom at 12 metres. I hadn't tied my

ankle velcro straps tight enough, so I was leg-buoyant, and scrambled around, trying to take photos, stay warm, and maintain some form of level. It was a lot of work, but it was enormous fun as we could see a whole 3 metres! After 24 minutes, I suggested we end the dive as my fingers hurt with the cold. Gavin kindly agreed and we ascended to 3 m, where we dutifully did a 3-minute safety stop. I cursed in my regulator as my painful fingers screamed at me, and a swell meant we hung onto some kelp to stabilise ourselves. We had descended to 13 metres and lasted for an impressive 27 minutes. Gavin had used 60 bar and I some 120.

As soon as we were done, we had lunch and navigated off through a series of icebergs. South Georgia disappeared as we turned southwest towards the South Orkney Islands. After taking some photos, I was soon asleep.

We generally had two days at sea between every set of islands to be visited, time spent writing up our experiences, cleaning our land kit for biosecurity reasons, and double-checking our dive kit. While on deck, we watched numerous whales blow either side of the Plancius while the sun did set, albeit slowly, and more icebergs became visible.

As we steamed south-west, the onboard atmosphere changed from trepidation to excitement – we had made it out of South Georgia without a single injury. The weather held and the Southern Ocean was flat calm which meant we could steam at 12 knots with all three diesel generators running. The phrase we were to hear on the bridge was "all well-3DG full ahead"

One morning, we steamed through fields of thick ice and arrived at Coronation Island in the South Orkneys. We were inside Antarctica and yet still so far from the actual continent. Our quietly-spoken Russian captain wove his way between the icebergs with supreme skill, penguins sat on the ice, seals sunned themselves and we marvelled at the weather.

The ice was so thick that we could not land on the shingle beach, so our dive team leader decided to dive an iceberg instead. We dropped in and circled a medium-sized iceberg: the depth was well over 100 metres and so we had to maintain perfect buoyancy. Gavin and Petra disappeared first, followed by Francisca and I. The water was green and murky, yet the iceberg was melting and creating a layer of clear water next to it. In



ABOVE: Divers and non-divers would always meet on land after the dive. **BOTTOM RIGHT:** Chris and Gavin look back at the recently surfaced divers.

water temperatures of between 0°C and 2°C, I tried to photograph ice with stone suspended in it, but with a strange current running. I found myself finning like mad to travel around the berg. After 15 minutes, we had seen enough and surfaced calmly.

Once we had clambered back onto the Zodiacs, we cruised around in the stunning sunlight before alighting on another smaller iceberg for a team photo. Standing there, I literally felt as though I had made it to the highest passes in Nepal again before we headed back to the Plancius for lunch and coffee.

That evening, Petra and Gavin held a small 'Persian Gulf Divers' reception in their super deluxe cabin. The dive team were invited and a mysterious series of beverages appeared. I had nodded off in the library and so wandered in a little late, but thoroughly enjoyed this delayed Emirati-Antarctic divers' meetup.

We were told that there was a slight possibility of making it to Elephant Island, depending on sea conditions and time. If the sea stayed calm and we could set off by 1500 hrs, we were in with a chance. The atmosphere on the Plancius became electric. The idea of seeing the beach

where Sir Ernest Shackleton was forced to leave his men while he sailed to South Georgia to find rescue, was beyond belief.

The view from the porthole showed an apparently calm sea (you never can really tell in the Southern Ocean), and the Plancius steamed at its sedate 12 knots all morning - we were getting closer and closer.

Then, just as we approached Elephant Island, the sea started boiling with humpback and fin whales as they surfaced, blew, and dived again and again in front of us. I lost count of how many there were. In the foreground, hundreds of Chinstrap penguins filled the sea, while Antarctic terns and prions filled the sky as they dived for food. I had never seen such a proliferation of marine life. The captain decided that we could stop, and turning the Plancius in slow circles, we played with the big mammals for an hour.

It was time to head on to Elephant Island, and we steamed into the bay opposite Cape Wilde and anchored up so the crew could launch all 10 Zodiacs. Motoring slowly, we viewed Point Wilde from both sides, then closed in to see the tiny beach where Shackleton's men had

spent 16 weeks. They lived under two boats for 4 months, eating seal and penguin and drinking Bovril. With steep cliffs and a glacier behind, and caves and a spit of land in front, their camp would have been exposed and tiny. It was an incredibly emotive place.

On the far side, we found a Leopard seal playing with the Zodiacs. He swam from inflatable to inflatable until, bored, he bit into a Zodiac full of Germans. There was mild consternation as the boat deflated and some passengers had to be transferred to others!

We left Elephant Island, and a day later, were at Paulet Island. Francisca wasn't feeling great, so I joined Gavin and Petra once again. But once on the boat, Petra realised she had no air so I dived with Gavin. I was getting used to Gavin's completely unruffled style. We were advised to use an SMB if the current was running. We rolled in and the current was streaming along at 3 knots. Paulet Island was somewhere I had no desire to get lost on the surface, so I deployed my SMB immediately. We were diving on a steep slope, with rounded rocks, limpets, pale lobster krill, isopods, sea squirts, sea spiders and sea cucumbers, as well as numerous orange spongy things, a large white



ABOVE: We were buzzed by fur seals on a regular basis. It took a few days to catch one on my camera.
OPPOSITE PAGE: In December, South Georgia becomes a wildlife photographers dream.

nudibranch, some small worms, a few entry holes, loads of urchins and some small fish.

My regulator grew hard to breathe on, so I pulled in a hefty breath and a bunch of ice shot into my mouth, making the regulator a lot easier to breathe on. Too easy and in fact, it was starting to free flow, so I took out the regulator and switched to the second one. Gavin turned the air off to the free-flowing regulator, but with crap buoyancy, I ended up on the surface. I ducked down to find him and we continued on.

After a while, he turned my valve back on again, so that I could at least see, rather than guess, my contents gauge, and we dived on calmly. By the time we finished, we had moved over half a kilometre. I ran low on air, signalled to go up, and ascended. Gavin did not follow, so I went down to get him. He then followed, but in the confusion, I dropped my Go Pro camera and Francisca's torch. Apart from these losses, the dive had been a great success. Zodiac driver and commercial diver Chris had to help me de-kit. My fingers were so painful that I had to put them into my arctic warfare mittens and massage them, and it was a full 5 minutes before they were of any use.

Continuing on, we landed on rocky Paulet Island and saw a massive Adelie penguin colony near the ruins of an old stone hut, with an incredible frozen lake on the far side. We watched the penguins slither over the ice and waddle around in their comical penguin manner. Someone spotted what looked like a man-made path leading up a hill, reminding us that this was the island that Shackleton wanted to reach. Apart from having supplies, the landscape would have been sensational for a camp, rather than the tiny horrid space on Elephant Island.

