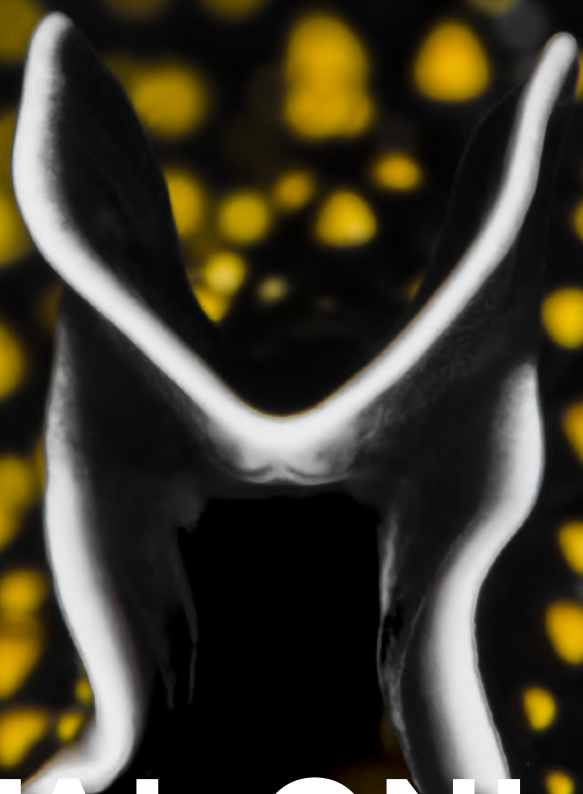


Inspiring People to Care About our Oceans Since 1995

# DIVERS

## FOR THE ENVIRONMENT

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# DIGITAL ONLINE'S

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INSPIRING CHANGE TO MAKE A DIFFERENCE TOGETHER

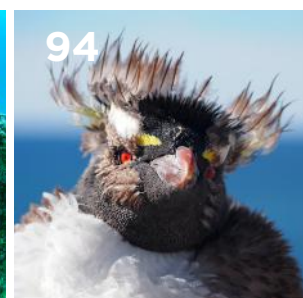
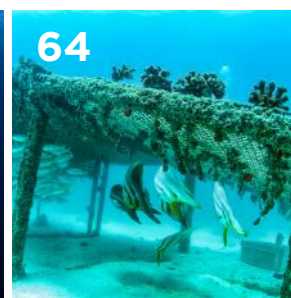
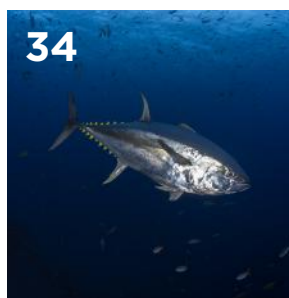


**CLEANUP ARABIA 2021 | THE UAE'S CLEAN-UP CAMPAIGN!**

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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 2021. Send all articles, feedback or comments to: [magazine@emiratesdiving.com](mailto:magazine@emiratesdiving.com)

## COVER

PHOTO BY ABDULLA ALALI  
Digital Online 2021 | Creative Underwater Photography  
[www.instagram.com/dive.world](http://www.instagram.com/dive.world)





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# BE RESILIENT & AGILE



**IBRAHIM AL-ZU'BI**  
EDA's Co-Founder

I would like to welcome you all to the June issue of 'Divers for the Environment'. Half of 2021 has already gone and we are getting ready for another hot summer, and trying to live the new norm during the pandemic. I hope you have all managed to get the vaccine where possible, and you have been enjoying some diving and the marine life.

The diving industry and community have been busy the last 6 months and I am sure they will be even busier in the next months to follow. In a time marred by pandemic-driven volatility, 2020 forced the world into an unpredictable 'pause' – oscillating between peaks of uncertainty, and troughs of human loss. Yet, despite being subject to what remains undeniably amongst the worst of our times, the UAE was anything but a silent spectator. As a country committed to global citizenship, 2020 presented an opportunity for the UAE to epitomise this philosophy – starting with its own exemplary management of the health and wellbeing of its society, actively aiding COVID-19 containment and relief measures for the international community. Throughout this period, the UAE's resilience received global acclaim as it delicately balanced the sustenance of lives and livelihoods. Refining its approach real-time demonstrating uncompromised efficacy in safeguarding both visitors and residents, it became one of the first countries to reopen and welcome the world. Given the extraordinary efforts that have been made to ensure public safety, divers can safely enjoy the UAE's marine life and this is all because of the country's resilience and agility.

Last month, we held the 12<sup>th</sup> year cycle, announcing this year's winners of Digital Online's Underwater Photography and Film Competition. I thank all our underwater photographers and videographers for submitting their amazing photos and short films of the varied marine life from all the places they have dived. It is very inspiring and beautiful as usual – I am sure you will all agree with me when you see the photos in this issue. I also want to thank the judges, the sponsors, and the EDA team for another successful event towards promoting for diving, not only in the UAE, but the whole region and around the world.

As we stand today and take stock of the half year gone by, we acknowledge each and every EDA partner; the dive centres and members for their vital support through one of the most challenging periods on record. It is this spirit of symbiotic partnership that remains at the heart of our journey to inspiring people to care about the oceans as we look beyond this present moment in time.

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

Stay Safe,

Ibrahim N. Al-Zu'bi

# NEMO DIVING CENTER

## INTRODUCE THEIR NEW LOCATION WITH A CLEAN-UP EVENT



Nemo Diving Center have officially announced their move to the Azure Residence from their previous location at Dukes The Palm, Royal Hideaway Hotel. What better way to make an announcement than to help the environment out at the same time? Being an experienced diving center they not only train new divers and upskill certified divers, but they aim to protect the ocean and our environment as well.

Having partnered with Nakheel and the Emirates Diving Association, Nemo Diving Center held their first clean-up event on Saturday the 3<sup>rd</sup> of April for the Palm Jumeirah community. They had 23 volunteers who had dedicated their time to come down and help the five dive instructors. Utilising their beachfront property, the welcome message was delivered by Nemo's Dive Instructor, Mohab who outlined the purpose of the event. He shared some key facts to reinforce the impact they were trying to make.