In the afternoon, we steamed to Brown Bluff in Antarctica, a pillar of volcanic ash mixed with basalt. The cliff behind looked like the Grand Canyon, and we enjoyed summer-like weather with brilliant sunshine. We dived on an underwater ridge off Brown Bluff, with two icebergs, one grounded and one floating. We swam along the ridge and down to 14 m, spotting life everywhere: seaweed, red algae, amphipods, brittle stars, limpets and more. There were penguins on top of the ice, but not under, and we were excited to be diving on the Antarctic continent – and soon after we ascended, we were on the continent!







ABOVE: Tabular icebergs started to appear once we had left South Georgia. **BOTTOM ROW:** Elephant seals surrounded by King Penguins in South Georgia; King Penguin close-up and them landing to shore. **OPPOSITE PAGE FROM TOP:** The MV Plancius at Elephant Island; Pushing through the ice; One of the highlights was diving and snorkelling around icebergs.

Our expedition leader decided that we should try and get to A68A, one of the world's largest icebergs and a section of the Laarsen ice shelf that had broken off. Our skipper found it and the weather held perfectly. We cruised for about 90 nm along A68A before coming into fast and brash ice. The ship circled the bigger of the ice floes, and bashed its way through the smaller ones, the hull clanging against larger lumps. We pushed ever southwards and the ice thickened, with Adelie penguins scurrying out of our way onto the pack ice. Eventually, we saw a single Emperor penguin, then a second, and I took several photos, knowing that my chances of making it this far south again were slim, and

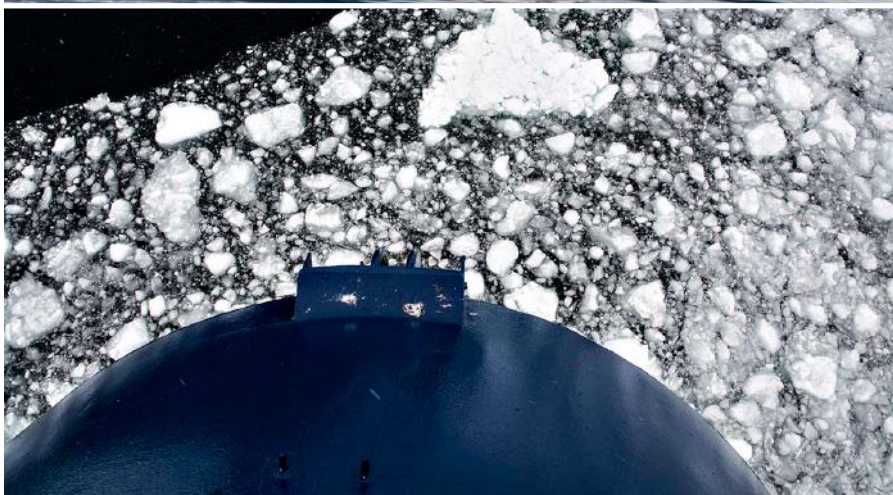
I would probably never see one of those magnificent birds again.

It was time to enter the green water and its great visibility. Petra had a cold, so I dived with Gavin again. We had around 3 metre visibility but with plankton everywhere. Visibility improved at depth and there was more life on this dive than any other we had done since the Falklands.

The morning saw us arrive at Yankee Harbour, a name whose provenance stumped us all. I decided to dive with the Walkers. We had crystal clear blue water with 5 metre visibility and 1°C water temperature. This does not sound like much, but 5 m of clear water and

sun illuminated water made the dive seem like paradise. The 2 degree warmer water made such a difference. I photographed fish again, krill and more fish. This was the best of Antarctic diving. With that, I was done. This dive would be too hard to beat. I washed my kit and later that day, went ashore with the non-divers. I sat on a stone in Horseshoe Bay watching whales breach and penguins natter. The expedition was over.

There remained the small matters of writing reports, editing photos and steaming for two days on the Drake Passage to start the journey home – a small price to pay considering what we had done and seen.



HOW TO GET THERE

Emirates fly to Buenos Aires four times a week. Raf and Francisca joined the African and Oriental Travel Company (A&OTC) team who arranged the mid-summer Antarctic dive expedition from there. Based in the UK, the A&OTC specialises in dive trips to remote and less well-known locations, and is also an African safari specialist. The next escorted Antarctic dive expedition is in December 2021. Prices start at \$11,500 per person including flights from the UAE.

CONTACT A&OTC:

Email: info@orientafrica.com

Call: +44 1291 570953

www.orientafricatravel.com

WHEN TO GO

Most Antarctic dive trips take place in the late season, when the whales are out, but this is not always the best time for the land based expedition goers. The African and Oriental Travel Company runs dive trips every 2 years in December. The next is in 2021.

Non-divers are more than welcome, which is why the trips are run in December in the penguin season.

WHAT YOU NEED

You will need to be an autonomous diver who is competent underwater. You will need to have 30 dry suit dives, but more importantly, you need to be comfortable with dry suit diving. More than any qualification, you need to be happy in a dry suit and to be able to solve small problems and fiddle with your kit underwater. The diving is not deep, and not technical.

The best dive gear to take is simple BCD's and two basic cold water regulators. We bought a lot of stuff from Stevie at Al Boom Diving and used aqualung core regulators. 7 mm mittens seemed to be best for the Antarctic, 5 mm gloves for South Georgia and 3 mm gloves for the Falkland's.

DIVE OPERATIONS AND COVID-19: PREPPING FOR RETURN

FEATURE **DIVERS ALERT NETWORK**



FREQUENTLY ASKED QUESTIONS

While most dive businesses have ceased operations due to national and local lockdown orders, divers and dive business owners are eagerly anticipating a return to diving. It's not too early to prepare for the resumption of diving when restrictions are eventually lifted. The following Q&As have been compiled from questions sent in by divers, dive professionals and dive business owners and are intended to help everyone get ready for a safe return to the water.

A few basic rules apply to everyone, including staff and customers, regardless of activity.

- Wash hands regularly and thoroughly with soap and water; for at least 20 seconds, or use an alcohol-based hand sanitizer (unless working with oxygen-enriched gases).
- Maintain a social distance of at least 6 feet, and avoid direct contact with other people.
- Avoid touching your eyes, nose and mouth.
- Make sure you and the people around you follow good respiratory hygiene. Cough or sneeze into your elbow or a tissue, and dispose of the tissue right away.
- The CDC recommends wearing a cloth face covering in public settings where other social distancing measures are difficult to maintain. Defer to local orders with regard to masks/face coverings to ensure compliance.

PROTECTING STAFF AND CUSTOMERS

How can I protect my staff from COVID-19?

For employees, the general COVID-19 safety recommendations, as published by the WHO and CDC, apply. The use of protective face masks and gloves should be considered when staff members are in direct contact with clients. Reducing the number of people in certain areas or designating areas for staff members only may also be useful. Compressors, equipment maintenance areas, rental equipment areas, offices and classrooms could be temporarily off limits to clients to limit virus transmission. Encourage clients to practice social distancing and make sure they disinfect their equipment after every dive.

How can I ensure that my customers will not get COVID-19 from my facility?

While you cannot fully guarantee this, you can certainly reduce the risk by enacting preventive measures, which include but are not limited to creating and enforcing strict disinfection procedures, preventing clients from gathering or sitting too close to each other; reducing the amount of airflow in the building to a minimum (to prevent any airborne virus droplets from being circulated), and most importantly, interrogating clients before allowing them to

attend a training session or dive. Clients with signs or symptoms should not be allowed to participate in any diving or related activities. Be sure to clearly post all disinfection policies to ensure that clients are aware before entering your business.

Should I request something from my customers prior to their arrival?

It takes only one infected person to spread the virus. Clients may not know they are infected, deny contact with an infected person, or assume that minor symptoms are not related to COVID-19. It is therefore important to ask if they have any indication of being unwell and encourage them to stay home or speak to a physician. You may want to consider refunding or rescheduling. You may also consider limiting visitors to only those who will be participating in diving or related activities.

Will maintaining social distance between customers in my dive centre prevent the spread of the virus?

Social distancing should be enforced but is insufficient on its own to prevent the spread of COVID-19. Social distancing should reduce the spread of the virus between people, and the use of masks would reduce its risk further. Because clients might touch

equipment or products, having gloves available and encouraging their correct use may be warranted, as could providing hand sanitizer or hand-washing facilities. You may also consider reducing the amount of stock in your shop area, as this would reduce the amount of disinfection necessary.

Can I safely conduct classroom activities?

If your business is able to offer distance learning or e-learning, this is a good option for decreasing the risk of transmitting COVID-19 among customers and staff. If this is not an option, consider setting up the classroom to comply with social distancing requirements. Ask students to wear protective face masks and wash their hands before and after classes. If equipment is used during class time, ensure it is always disinfected between students. Ensure that desks and chairs are disinfected each day or between classes of different students. Be sure to question potential visitors to your shop, including students, to ensure they do not have symptoms and have not come into contact with an infected person.

Are there any areas of my dive shop which should be temporary closed or made unavailable to customers?

Changing rooms carry a heightened risk of contamination. Personal belongings of customers (including clothes) should be stored in such a way as to avoid contact with common surfaces. If stored in lockers, these must be sanitized after each use. To minimize the risk of contact, consider asking customers to store personal items in plastic bags. Bathrooms also warrant special attention and should be disinfected regularly. Showers could be temporarily closed and replaced with a hose outside to rinse gear, and clients should be encouraged to shower and rinse their gear at home.

DISINFECTION

How should I manage disinfection operations at my dive shop?

Disinfection operations should be added to existing standard operating procedures. These procedures should follow local, state and federal guidelines on disinfection, and staff should be trained thoroughly in disinfection protocols. Identify high-touch surfaces in your operation, and ensure these are disinfected regularly. These include but are not limited to bathrooms, countertops, door handles and other surfaces staff and guests may touch often.

When using any disinfectant, be sure to follow the manufacturer's instructions for use. Follow this with a thorough rinse in fresh water, and allow the equipment to dry completely before use. For more information about choosing a disinfectant, go to [Disinfection of Scuba Equipment and COVID-19](#).

Note that alcohol-based hand sanitisers are incompatible with oxygen-enriched gases.

If alcohol-based hand sanitisers are used before filling cylinders, ensure hands are

completely dry and all alcohol has evaporated. Equipment should be disinfected, especially when it comes into contact with the face, eyes or mouth. This includes but is not limited to:

- Second stage regulator mouthpiece and internal surfaces
- Snorkel
- BCD oral inflator
- Mask

When using any disinfectant, be sure to follow the manufacturer's instructions for use. Follow this with a thorough rinse in fresh water and allow the equipment to dry completely before use. For more information on choosing a disinfectant, go to [Disinfection of Scuba Equipment and COVID-19](#).

Which surfaces should I disinfect in the dive centre?

The CDC recommends disinfection of all frequently touched surfaces. In a dive shop these may include but are not limited to door handles, bathrooms, countertops, card-reading machines, fill stations, equipment workbenches, communal tools and computer keyboards and mice. When using any disinfectant, be sure to follow the manufacturer's instructions for use.

Which disinfectant should we use, and how should it be used?

The choice of disinfectant is up to you; however, you should use a product that has been proven to work against the virus that causes COVID-19. The EPA's "List N" is made up of disinfectants that will kill the virus. Any disinfectant should be used according to manufacturer's directions, as both concentration and contact time differ from product to product. You can find more information [here](#).

How long should I soak equipment in disinfectant to effectively kill the new coronavirus?

This is entirely dependent upon which disinfectant solution you choose. For more information about selecting a disinfectant, see [Disinfection of Scuba Equipment and COVID-19](#).

Is 70% alcohol an effective disinfectant for scuba equipment?

According to the World Health Organization, a solution of 70% alcohol with a contact time of 1 minute would inactivate the new coronavirus, meaning that the surface must stay wet for this amount of time. However, isopropyl alcohol can degrade some types of rubber and plastic with repeated use, so to ensure you do not compromise the integrity of your equipment we recommend contacting the manufacturer for guidance. In addition, please be aware when using alcohol near any source of heat, flame, sparks or enriched gas, that it is highly volatile and flammable, presenting a significant risk of fire and explosion.

Can I use heat or hot water to disinfect equipment?

Theoretically, heat is an efficient way to kill the new coronavirus. However, we are unaware of any studies that have been conducted on the survivability of the virus on scuba equipment. Using heat may not be the best method of disinfecting in terms of time-effectiveness. Some studies have shown that a temperature of between 60-68°C (140-155°F) will inactivate the virus after 30-60 minutes. It does not seem feasible to keep scuba equipment at this high temperature for this amount of time for a few reasons – one being that it could damage or distort some parts and another being that you would have to use a specifically designed hot water bath or constantly monitor and adjust your heating mechanism to maintain a constant water temperature for that duration.

It should be noted that quite a few studies have been conducted to determine temperatures that will kill the new coronavirus. The temperatures specified previously were selected as they are on the lower end of the spectrum tested, and they closely match with the generally accepted disinfection method in the scientific community: 60 degrees Celsius for almost one hour.

INFECTION CONTROL: LIMITING THE SPREAD

How long does the coronavirus survive on various materials and surfaces?