Ocean pollution isn't news to anyone, which is why these types of events are welcome and needed around the world. Nemo Diving Center wanted to make an impact and be one of the solutions in removing as much debris from the waters in which they dive every day! Being their first event, they weren't sure exactly what they would find, however they were sadly made aware by the amount of debris they came back with.

Collectively, each diver brought up a bag full of

trash from the sea. 17 bags were filled in total with divers mainly focusing on the beachfront area of Azure Residence down to a depth of 8 metres. The debris was extremely varied from numerous plastic bottles, drifting fishing nets, balloon debris, plastic bags, to large metal poles, plastic buckets and much more.

They also had some volunteers searching the shoreline and neighbouring rock formations to find more plastic bottles, plastic straws, numerous cigarette butts, including maintenance and cleaning materials – silicon bottles, and a very badly corroded shovel.

Continued education and regular events like these will be the only way to continue making an impact. This is just the start for Nemo Diving Center, with many more educational events being organised. They hope that they continue making an impact in the Palm Jumeirah community and if you want to be involved in any upcoming events, please message them on Instagram: [@nemo\\_diving\\_center](https://www.instagram.com/nemo_diving_center).



### ABOUT NEMO DIVING CENTER

Nemo Diving Center was established in 2014 in Dubai, UAE and continues to offer high-quality services to thousands of divers throughout the world. We offer diving excursions in both Dubai and Fujairah to certified divers, and train all levels – from beginners to experienced divers. People can get to know the enchantments of the sea safely and easily by doing their first dives with us.

We are proud of our dedication to our high safety standards, clean and comfortable facilities, and friendly, experienced staff. Diving is a serious occupation to us, and our way of life.



## ENVIRONMENT AGENCY - ABU DHABI JOINS FORCES WITH THE NATIONAL AQUARIUM TO PROTECT THE WILDLIFE IN ABU DHABI



The Environment Agency - Abu Dhabi (EAD) has signed an official agreement with the largest aquarium in the Middle East – The National Aquarium – to help create the largest and one of the most innovative rehabilitation schemes of its kind to protect and rehabilitate wildlife in the emirate of Abu Dhabi. According to the agreement, both parties will be working closely together to conserve wildlife, specifically wild sea turtles, which will be rehabilitated within the aquarium.

The virtual signing ceremony was held between Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of EAD and Fouad Mashal, CEO of Al Barakah International Investment, developer of Al Qana and The National Aquarium.

Furthermore, the five-year contract outlines how The National Aquarium will support EAD with some of its ongoing wildlife conservation programmes, the development of new awareness campaigns and unique educational experiences in the region. The National Aquarium will also work with the agency in further research studies and gathering of data, while encouraging exciting internship opportunities for students of biology, ecology, and veterinary education.

Her Excellency, Dr Shaikha Salem Al Dhaheri, EAD's Secretary General said, "We are delighted to initiate this rehabilitation project, in collaboration with The National Aquarium. Having such facilities within the confines of Abu Dhabi will assist our continuous efforts to preserve wildlife in the emirate. By collaborating with The National Aquarium, we will be able

to rehabilitate various wildlife species before releasing them into their natural habitats, while expanding our scientific studies."

She added that sea turtles would be one of the main species that the project will focus on, and this agreement will add to the successful rehabilitation projects that have taken place over the years.

She stated, "We have been working on conserving sea turtles in Abu Dhabi's waters as far back as 2001. Now, the overall foraging sea turtle populations, namely Hawksbill and Green turtles, have been relatively stable over the last decade. Based on data from aerial surveys, we have more than 5,000 wild sea turtles in our waters."

Fouad Mashal, CEO of Al Barakah International Investment, developer of Al Qana and The National Aquarium said, "The National Aquarium is one of the key attractions that will play an important role in Al Qana's life. Beyond the social dining and entertainment destinations, our vision is to also raise awareness in Abu Dhabi and across the globe. With The National Aquarium set to become one of the UAE's top tourist attractions, we have a unique opportunity to speak to people from all around the world about the great conservation work being done here in Abu Dhabi.

We are honoured to partner with EAD and invest in such an inspiring programme. To bring this exceptional project to life, we have hired a world-class team of experts to manage the rehabilitation of important marine and

terrestrial wildlife in the Emirate."

Paul Hamilton, General Manager of The National Aquarium said, "We want to create memorable moments for people to reconnect with nature. Our daily lives have become disconnected from the natural world and while we are slowly realising the impact that humans are having on the environment, there is still a long way to go to address these issues. That is why it is so important to reach new audiences and educate future generations about the importance of protecting and rehabilitating our wildlife and ecosystems."

He added, "We recognise the important role we must play with regards to education and the conservation of Abu Dhabi's natural treasures. Hence, we have constructed specialised facilities and a rapid response vehicle to assist our veterinarians in effectively reacting to wildlife emergencies."

The National Aquarium is going to provide full veterinary treatment support and in-house care, as well as general animal husbandry expertise, until the animals are fully recovered before their release back into nature. They will also collaborate with EAD for satellite tagging and services, when required.

Wild sea turtles are among the most highly migratory animals on the planet, and their numbers are a great reflection of the condition of marine environments. Of the seven species of marine turtles in the world, two occur in Abu Dhabi's waters: the Critically Endangered Hawksbill turtle and the Endangered Green turtle.

## ENVIRONMENT AGENCY – ABU DHABI & THE NATIONAL AQUARIUM START RECEIVING AND REHABILITATING RESCUED ANIMALS



Following the recently-announced partnership between the Environment Agency - Abu Dhabi (EAD) and The National Aquarium, the largest aquarium in the Middle East, the UAE is set to welcome one of the largest wildlife rehabilitation facilities in the region. This facility is located at Al Qana, Abu Dhabi's upcoming social dining and entertainment waterfront destination. The state-of-the-art rehabilitation centre is set to be one of the largest conservation facilities in the Middle East, focused on biodiversity and the natural local heritage. Staffed by a team of international veterinary and aquarist experts from 15 countries, this facility is central to the partnership. As well as helping hundreds of rescued animals every year, it will also act as an important centre of education for students and the general public.