Research on SARS-CoV-2, the virus that causes COVID-19, is still developing, forcing experts to apply knowledge about similar viruses for answers. The human coronavirus 229E was found to survive for 2-6 days on plastic, 5 days on steel, glass, PVC, silicone, Teflon™ and ceramic, up to 8 hours on latex, and 2-8 hours on aluminium. The SARS-CoV-1 virus was found to survive up to 9 days on plastic, 5 days on metal, 4-5 days on paper, and 4 days on wood and glass. Studies of SARS-CoV-2 have found that it can survive for 2-3 days on plastic and steel, 24 hours on cardboard, up to 4 hours on copper and up to 3 hours in aerosols (from a cough or sneeze). Little data exists on the survivability of SARS-CoV-2 on fabrics. Disinfection – in conjunction with additional practices such as social distancing – remains a vital part of reducing the risk of viral transmission between divers using rental equipment. For more information, go to [COVID-19: Surface Survival Times](#).

Is COVID-19 transmissible through water? If so, does the risk vary based on type of water, i.e. swimming pools, open fresh/saltwater and rinse tanks? Will adding a disinfectant to the water be sufficient to inactivate the virus? What about adding regular hand soap to the rinse tank water?

Currently it is not known whether the new coronavirus can be transmitted in a rinse tank with communal equipment, however studies on other coronaviruses have shown that they survive well in surface water such as lakes and rivers. With this research in mind it would be



prudent to assume that the virus will survive in a rinse tank and, although diluted, could remain infectious. According to the CDC the virus would be inactivated in a properly treated swimming pool, however rinsing equipment in a swimming pool is not an acceptable method of disinfection.

A disinfectant solution must be used according to the manufacturer's directions, and these usually include specific dilution requirements and a statement instructing the user to thoroughly rinse the disinfected item and allow it to dry. Therefore, a disinfectant solution should be mixed and used separately from the freshwater rinse tank. Best practice in this case would be to have divers disinfect equipment before rinsing to avoid contamination of the rinse water. Hand soap is not a viable option for disinfecting. The US Environmental Protection Agency (EPA) has a list of disinfectants that will kill the virus called "List N"; a disinfectant should be chosen from this list or from among registered disinfectants from other local governing bodies.

Would the use of protective gloves reduce the likelihood of contaminating materials and surfaces?

The use of protective gloves will only protect the hands of the person who is wearing them. They do not protect the environment or other people. While they might be useful for people handling items, they would not protect items from becoming contaminated if the virus is present on the outside of the gloves.

Should I require staff and divers to use an alcohol-based hand sanitizer before filling cylinders or connecting their regulators or rebreathers to the cylinders?

The use of alcohol-based hand sanitisers is recommended only when soap and water

is not available. Alcohol-based substances should not come into contact with some equipment, including cylinders and fill whips that are used with oxygen enriched air. This would increase the risk of fire and explosion due to the high volatility of alcohol and its ability to ignite at relatively low temperatures.

If I close my dive centre at 8:00pm and reopen the next morning at 8:00am, would this be enough time for the virus present on surfaces and floors to become inactive?

Studies suggest that the new coronavirus may remain active on surfaces for as little time as a few hours or as much as 9 days. This may vary under different conditions (e.g., type of surface, temperature and humidity). Studies have also revealed that it is possible to render the virus ineffective through simple disinfection procedures with easily obtainable products. This should be done before you leave in the evening.

EQUIPMENT AND OPERATIONS

Can rental equipment still be rented and used?

You can continue to rent equipment, but you should take additional care, including but not limited to the following:

- Restrict access to the rental area: Bring the rented equipment out to the client.
- Disinfect returned rental equipment thoroughly according to directions on the selected disinfectant. This should include second stage regulators, BCDs, wetsuits, snorkels and masks. Rinse thoroughly with fresh water and allow to dry before renting them out again.
- Maintain a separate area for returned rental equipment to avoid contamination of equipment that has already been disinfected.
- Instruct clients not to touch the cylinder valve outlet or regulator inlet when

assembling and disassembling their scuba unit. Alternatively, consider providing divers with a pre-assembled rental set and instruct them to not disassemble the set after the dive. As long as your staff work with clean hands or gloves, this will prevent contamination of the cylinder valve outlet and first stage regulator inlet.

- Instruct staff how to handle used rental equipment, how to properly disinfect the materials and protect themselves.
- If a client dives with you for several days, label the rental equipment so that the client always gets the same equipment. The other listed recommendations still apply.

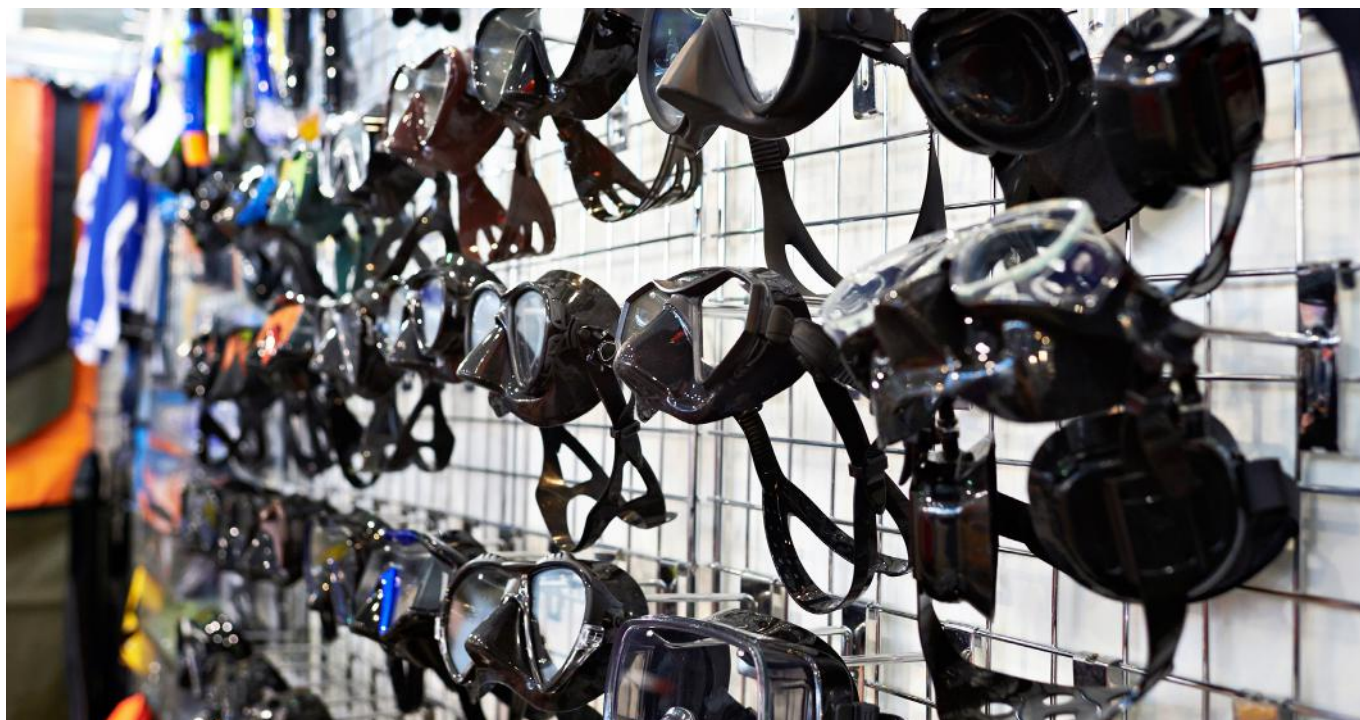
Should an individual mouthpiece be used for every client who rents a regulator?

If you wish to provide each diver with their own mouthpiece this will reduce some of the risk of contamination. However, exhaled air will enter the second stage and potentially contaminate the inside of the regulator. If not properly disinfected, this could cause infection of the next person to use the regulator. Proper disinfection should be used in addition to providing individual mouthpieces.

Can the coronavirus survive inside the bladder of a BCD? What are DAN's recommendations for oral inflation?

It is not known if the virus will survive inside the bladder of a BCD. Instruct divers not to orally inflate rental BCDs, as this increases the risk of contaminating the inside of the bladder.

If possible, consider taking rental BCDs that have been orally inflated out of service for the predicted survival time of the virus. This would reduce the risk of transmission between divers. It may also be prudent to consider mitigation measures for the release of air from the BCD (if it has been orally inflated), as the



virus could theoretically be aerosolized with any water vapour that leaves the BCD as you deflate it to descend.

In terms of disinfecting the BCD, the best practice may be to thoroughly disinfect the outside of the BCD and avoid oral inflation. Recommendations for disinfecting the bladder of the BCD are unclear. The use of disinfectant solutions should always be followed by a rinse with fresh water to remove the active ingredient. This helps avoid inhalation or ingestion of the disinfectant and prevents the active ingredient from damaging equipment over time. It is unclear whether remnants of disinfectant solutions inside the BCD bladder would affect the health of a diver through inhalation or ingestion or would cause damage to the bladder material.

What should I do when a client wants to try on a mask or other equipment?

Any mask or other equipment handled by clients should be properly disinfected, rinsed with fresh, clean water, and allowed to dry. In the case of masks specifically, alcohol or other disinfectant wipes could be used for disinfecting. It is recommended that wetsuits not be available to try on. However, if this is really necessary, they should be removed from sales stock following fitting and stored for nine days to allow the virus to die naturally.

If I run my compressor, is there a chance that the compressed air inside my cylinders could be contaminated? Can the new coronavirus get into my filled cylinders?

The new coronavirus is small enough to theoretically enter the compressor without being caught by the filters. The compressor will heat the air up to well above 150°F after each stage of compression. In addition, during each stage, the peak, instantaneous temperature due

to near adiabatic heating that occurs during compression, can be at least 182°C (360°F) inside the cylinder; irrespective of whether the compressor is cold or warm. This will therefore occur multiple times. These temperatures are hot enough to eliminate infectivity. Therefore, no live virus should enter a scuba cylinder during filling. It can, however, enter a cylinder if the fill whip or cylinder valve is contaminated, such as by being touched by an infected person. For this reason, it is important to practice hand washing and disinfection of high-touch areas including cylinders and fill stations. For more information, see the "Heat" section of our article [Disinfection of Scuba Equipment and COVID-19](#).

What actions should I consider during dive boat operations to prevent possible COVID-19 transmission?

This situation is one in which the risk of transmission will be high due to the limited space and proximity of people. At a minimum, consider the following suggestions:

- Consider reducing the number of divers per boat to better respect social distancing, and discourage any non-diving passengers.
- Any materials not needed for the dive operations or for safety reasons should not be taken on board.
- Have all equipment on board before you start boarding the divers.
- Have scuba units assembled before divers board.
- Consider protecting masks, snorkels and second stages/mouthpieces by wrapping them in plastic bags to avoid contamination.
- Boarding procedures should be organised to respect social distancing at all times.
- Pre-dive mask rinse buckets should not be used. Anti-fog should be used, but spitting in masks should be discouraged or disallowed (especially for rental masks).

Consider having divers supply their own masks instead of providing rentals.

- Staff should wear gloves when handling equipment.
- Social distancing is important to prevent the spread of a virus, but one should keep in mind that on a moving boat or in the wind, the virus may travel a longer distance. The use of protective masks will reduce the risk of contamination, but the virus can be present on any surface on board.
- Advise everyone on board to avoid touching anything where possible and to avoid touching their face.
- Remind divers not to share equipment or even let their equipment touch.
- Maintain social distancing while divers enter the water; and ensure that divers do not crowd together on the surface.
- Encourage divers to maintain at least 6 feet of distance when clearing their nose, sinuses or throat at the surface, or after a dive.
- Maintain social distancing when divers get back on board.
- If your operation has chosen to provide all divers with pre-assembled equipment, the crew should change cylinders and either disinfect their hands prior or wear gloves when doing so.
- Encourage divers to handle only their own equipment.

If you would like to learn more as you prepare for resumption of diving activities when local regulations permit, keep an eye on [DAN.org/COVID-19](https://dan.org/COVID-19) for more comprehensive recommendations to help you prepare.



THE DIVING COMMUNITY JOINS IN THE C-19 FIGHT

FEATURE **MICHAEL MENDUNO**



While the diving industry has been all but shuttered as a result of the coronavirus pandemic, some diving organisations are providing their unique expertise to help in the fight against the virus, and more are likely to join as the pandemic continues. Watch this space.

In response to calls from health providers inquiring whether British rebreather manufacturer AP Diving, could help increase their capacity to provide oxygen to sick patients – doctors were concerned that many patients' oxygen saturation levels were too low when arriving at the hospital – Managing Director Martin Parker sprang into action. In a day, Parker and his team had developed and tested a low-tech, adapter costing £6, that can be fitted to the first-stage scuba regulator on an O₂ cylinder and provide a constant adjustable flow of oxygen at 7-9 litres/min to patients through a "non-rebreather" medical mask.

Shortly thereafter, the British government closed all non-essential factories such as AP Diving, but Parker brought in a skeleton crew to produce a supply of adapters called SCUBA2MED2, to be given for free to individuals and organisations in need. They then sent engineering drawings to regulator manufacturers such as Apex and Interspiro, posted the drawings "open source" for others to reproduce, and let their customers know.

They have also tried to address the needs of their local community. "We have equipped our employees who are trained primary care responders including oxygen administration, with O₂ cylinders and adapters just in case they have relatives in need," Parker said. One bureaucratic hitch: in some countries diving oxygen is not supposed to be used for medical applications or be dispensed by non-medically trained personnel but these are extraordinary times.