According to the agreement between both parties, a specialised animal rescue vehicle, which is the only one of its kind in the region, will soon be on the Abu Dhabi roads responding to wildlife emergencies reported through EAD. All the rescued animals will receive immediate first aid whilst being transported to The National Aquarium facilities for assessment, treatment, rehabilitation and eventual release.

EAD has a long record of attending wildlife emergencies in the emirate and most of the animals that are rescued from the shores are native species to the UAE, such as the green sea turtles. They are classified by the International Union for Conservation of Nature (IUCN) as an endangered species.

Each animal will have a tailored rehabilitation programme. This rescue programme will go the extra mile to increase its success by doing a pre-release within the aquarium facilities into the UAE's Natural Treasures Lagoon. This is an opportunity for the marine life to utilise more space under the experts' supervision in controlled environments to encourage natural behaviours before being released back into the wild. The public will have a unique opportunity to visit the animals during their pre-release

phase. They will learn about the animals and understand more about the challenges these creatures encounter in the wild. More importantly, the public will learn how we, as humans, can reduce the negative impacts of our behaviour on their natural environments.

Maitha Hameli, Specialist at Environment Agency - Abu Dhabi said, "Our efforts to monitor and protect turtles date back to 1998, thus our partnership with The National Aquarium at Al Qana is essential for our commitment to marine conservation and care of injured marine wildlife. Our mission is to protect and preserve the marine ecosystems and the new rehabilitation facility staffed with The National Aquarium's world-class team of experts is an important addition to reach our goal and protect species that are threatened with extinction.

"We are confident in the quality and readiness of the facilities at the rehabilitation centre. When a call came in regarding an endangered sea turtle, we conducted the rescue and carefully transported her to The National Aquarium's rehabilitation facility for assessment."

Anne Bourbon, Manager of Education and Conservation at The National Aquarium added, "At The National Aquarium, we are all

committed to protecting the Arabian Gulf's wildlife and raising awareness around broad environmental issues. Education is an essential part of the process of connecting the young and adults alike with the stories of these rescued animals. The first and most recently rescued turtle was brought to us by EAD and we can't wait for the public to meet her and learn her story. She is an endangered green turtle and under the care of our experts, she has now passed the critical stage. A key part of our rehabilitation process will be time spent in the UAE's Natural Treasures Lagoon for her to acclimatise to her natural environment prior to release. We anticipate the turtle to be spending six to nine months in our lagoon.

Beatriz Maquieira, Curator at The National Aquarium said, "We are ready to offer full veterinary treatment and in-house care for the rescued animals. Our facilities are fully equipped with the latest technology. We have a hospital, an ICU, and rehabilitation rooms for both marine and small terrestrial animals alike, all this with the support of experienced aquarists and vets."

The National Aquarium's vision is to become a role model in the field of conservation and education through community engagement to preserve the UAE's heritage and help build a more sustainable future.





## ENVIRONMENT AGENCY – ABU DHABI & THE NATIONAL AQUARIUM TEAM UP TO RESCUE ENDANGERED LOGGERHEAD TURTLE

The Environmental Agency - Abu Dhabi (EAD), in collaboration with The Middle East's largest aquarium, The National Aquarium located at Al Qana in Abu Dhabi, announced that it has successfully treated and pre-released a Loggerhead turtle. The rescued female turtle is an endangered species of oceanic turtle as listed by the International Union for Conservation of Nature (IUCN), and is a breed that is rarely seen in the UAE. She was spotted by 'The Emirates Nuclear Energy Corporation's subsidiary; 'Nawah Energy Company' and brought by EAD to 'The National Aquarium's treatment facility. Here, she was nursed back to health and later pre-released with all the 200 other green and sea rescued turtles into the UAE's Natural Treasures Zone in The Aquarium.

After being found entangled in a fishing net that was left stranded by local fishermen, The National Aquarium team of specialists had to overcome a series of different challenges to save the turtle from the heavy damages inflicted by the fishing net. In fact, as they began to operate on her, they found multiple broken bones and expelled swelling due to the damage caused from the net, which sadly led to the loss of another one of the turtle's flippers. This means that she will not be able to survive alone back in the wild, as she was found already missing one flipper due to unknown causes, and will have to remain within the aquarium for permanent care.

Throughout her intensive two-week treatment plan, the rescued turtle received outstanding levels of care, including overseas attention from Vets Dr. Claire and Dr. Max who are based in the UK and Florida respectively, and are part of the Sea Turtle Rescue Alliance which is a global network for sea turtle rescue centres to share clinical knowledge and data to enhance medical practices at facilities worldwide.

The loggerhead turtle's survival was uplifting news to the whole team but it is extremely unfortunate that she will not be able to return to her natural habitat. Loggerhead sea turtles are a fundamental link in the marine ecosystem and help maintain the health of coral reefs and seagrass beds which are essential to the survival of all oceanic life. The National Aquarium calls upon all citizens and fishermen around the UAE to always respect the nature that surrounds them and remember the collective consequences of their daily actions.

EAD calls on the community to report any injured wildlife or environmental emergencies through the Abu Dhabi Government Contact Centre at 800555.





# AL WATHBA WETLAND RESERVE

## TO TEMPORARILY CLOSE TO PROTECT BIRD NESTS



The Environment Agency – Abu Dhabi (EAD) today announced that Al Wathba Wetland Reserve will be temporarily closing on Wednesday 31<sup>st</sup> March until November 2021, due to the bird nesting season that started early this year. The agency observed that flamingo nesting began in February, as opposed to March, and they have already recorded 1,000 nests, indicating that the nesting season will be successful.

To protect the nests EAD believes it is vital to close the Reserve, especially with the hot summer months approaching. Furthermore, EAD will also be performing maintenance and adjustments on the infrastructure of Al Wathba Wetland Reserve to improve the facilities and make it a more memorable experience for visitors.

EAD also recorded that five other species of birds started nesting. These include both important migratory and resident species such as: Kentish Plover, Black-winged Stilt, Red-wattled Lapwing, Ring Plover and White-tailed Lapwing. These birds are nesting on the ground

close to the roads and around the lakes.

Ahmed Alhashmi, Acting Executive Director, Terrestrial and Marine Biodiversity at EAD said: "We were extremely happy to witness the early flamingo nesting season, which started last month, and to ensure that the nesting season continues successfully we have decided to close Al Wathba Wetland Reserve, as part of our commitment towards the conservation of our bird species and the reserve's biodiversity."

He added "The success of the reserve in attracting important birds for nesting is a positive indication of the improvement of conditions and the provision of a suitable environment for the birds to breed. This indicates the sustainability of the ecosystems in the reserve, as well as the good management and protection which enhanced the willing of these species to start nesting and increase their numbers."

Al Wathba Wetland Reserve has proven to be extremely popular with the number of

visitors reaching more than 17,000 since the beginning of January, and it is expected that the total number for the season will reach more than 20,000. The reserve was receiving visitors for two days a week, and this is the highest number of visitors to the reserve since it opened to the public in 2014.

Established in 1998 by the late Sheikh Zayed, Founder of the UAE, the Al Wathba Wetland Reserve is a nature reserve consisting of both natural and man-made bodies of water located 40 km southeast of central Abu Dhabi. Covering a total of five square km, the wetlands are comprised of wetlands, salt flats, fossilized sands and dunes, and are densely packed with a variety of animal and plant species.

The reserve is famous for its remarkable flamingo population, which flock to the reserve in their thousands to enjoy the warm weather during the winter months, with some remaining all year round. There are approximately 4,000 flamingos residing on the reserve alone.



## FOLLOWING CONTINUOUS EFFORTS UNDER THE DIRECTIVES OF HAMDAN BIN ZAYED ENVIRONMENT AGENCY - ABU DHABI RECORDS A REMARKABLE INCREASE IN THE SUSTAINABLE FISHING INDEX



Senior Fisheries Enumerator Khalfan Al Suwaidi working during the FRAS Survey.

Following continued efforts under the directives of His Highness Sheikh Hamdan bin Zayed Al Nahyan, the Ruler's Representative in the Al Dhafra Region and Chairman of the Environment Agency - Abu Dhabi (EAD), the Agency which has been conducting research to assess the state of fish stocks since 2001, recorded a noticeable improvement in the state of fish stocks during 2020 for some of the major commercially fished species in Abu Dhabi waters.

The results revealed a remarkable increase in the Sustainable Exploitation Index (SEI) indicator, which provides a rapid insight into the level of sustainability of fisheries, through the calculation of percentage of volume of landings which came from fish stock assessed as sustainably exploited over the total assessed landings. The indicator increased continuously, raising from 5.7% in 2018 to 29.3% in 2019 and reaching 57.1% in 2020.

The results also revealed an improvement in the Spawning Biomass per Recruit (SBR), which estimates the ratio of the adult stock size of 28 key species in comparison to the size of their untapped stock, providing a basis for evaluating the conditions of the spawning biomass. The SBR increased from 7.6% in 2018

to 8.1% in 2019 and reached 25.6% in 2020. Her Excellency Dr. Shaikha Salem Al Dhaheri, EAD's Secretary General, said, "Like other countries in the world, fisheries in the UAE are being depleted as a result of a combination of natural and human factors. Pressures, such as the overexploitation of fisheries and the acute depletion of fish species has led to a decline in the stocks of many major commercial species to unsustainable levels, compared to global rates."

H.E. Dr. Al Dhaheri added, "In order to face this challenge, EAD has taken a series of decisive administrative measures and implemented procedures that will reduce the pressure on fisheries in the commercial and recreational sectors. This involves improving fish stocks, rehabilitating fisheries habitats and intensifying efforts to control and reduce this depletion. These measures taken by the agency aim to achieve sustainable fisheries, including restoring balance and sustainability of fish stocks and developing the aquaculture sector."

H.E. Dr. Al Dhaheri indicated that EAD sought the assistance of an expert in the field of fish stock assessment accredited by the Food and Agriculture Organisation of the United Nations (FAO) and the European Union to

assess landing data. The results of the evaluation conducted and the data collected by EAD during the last 15 years were consistent with the results of current indicators.

Ahmed Al-Hashemi, EAD's Acting Executive Director of the Terrestrial and Marine Biodiversity Sector, said, "The results of the study of the main species indicate a remarkable improvement in the SBR, which estimates the portion of the fish stocks that is old enough to spawn, thus allowing for the renewal of the stock. In particular, an improvement was observed in the average SBR indicator for some key species, including the Kingfish (*Scomberomorus commerson*) which registered an increase in the SBR from 17.3% in 2018 to 20.5%, and the Hamour (*Epinephelus coioides*), for which the SBR increased from 7.1% in 2019 to 15.8% in 2020. In addition, for the Dhil'e (*Scomberoides commersonnianus*), the SBR increased from 19.4% in 2013 to 36.8% in 2020, for the Jesh Um Al Hala (*Carangoides bajad*) it increased from 22.6% in 2014, to 32.7% in 2020, and for the Shaari (*Lethrinus nebulosus*) it increased from 11% in 2018 to 16.6% in 2020.

Al-Hashemi added that thanks to the combination of scientific information, continuous monitoring and firm and sound managerial decisions, significant progress has been made in improving the status of fish stocks in Abu Dhabi, with many indicators showing a steady increase in recent years. Moreover, for the Hamour, one of the most important species of the emirate, large specimens were observed throughout the year including the observation of a maximum length of 113 cm, which was the longest since the beginning of the surveys conducted over the past 20 years.