"I think you agree with me," Parker offered "We're not dealing with normal circumstances in this crisis. Many divers are sitting on perfectly good oxygen, which has to pass tighter impurity controls than medical oxygen, if only they could deliver it at a fixed rate."

Another UK-based diving equipment manufacturer, Narked at 90 has also entered into the fray, using their in-depth technical engineering expertise to supply oxygen control and monitoring systems for the new OxVent ventilators manufactured by Britain's Smith+Nephew. The OxVent design is the result of collaboration of scientists, clinicians and med-tech manufacturers from the University of Oxford, King's College London and Smith + Nephew itself, and is meant to allow for large-scale production amid the shortage of ventilators in the UK and around the world. It is currently being reviewed by the government for authorization.

"We are truly proud to be able to provide our expertise and key components in support of this project, and to play a part in solving the current ventilator challenge that the NHS is facing," Brent Hudson, Narked at 90 co-owner and technical director said. "We're trying to save as many lives as possible!"

The Brits aren't the only ones applying their technical expertise to helping to save the lives of COVID-19 patients. Divesoft co-founder and engineer Aleš Procházka joined a consortium of individuals from the Czech tech industry, educational institutions and government to develop a quality low-cost, open source-design ventilator that can be produced worldwide.

The medical ventilator's design features include the use of easy to manufacture parts, a user-friendly interface that minimises the training requirements, simple assembly, and more. The design also includes the ability to run on bottled oxygen and "regular" filtered compressed air, as well as compatibility with hospital systems. They hope to have 500 ventilators ready for delivery by mid-April at a fraction of the US\$20,000 cost of traditional units.

"I'm focused on the development and construction of pressurised valve prototypes," Procházka explained. "It's a safety valve which limits the oxygen pressure that a patient breathes to ensure the device doesn't cause injury to the lungs." Divesoft produces similar valves for their Liberty rebreathers.

WHO WAS THAT MASKED MAN?

In March, SANTI Diving, which makes drysuits, joined a Polish nationwide campaign #BusinessSupports, and devoted a portion of its production facilities in Gdynia, Poland to making protective facemasks for health workers. The masks were donated to the local Pomeranian Hospitals Group.

"We made the decision some time ago," said SANTI founder Tomasz Stachura, "and has become even more significant in the face of current crisis." SANTI has also started producing prototypes of hazmat suits and protective visors to protect healthcare professionals against the Coronavirus disease.

In the US, in response to the CDC's new recommendations for people to wear cloth masks in public, Waterlust, a Florida-based family business started by ocean scientists which makes ocean-themed advocate-apparel, began producing colourful protective masks that they sell at their US\$3 cost.

The company has also partnered with the City of Miami government to donate masks to fellow Floridians who might have a difficult time acquiring one for themselves such as the homeless, and elderly, etc. They are currently helping to distribute some 500 masks locally.

For people that don't need a mask but still want to help, they've setup a "donate masks" page where you can contribute funds for mask donations; 100% of the funds go towards manufacturing masks.

Face masks, which divers are well familiar with, are obviously critical to protect health care workers as well as consumers from the onslaught of the pandemic. That was likely part of the motivation for Italian Company, Mestel Safety, which builds full-face masks for snorkelling and scuba diving under the Ocean Reef Group brand Ocean Reef, filed an international Patent for an adapter to connect their masks to P3 and other types of filters transforming it into a personal protection mask. Reportedly, the mask maker has an installed base of some 1.25 million users.

According to the company, the mask with adapter is not meant to replace standard personal protection equipment (PPE). "We are just offering a possible solution, in a time of dire need, to physically create a barrier, with the possible addition of a filter, to contagious droplets," a company spokesperson said.

Last week, Italian diving equipment manufacturer Mares together with 3D printing companies Nuovamacut and Mira Meccanica in Bologna, announced that it was converting Mares' full face Sea Vu Dry snorkelling masks for use with CPAP ventilators to treat COVID-19 patients. The idea initially came from Dr. Renato Favero, former Head Physician at GardoneValtrompia Hospital in Brescia, Italy. To date, masks have been provided to hospitals in Genoa, Parma, La Spezia, Lavagna, and Savona in Italy, with plans to reach more soon.

France's Subea's Decathlon brand, which manufactures the "Easybreathe" full-face snorkelling mask has also joined the fight. They were contacted by an Italian 3D printing start-up called Isinnova, that had developed a printed valve called the "Charlotte Valve." The valve attaches to a snorkelling mask enabling it to connect to a hospital's BiPAP machine, which then pumps pressurised air into the mask, making sure patients' lungs don't collapse. The adapted Easybreathe masks allow doctors to treat some patients with respiratory problems without having to put them on ventilators, which are in increasingly short supply. Subea has donated tens of thousands of masks for use across Europe in this effort, while Isinnova has made the design freely available.

FIGHTING THE VIRUS MANO A MANO

Diving manufacturers aren't the only ones on the front lines helping to fight the pandemic. DAN Europe's Benelux Medical Director Dr. Peter Germonpré, Dr. Oscar Camacho from DAN Portugal, and the Area Director DAN Europe Germany, Austria & Hungary, Dr. Ulrich van Laak, who also serves as an active Naval Medical Officer the German Naval Institute of

Maritime Medicine, are all fully engaged in the battle in their respective geographies. They are not alone.

Dr. Stefano Manera, a specialist in anesthesia and critical care medicine, who serves as one of DAN Europe's medical doctors, left his home in Milan, last month to volunteer at the intensive care unit at the Papa Giovanni XIII hospital in Bergamo, located in the so-called "Red Zone, that is, in the epicentre of the epidemic in northern Italy.

"As an anesthesiologist, I have always worked on the front lines throughout my professional life including working as a volunteer in Africa for many years," explained Manera. "It was absolutely normal to respond to the cry for help. I don't think I made a heroic gesture; I simply responded to my sense of duty and the desire to help people," he said.

Manera says the shifts are long and tiring because of the protective devices that they have to wear, and the decisions are complex and stressful working with sophisticated life support equipment and gas mixtures that require constant attention. "As a diver and as a diving doctor, I like to think that every shift is a bit like facing a very demanding technical dive where you need to plan every detail in order not to risk your life and be able to get out of the water unharmed," Manera elucidated. "In this case, dark water is the disease and immersion is our cure path."