Al-Hashemi also explained that EAD registered an increase in landings for some species, including the Aifah (*Chanos chanos*), which increased by more than 200% rising from 25 tons in 2019 to 78 tons in 2020, and Safi Arabi (*Siganus canaliculatus*), which increased by 32%, rising from 35 tons in 2019 to 46 tons in 2020. It is also interesting to note that large specimens of Hamam (*Seriola dumerili*) have also been observed, some of them over 100 cm in length, which is considered a rare event according to EAD's historical data.

Furthermore, according to the recent trends in the results gathered and the managerial restrictions in place, in particular the banning of Gargoor and Ghazal nets which target species vulnerable to overexploitation, it is envisioned that fish populations will continue to increase in the future.

# ABU DHABI MEDIA TO AIR ENVIRONMENT AGENCY - ABU DHABI'S NEW DOCUMENTARY: **OUR SEA, OUR FUTURE**



The Environment Agency – Abu Dhabi (EAD) has unveiled its new documentary: "Our Sea, Our Future," as a part of its ongoing cooperation with Abu Dhabi Media, the UAE's leading public service broadcaster and media company. The documentary highlights the fisheries sector, which is an integral part of Abu Dhabi's heritage. The film illuminates the pressure that Abu Dhabi's fisheries face, and the actions taken by EAD to contain the impacts of overfishing on the marine environment, with the aim of ensuring the recovery and renewal of the Emirate's fish stocks.

The documentary premiered in Ramadan on the Emarat Channel on Saturday May 1<sup>st</sup>, and Wednesday, May 5<sup>th</sup>, 2021 and was broadcast at the same time as the premiere on all accounts of the Abu Dhabi and Emarat Channels social media platforms. It was also shown on the Abu Dhabi Channel on the first day of Eid Al Fitr.

The documentary, which runs for 35 minutes, was produced by EAD to highlight the roles of some of its employees as they undertake their daily work on shorelines, marine areas, ports, labs and landing sites. It showcases the challenges that employees face while conducting their various tasks and responsibilities. In addition, the documentary features interviews with EAD experts and specialists who emphasise the importance of

fishing, the work undertaken by many Emiratis as a main source of income in the pre-oil era. Despite the ubiquitous development in all aspects of life in the UAE, and the wide diversity of income sources, fishing remains one of the main sources of income and a valued traditional craft.

The documentary also showcases the perspectives of various fishermen, who are key partners of the agency. Fishermen play a major role in protecting marine life through their ongoing co-operation with EAD's staff both in the field and at landing sites. Additionally, fishermen contribute to scientific research and traditional knowledge by providing information about the types of fish and endangered species, as well as landing catch data, to name a few. Moreover, fishermen play a vital role in compliance with resolutions and procedures, which have a significant impact in curbing the impacts of overfishing in the marine environment.

His Excellency Mohamed Ahmed Al Bowardi, Vice Chairman of EAD, said, "Abu Dhabi is one of the key stakeholders in fisheries in the UAE, and the improvement of the fish stock and the abundance of demersal species represent very good indicators of the general condition of the country's territorial waters in the Arabian Gulf."

His Excellency pointed out that natural

fisheries in the UAE, like others around the world, are subject to depletion due to several natural and human factors. Studies conducted by the agency show that the fishing sector in Abu Dhabi faced significant pressures, as the over utilisation of fisheries and the sharp depletion of the fish stock led to more than 80% decline in the fish stock levels in the country. Moreover, several key commercial species declined to unsustainable levels.

He added, "As part of our efforts to protect the fish stocks and encourage sustainable use of fisheries and marine resources, the agency set several controls to manage fisheries in the emirate in a manner that would increase feasibility to utilise and preserve natural resources."

His Excellency asserted, "In this regard, several standards have been implemented to manage fisheries in Abu Dhabi by banning unsustainable fishing methods to protect marine species. It is also to ensure the sustainability of fisheries as part of a comprehensive plan to ensure recovery and sustainability for the next generations and to remain a key pillar of the country's food security ecosystem. This would also help enhance sustainable development of marine resources and increase fish stocks while improving revenues for fishermen at the same time."

Her Excellency Razan Khalifa Al Mubarak,





Managing Director of EAD, said, "Fisheries are not only a source of revenues or income, as they also have a significant cultural and historical importance. Therefore, Abu Dhabi's government considers their protection a key priority."

She added, "We cannot underestimate the importance of early response to protect the marine resources for the current and next generations. After fish catch in the UAE were sufficient to meet the population's needs, we are now depending heavily on importing to bridge the widening gap between supply and demand. Therefore, we took strict actions and controls that would ease the pressure off fisheries in the commercial and recreational sectors."

She stressed, "Implementing the controls set by Abu Dhabi government to manage fisheries in the emirate requires cooperation by all stakeholders. Efforts to protect and preserve the environment are not only the work of government agencies but the duty of everyone in the country."

Her Excellency Dr. Shaikha Salem Al Dhaheri, Secretary General of EAD, said, "This documentary enabled us to highlight some of the main threats facing fisheries in Abu Dhabi, and the internationally-recognised efforts taken by the agency, in cooperation with its partners to manage the fish stocks. Those efforts resulted in creating multiple marine reserves, in addition to deploying a system for licensing commercial and recreational fisheries, and regulating the use of fishing equipment, in addition to imposing a seasonal ban to protect fish during the breeding season. The agency also set a minimum size for fish to be caught for some of the key types and prohibited unsustainable fishing methods."

According to her Excellency, policies, procedures, and administrative controls taken by the agency led to significant improvement in the fish stocks of some of the main commercial species that were depleted. EAD hopes for further improvement as the compliance with current policies and measures continues in a manner that helps achieve the desired outcomes of an environmentally sustained fisheries.

She concluded that the agency will continue its efforts in cooperation with the Ministry of Climate Change and Environment and other strategic partners to fulfil the set objectives and aid in the long-term recovery of the fish stocks, as part of the comprehensive efforts to protect the marine resources in the UAE within the National Framework for Sustainable Fisheries until 2030.

Acting General Manager of Abu Dhabi Media Abdul Raheem Al Bateeh Alnuaimi, said, "With its contribution to the community, Abu Dhabi Media is keen to consolidate its leading

position through raising the community's awareness of various topics and initiatives, as well as reaching its target audience through its various media channels.

Through airing this documentary, we aim to support environmental and cultural initiatives, highlighting the efforts made by the government to preserve the Abu Dhabi's environment and biodiversity. 'Our Sea, Our Future' documentary highlights the efforts of the Environment Agency and the concerned authorities in addressing the environmental challenges resulting from overfishing."

The feature is the second documentary produced by EAD about marine resources in the United Arab Emirates. EAD produced "Our Sea, Our Heritage" in 2019 which highlighted the condition of fisheries in the UAE and the long-term protection and recovery plan for fisheries, which was developed by the agency in cooperation with its strategic partners to replenish the country's fish stocks.





# SAFETY FIRST: KNOW YOUR EQUIPMENT

BY AHMED NABIL – ALPHA DIVING

Don't miss a dive due to minor issues with your scuba diving equipment. Whether it's a missing O-ring, wetsuit tear or a broken fin strap. Make sure you keep up to date with your BCD and regulator services.

The safety process starts from the moment you buy or rent dive gear. Selecting the right equipment from the start is key; make sure it fits well and meets your needs and know its specifications. Dive within your training and equipment limits. Finally, make sure you properly clean and store your equipment after each use to ensure your investment stays in good condition.

As a diver, you have to familiarise yourself with all these things.

Understanding the theory, principles and operation of your diving equipment can be easy and fun. Remember that maintenance, or "the process of keeping something in good condition" isn't just needed to keep the warranty valid, but to prolong the life of your scuba gear, and keep you alive! Repairs and servicing should always be done by certified experts.



## HOW DO YOU START?

Whichever diving organisation you follow, there will be a section in your level one diver training which covers equipment. Please read and practice that section carefully. Still feel that you need more hands-on training? Thirsty for more? Preparing yourself to become a rescue diver, or divemaster? You can proceed to the next level of learning with an equipment speciality course.

The course covers recommended care and routine maintenance procedures, correct equipment storage methods, common problems you may encounter with your equipment, and recommended professional maintenance procedures. Above all, it will help secure your safety, along with the ability to make better purchasing decisions when considering new equipment.

Please contact your local dive shop, instructor or email your diving organisation directly. You will get yourself educated, trained and most importantly, enjoy safer and fun diving. There is no better investment than investing in training for yourself.

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# DIVEHEART & TOURISM MALAYSIA

## ATTEND THE MOSCOW INTERNATIONAL DIVE SHOW 2021



Diveheart was represented at the Moscow Dive Show by its Malaysian Diveheart Ambassador Syed Abdul Rahman who is based in Kuala Lumpur, Malaysia. As founder and director of Kids Scuba Malaysia, Syed has been conducting Diveheart and adaptive scuba diving programmes in Malaysia for the past ten years and has trained over a hundred local adaptive divers and Diveheart volunteers.

"I am pleased that more and more dive destinations in Malaysia are becoming more disability-friendly in terms of the facilities that they offer and willingness to accept adaptive divers," said Syed who has personally conducted stakeholder engagements with both government and private tourism players to make the industry more accessible to people with disabilities.

Syed also presented Malaysia's world-class diving destinations at the International event. "Malaysia is truly blessed with so many beautiful dive destinations including Tioman Island, Perhentian Islands, Tenggol Island and of course, Layang Layang and Sipadan Island," said Syed adding that Malaysian waters are known for its rich underwater biodiversity, beautiful coral reefs and suitable for divers of all levels.

The Malaysian booth organised by Tourism Malaysia's Moscow Director, Jefri Munir in collaboration with Diveheart, proved to be very popular at the show. The event was held from April 8<sup>th</sup> to the 11<sup>th</sup>.

Held at the Gostiny Dvor Exhibition Centre, the MDS 2021 was the largest exhibition in equipment, tourism and training for people interested in scuba diving and other water-based sports in Russia and Eastern Europe.

The Next Diveheart Malaysia 2021 Event will be held from September 21-23, 2021 at Mimpi Perhentian Resort, an Official Diveheart Friendly Resort in Perhentian Island Terengganu. For more information, email [syed.rahman@diveheart.org](mailto:syed.rahman@diveheart.org).





**Mimpi Perhentian**  
Resort  
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Special rates will apply for this event.



For more information, please contact  
Syed Abd Rahman Diveheart Ambassador Malaysia  
[syed.rahman@diveheart.org](mailto:syed.rahman@diveheart.org)



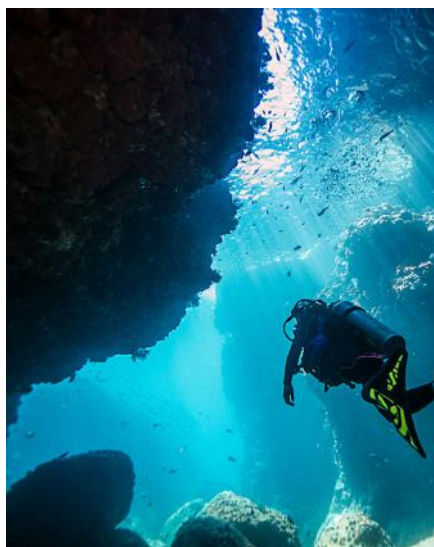
# INTRODUCING THE ALL-NEW PADI DIVE GUIDES: CONNECTING DIVERS WORLDWIDE WITH LOCAL EXPERTISE



The new PADI Dive Guides™ make it easier than ever for divers to discover, explore and plan their next adventure by providing the tools needed to research and book dive experiences or training anywhere in the world. PADI Dive Guides are the go-to resource whether planning a local dive or seeking inspiration and information about far-off destinations.

"Dive destination information has been integral to padi.com for years," says Lisa Nicklin, Vice President of Consumer Marketing for PADI Worldwide. "This next evolution provides more detailed guides that will continue to grow in global coverage and bring unprecedented value to PADI Members and divers alike. Leveraging new system capabilities, the guides combine PADI's global expertise with the immense local knowledge of PADI Members around the world. PADI Dive Guides enable divers to plan and book adventures near home or wherever their future travels may take them – all through one convenient platform."