WE'RE LOOKING FOR INFO

Do you know of other diving organisations or individuals helping in the fight?
If so, please contact us at: editor@alertdiver.eu

ABOUT THE AUTHOR

Alertdiver.eu's contributing editor Michael Menduno is an award-winning journalist and technologist who has written about diving and diving technology for more than 25 years. He coined the term "technical diving." His work has appeared in magazines such as Alert Diver, DeeperBlue.com, DIVER, Quest, Scientific American, Sports Diver, Undercurrent, Undersea Journal, WIRED and X-Ray. He founded and served as editor-in-chief for aquaCORPS Journal (1990-1996), which helped usher tech diving into the mainstream of sports diving. He also produced the first Tek, EuroTek and AsiaTek conferences. Michael is on the board of the US Historical Diving Society, and serves as the editor-in-chief of InDepth, Global Underwater Explorers (GUE) online magazine.

SCUBA EQUIPMENT CARE

RINSING AND CLEANING DIVING EQUIPMENT

FEATURE **GUY THOMAS**



Maintenance, or “the process of keeping something in good condition” isn’t just needed to keep the warranty valid, but can prolong the life of your scuba gear; and even keep you alive.

WHO ARE THE ENEMIES?

The two biggest enemies of our scuba gear are salt water and sun.

Salt is dissolved in sea water and from the moment water starts evaporating, salt crystals form, and this could lead to jammed zippers, leaking or sticking valves, free-flowing regulators and buttons stuck in “open” position.

WHO ARE OUR FRIENDS?

The maintenance technician, and fresh water! Rinsing is the magic word. Rinse everything with fresh water, after every dive. Incidentally, diving in pool or fresh water doesn’t release you from cleaning and washing your kit. Chlorine (pool water), dirt and bacteria (fresh water) need to be removed as well.

GENERAL RINSING PRINCIPLES

Try to keep the time between the dive and

the rinsing as short as possible, to prevent salt crystals to form. Use lukewarm water rather than cold water; allowing crystals that may have formed to dissolve better.

In some dive centres you don’t have access to a water hose to rinse your equipment, but you can place it in tubs with “fresh” water; and give it some time to make sure salt is washed off. But where does all that salt go? Right into the tub! Most dive centres change the water often, but when a large number of divers use the tubs at the same time, it is less effective than a water hose or shower. To reduce this issue, some centres provide a separate tub for regulators, computers and photo gear; as these items are more sensitive.

Don’t soak or rinse for just a few seconds: you need some time to remove salt or dirt from the equipment.

There is nothing we can do to avoid salt crystals forming, but we can prevent them from building up. Exposure to the sun (drying your kit after a dive) will allow crystals to form more quickly, and direct contact with sunlight decreases the lifetime of your kit in any case.

Salt water, fresh water, pool water, even the water you clean with can also cause Calcium deposits.

Dive suits and fins require less care, but water gets everywhere, so keep in mind that every piece of equipment with grooves, overlapping parts such as hose protectors, valves, buttons, couplings and moving parts is prone to salt crystals and calcium deposits, with risks of possible malfunction, leaks or a decreased lifetime.

Then there’s the BCD, especially the internal bladder. Water can/will get inside, and humidity, bacteria and warmth are a perfect mix for fungus to grow. Additionally, salt crystals on the inside can damage the bladder itself, so rinse the internal part too.

Take some time to rinse dive computers, and keep metal contacts clean to avoid corrosion.

Regulators require special care. There are several parts where salt deposition is possible, so rinse them thoroughly, avoiding to let water into the first stage. Soak or rinse them with their protection caps fitted, and don’t press

the purge button when immersed and not pressurised. It is recommended to turn all moving parts – such as air flow controllers – and to lower hose protectors during the cleaning process, to make sure all salt is removed.

Last but not least, dive equipment does not like alcohol, oil, gasoline or chemical solvents, as they might degrade materials. Avoid contact with these chemicals!

DISINFECTION & CLEANSING AGENTS

Washing dive equipment in a machine washer is not recommended. Neither is the use of strong washing agents. Mild cleansing agents or special products such as anti-odour solutions or wetsuit shampoo will remove dirt, kill bacteria and deodorise neoprene correctly. Always follow the manufacturer's instructions before use.

Disinfecting agents – when not already part of the cleansing agent – are recommended, especially for BCDs and all equipment coming into contact with your face and mouth: regulators, snorkels masks. Most of the water

we dive in – be it ocean, lakes, freshwater springs and even swimming pools – contains bacteria. Keep it in mind, in case of repeated mask clears or mask removal/replacement. Defogging your mask with saliva also increases the bacteria population.

Use a special or mild cleansing/disinfecting agent for the BCD internal bladder: Get water and cleansing solution into the BCD through the inflator hose. Once cleaned inside, rinse with fresh water; inflate and drain any remaining water from the inflator hose.

For a more in-depth consideration about dive equipment and microbes, read our article Germophobia: <https://bit.ly/3fxDYkj>.

WHAT ABOUT ZIPS?

Dive suits, boots and even our dive bags have zips which, if not properly maintained, don't slide smoothly anymore over time. The reason can be salt and calcium deposits, sand or dirt, and will ultimately lead to a broken zip. Cleaning with fresh water is the first thing to do. Use a toothbrush to remove any sand or dirt. Some commercial products (with

incorporated brush) are available for cleaning and lubricating these zips.

With dry suits the zips are a fragile and expensive component and special care is required. It is therefore recommended to use Zip wax or Zip oil to keep the zip lubricated. When the zip gets dry you will notice a resistance, and too much force to open or close a zip is a clear sign that maintenance was not done well.

OFTEN FORGOTTEN

All items that are usually carried in pockets (BCD or dry suit), cylinders and everything inside a pouch or rolled up (such as retractors or DSMBs) tend to be forgotten. Rolled up items need to be unrolled when being washed, and the inside of the SMBs and release valves need to be rinsed as well. Some extra care is needed for the boot assembly of the cylinder, as salt water will remain behind between the boot and the cylinder, leading to corrosion.

Once we have rinsed and cleaned our gear, we need to dry and store it. This will be discussed in our next article.



FIT DIVER: ACTIVATION & WORKOUT

FEATURE **CRISTIAN PELLEGRINI**



THE ULTIMATE FITNESS WORKOUT PROGRAMME FOR DIVERS

How much time and money do you invest in choosing and purchasing the right dive equipment? Now ask yourself: are you really making the most of it?

Most of us tend to forget what actually is the most important piece of our diving equipment: ourselves.

In fact, your experience in and out of the water would be greatly enhanced if you were to improve your strength, resistance, and flexibility.

Again, ask yourself: would you be ready to effectively face a sudden change in weather or sea conditions (e.g. strong currents), or manage an emergency (e.g. transport of an injured buddy), or quickly respond to an equipment failure, using the necessary aerobic and anaerobic capacity, and with the right timing? Would you be ready to sustain an unexpected physical effort, or to control your emotional state?

Were there times when even managing simple activities such as transporting your equipment, perhaps on unstable soil (e.g. on a boat during poor weather conditions and perhaps rough seas) represented a challenge for you? Then, it's high time you trained!