Now available at [www.padi.com/exploration](http://www.padi.com/exploration), the collection of thousands of guides offers marine life calendars, seasonal weather data and travel information. Users can learn about dive opportunities by continent and country,



or drill down to specific dive destinations and dive sites. They will find a mosaic of dive sites to explore in each location with insight provided by local experts, as well as dive site reviews from fellow explorers. Users can easily contact PADI operators and book dives, snorkel excursions, holidays and courses through the integrated PADI Adventures™ platform.

Start exploring and planning your next adventure at [www.padi.com/exploration](http://www.padi.com/exploration).

## ABOUT PADI

PADI® (Professional Association of Diving Instructors®) is the world's largest ocean exploration and diver organisation with a global network of 6,600 dive centres and resorts and more than 128,000 professional members worldwide. Issuing more than 28 million certifications to date, PADI enables people around the world to seek adventure and save the ocean through underwater education, life-changing experiences and travel. For over 50 years, PADI is undeniably The Way the World Learns to Dive®, maintaining its high standards for dive training, safety and customer service, monitored for worldwide consistency and quality. With a long-standing commitment to environmental conservation, PADI is leading the way for millions of people to actively explore, steward and protect the ocean through its course offerings and partnerships with like-minded, mission-driven organisations. PADI embodies a global commitment to ocean health with its mission to create a billion torchbearers to explore and protect the ocean. Seek Adventure. Save the Ocean.™

[www.padi.com](http://www.padi.com)



# PADI MEETS WITH MALDIVIAN MINISTRY TO CONFIRM PROTECTION OF SHARKS



Over recent weeks, there has been speculation about the possibility of the Maldivian government lifting the ban on shark fishing in the country's waters. PADI®, and the dive industry at large, were instrumental in establishing these protections over a decade ago.

With concern for the continued protection of sharks in the Maldives, the PADI organisation and Project AWARE®, along with 200 concerned local and international stakeholders opposing the lifting of the shark fishing ban, called on the government to continue to enforce the legal protections of sharks. PADI staff met with Maldivian Ministry of Fisheries, Marine Resources, and Agriculture Zaha Waheed to reinforce the position of the dive community and critical role sharks play in dive tourism.

In those meetings, Minister Waheed assured PADI that the Ministry of Fisheries, Marine Resources, and Agriculture has no intentions to lift the ban on shark fishing. She affirmed that they remain committed to sustainable and responsible management of fisheries and marine resources in the Maldives. On 20 April 2021, the Ministry of Fisheries, Marine Resources, and Agriculture released a statement asserting that "the Maldives does not intend to permit a targeted shark fishery in the Maldives."

"Sharks are a dominant force in dive tourism in the Maldives. We congratulate the Maldives's commitment to their ongoing protection," says Drew Richardson, President and CEO of PADI Worldwide. "The Maldives continues to lead by example, among the most progressive countries on this critical issue."

There are currently 17 shark sanctuaries in the world; the first established in Palau in 2009 and others in popular dive destinations including French Polynesia, Honduras, The Bahamas and several others in the Caribbean. The Maldives shark sanctuary was established in 2010 and covers 916,000 km<sup>2</sup> (353,000 square miles).

Tourism accounts for an estimated 25 percent of Maldives' GDP (according to 2014 figures), with diving and snorkelling being the most popular tourism activity. Prior to the formation of the Maldivian sanctuary, shark fishing was worth US\$0.7 million to the Maldives' economy, compared to US\$2.3 million from shark tourism. In 2018, the shark sanctuary increased dive-trip demand in the Maldives by 15 percent, raising an additional US\$6 million. Consumer research indicates that any re-opening of a Maldives shark fishery could potentially decrease dive tourism demand by

over 50 percent, which could result in a loss of US\$24 million.

Sharks are some of the most endangered species in the ocean, with recent research showing that the global number of oceanic sharks has declined by 71 percent. Over a third of shark and ray species are threatened, facing an increased threat of extinction, primarily due to overfishing. There are an estimated 600,000 shark watchers globally spending \$314 million per year and directly supporting 10,000 jobs. Research indicates these figures are expected to rise as global tourism returns to pre-pandemic levels.

As part of its commitment to ocean conservation, PADI will continue to stand up for sharks and advocate for their protection.

For more information on responsible shark tourism, read Project AWARE's Guide to Best Practices. To learn more about PADI's efforts and how you can join the community of PADI Torchbearers working to save the ocean.

**VISIT:** [padi.com/conservation](https://padi.com/conservation)









# BRINGING BACK KELP FORESTS IN THE MONTEREY PENINSULA

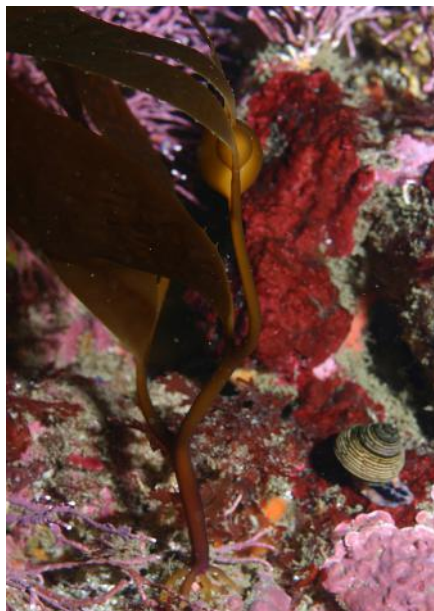
BY **MAXWELL SEALE & DILLON DOLINAR** – REEF CHECK CALIFORNIA VOLUNTEER COORDINATORS

Kelp forest restoration along the Central Coast of California is underway with rapidly developing progress! Last year, our North Coast Reef Check Team made major headway coordinating commercial urchin fishers in restoring lost kelp forest habitat at Noyo Harbor. This year, our Central Coast Reef Check Team is leading the charge on restoration at two sites along the Monterey Peninsula: Tankers Reef and Lovers Point.