The following is a training programme aimed at improving or maintaining a proper state of physical fitness that will also enhance your performances in diving, reduce the risk of

injury or accident, better react to emergencies or sudden changes of certain conditions, or simply enjoy diving at its best!

SETTING REASONABLE GOALS

It's all about expectations. Through our training programme, we intend to:

- Increase joint mobility
- Increase joint stabilisation
- Improve general strength and body proprioception – the ability to control your body through postural rebalancing.

We will try to reach our target through a series of 4 routines (functional primitive movements) specifically designed and built for the needs of divers, at any level. Whether you are an athlete or not, this workout can serve as a useful tool for optimally training all the structural components, generating a safe and effective body movement. Not only muscles will be involved, but also joints, tendons, ligaments, the connective tissue that constitutes the bands giving life to the muscle chains, as well as the nervous system.

This will result in an improvement in joint mobility and proprioception, as well as coordination, reactivity and ultimately strength, speed and power.

www.youtube.be/DrdQBWUVO6M

ADJUST THE PROGRAMME TO FIT YOUR NEEDS

This functional training system can be carried out just with your body weight, or using loads – such as diving equipment itself.

Routines consist of a sequence of postures of global stretching, mixed with dynamic, multi-articular stretching and movements to enhance general strength.

In the video, the static positions (marked in white) will be maintained for about 7 seconds, while the strength series (marked in orange) consists of 8 repetitions. Depending on your needs, you can vary the holding time, the width of movement, or the number of repetitions.

By reducing or increasing the holding time you can put an emphasis on cardiovascular fitness or postural rebalancing and global myofascial release.

Progressively increasing the amplitude of movements will act on the recovery or maintenance of the full range of motion in joints. Increasing the number of repetitions of the exercises will increase the general strength, and a multi-articular and proprioceptive strengthening/stabilisation.

We hope that this programme, combined with general cardiovascular training (see WHO guidelines), will positively influence your underwater activity!

"Fitness is not about being better than someone else. It's about being better than you used to be"

MEET THE TRAINER

Matteo Del Principio is a qualified Professional Strength & Conditioning Coach with extensive experience in basketball championships (A1, A2 and B Basket Leagues). In 2016 and 2017 he was a Professional Strength & Conditioning Coach for National Youth Teams (FIP – Italian Basketball Federation) and completed an internship in NBA with the Atlanta Hawks team. He has also been a Professional S&C Coach for several motorcycling riders in the MotoGP and World Superbike Championships.

Find Matteo on Facebook and Instagram.



UPCOMING EVENTS

EDA MOVIE NIGHT WITH VOX CINEMAS

DOCUMENTARY TBC | Location TBC
Wednesday 5th August 2020

DID YOU KNOW?

BLUE MANIFESTO – ROADMAP TO A HEALTHY OCEAN IN 2030



Environmental NGOs launched new rescue plan for Europe to make our ocean healthy by 2030 – Today, 102 environmental organisations (1), led by Seas At Risk, BirdLife Europe, ClientEarth, Oceana, Surfrider Foundation Europe and WWF are launching the “Blue Manifesto” (2). The rescue plan lays out concrete actions which must be delivered by set dates in order to turn the tide on the ever-degraded and polluted ocean and coastlines.

To be successful, change is needed on both land and sea. The NGOs call for:

- At least 30% of the ocean to be highly or fully protected by 2030
- Shift to low-impact fishing
- Securing a pollution-free ocean
- Planning of human activities that support the restoration of thriving marine ecosystems

The situation in marine ecosystems around the world is dire, as stressed by recent reports released by the UN Intergovernmental Panel on Climate Change and by the UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (3). Urgent action is needed and Europe can play a leading role in facing this challenge. Heeding the recommendations presented in the Blue Manifesto will put Europe on the right track to protect and restore the ocean, which is under increasing threat and on which life on Earth depends (4). With the European Green Deal (5), the European Commission has committed to implement real climate and biodiversity strategies that will shift investment and legislation towards a climate-resilient and ecologically diverse future. NGOs now call on the European Commission to ensure the ocean is an integral part of these strategies by following the guidelines proposed in the Blue Manifesto.

Monica Verbeek, Executive Director at Seas At Risk said: “The ocean covers 70% of the Earth’s surface, mitigates climate change and provides oxygen – it is the planet’s support system. To perform its vital functions the ocean needs to be healthy and populated with life. We call on the political leaders of the EU to bring the ocean at the core of the political agenda and make a healthy ocean a reality. The joint Blue Manifesto launched today is the Blue answer to the European Green Deal.”

Bruna Campos, Senior Marine Policy Officer, BirdLife Europe & Central Asia said: “Saving the oceans means saving both marine species and their habitats. It is about actively restoring our seabeds and halting ongoing destructive fishing. It is incomprehensible how fishing vessels are still allowed to bycatch dolphins, seabirds and sea turtles. We need a transformative change to save our oceans in the next ten years. Nature at sea is in crisis because we lack commitment to change the status quo, and we can no longer afford it.”

Flaminia Tacconi, EU fisheries lawyer of ClientEarth said: “Sustainable fisheries law with ambitious environmental objectives will need to be implemented and enforced to have healthy oceans by 2030. We also need to promote a strong culture of compliance through transparent, reliable and accountable decisions in the EU.”

Pascale Moehrl, Executive Director of Oceana Europe said: “The EU has more water than land surface and, as a world economic power, should lead by example. EU seas are extensively used and need to be restored to their former abundant state rather soon. The EU must urgently act to ensure that all fishing is sustainable. It is in the hands of EU decision-makers to take action. Vibrant oceans mean healthier global ecosystems.”

Antidia Citores, Spokesperson for Surfrider Foundation Europe said: “Human activities on land and at sea are severely impacting the ocean. They are affecting all waters through visible and invisible pollution resulting from plastics, contaminants, chemicals but also oil leaks and noise. They are impacting the resilience of the ocean and the health and well-being of millions of citizens. The EU must deliver with concrete measures for a clean, healthy and pollution-free ocean”.

Samantha Burgess, Head of Marine Policy at WWF European Policy Office said: “Urgent action must be taken to ensure the resilience of our ocean in the face of the climate emergency, beginning with the restoration of marine biodiversity. A network of Marine Protected Areas covering at least 30% of the ocean with long term budgets and management plans, alongside planned and sustainable management for the remaining 70%, will support thriving marine ecosystems. The EU must ensure effective policy implementation to deliver this vision.”

THE BLUE MANIFESTO IS AVAILABLE AT: <https://bit.ly/3cmqrKd>



Chairman | Essa Abdulla Al Ghurair
Vice Chairman | Marwan Faraj Al Mehairbi
Secretary General | Jamal Bu Hannad
Financial Director | Khalfan Al Muhairi
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Head of the Technical Committee | Omar Al Huraiz
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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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