In a landmark regulation change issued by the California Fish and Game Commission (FGC), urchin fishing regulations have been amended within a 685-acre reef area in Monterey known as Tankers Reef. This regulation change follows a petition submitted by a local stakeholder group known as the Giant Kelp Restoration Project (G2KR). The amendment now allows divers with valid California sport fishing licenses to take unlimited numbers of purple sea urchin (*Strongylocentrotus purpuratus*) and red sea urchin (*Mesocentrotus franciscanus*) via in-water culling within the confines of the restoration area, a shale reef historically dominated by giant kelp (*Macrocystis pyrifera*). Over the next three years, Reef Check California will be responsible for ecological monitoring within the restoration area to document the effects of these restoration efforts. Removal efforts will be coordinated by the G2KR team. To see this project through, we will be working with our partners at the Monterey Bay National Marine Sanctuary, the California Department of Fish and Wildlife, and the Ocean Protection Council.

The main goals of this restoration effort are: 1) To reduce purple and red sea urchin densities to levels that facilitate kelp regrowth via in-water urchin culling and then to maintain those densities while the regulatory amendment is in place, 2) To conduct robust monitoring to evaluate the ecological effects of urchin removal, 3) To evaluate any direct or indirect impacts of this restoration approach on non-target organisms such as bycatch, damage to underlying reef structure, or disturbance of marine mammal populations and 4) To communicate results and lessons learned in a way that is both scientifically sound and informative to resource managers.

The G2KR team will collaborate with local dive shops whose business has been negatively affected by the rapid expansion of urchin barrens. They will be offering a PADI and NAUI Kelp Restoration Specialist Course to train recreational divers on how to work safely and effectively towards restoration. The hope



is that the local dive community will adopt a standardised and scientifically guided approach to restoration and that these trainings will generate some economic benefit to the local dive shops. In addition to the project at Tankers Reef, Reef Check California is in its third year coordinating experimental restoration efforts at Lovers Point in Pacific Grove. This experiment will be used to determine best practices for current and future restoration programmes in both California and at restoration sites across the globe. Restoration work here is being run by our very own Reef Check California Volunteers!

If you are interested in joining any of our Central Coast kelp restoration efforts, email Maxwell Seale, the Central Coast Volunteer Coordinator, at [mseale@reefcheck.org](mailto:mseale@reefcheck.org) to learn how you can help restore our changing coastline!





# IN MEMORIAM: CARINA ESCUDERO

## OCEAN WARRIOR & CHAMPION OF CHAMPIONS

BY FRANCIS XAVIER D. VERDADERO



Her name is Carina. I imagine her parents named her after the constellation of a keel. But even if they hadn't, in so many ways, Carina was like a boat's keel, sturdy and unyielding – slicing through any and all seas.

I first met Carina in 2012. She was training would-be Eco Divers in Culion, Palawan, Philippines. The class was in the middle of discussing the substrate survey. I watched as Carina struggled shifting between the English and Filipino language to teach, with the former being more prominent.

I noticed that the trainees were struggling too because neither English nor Filipino were their native language. Although the trainees picked up some English and Filipino, their native dialect was Cuyunin. But what struck me the most was the class' willingness to try and understand one another. They did so with great curiosity, persistence, and fun – qualities which I will learn much later on to be at the heart of every Reef Check training I would be in. The evenings of that training were equally filled with social activities. After dinner, an environmental film or documentary would be shown. And this is when deep conversations took place, where the formalities of the morning lectures disappeared. This is the time when you see people who deeply care for

the environment, especially the coral reefs and seas, exchange stories and experiences in conservation and its many challenges. And this is how I started to get to know Carina as a person who was really passionate about the environment, but most especially the sea.

Carina's way of life, of living for the seas, began when she became a scuba diver. In the 1980s and 90s, she became the second PADI Instructor in the country, and the first female at that. Carina's excellent skills in the water assisted her craft of becoming an underwater cinematographer. She filmed for television advertisements, environmental documentaries, and big-screen films.

For environmental documentaries, her most famous work was on *The Tuki Chronicles*, which tell the story of the tourist attraction of hand-feeding whale sharks in Oslob, Cebu. As for films, Carina worked together with Marissa Florendo to capture the breathtaking underwater shots of the multi-awarded film *Muro-Ami*.

In-between her work as a professional scuba diver and cinematographer, Carina also played a critical role in developing the whale shark tourist industry in Donsol, Sorsogon. Because of Carina, many locals were educated

about the importance of conserving marine habitats and the whale sharks. This education empowered the communities to take heart and pride in their wildlife tourism that greatly impacted their lives and livelihood.

Just a few years before, in 2010, Carina discovered Reef Check and had devoted her life to the organisation ever since. Carina was one of Reef Check Philippines' enduring Eco Diver Trainers. From 2010 until 2017, Carina trained and certified 204 EcoDivers. She was also involved in 121 Reef Check surveys, acting as either Team Leader or Team Scientist. Her involvement in the coral reef monitoring of the Malampaya Foundation Inc. from 2013-2014 led to a scientific article that she co-authored.

On February 28, 2021, Carina passed away. Reef Check Philippines is deeply saddened for the loss of one of its champions. She will be sorely missed. We will forever honour Carina by continuing to educate and empower Filipinos, that they may lead or play vital roles in conserving their seas and coral reefs for future generations. Carina lived by Reef Check's mission and Reef Check Philippines is hopeful because Carina, the keel, has sliced through the sea of life, and generated small but prevailing waves of dreams and aspirations for future environmentalists and conservationists.

# MEMOIRS OF A RESTORATION TECHNICIAN

BY **IAN NORTON** – REEF CHECK NORTHERN CALIFORNIA SURVEY COORDINATOR



After a summer spent observing and monitoring the kelp restoration site in Fort Bragg, California, I noticed something peculiar. A wind-swept 14 ft, 17 sec swell washed over the site in late September; the largest since the project began. After the dust had settled, fellow restoration technician Morgan and I dove the site to assess how the site had weathered the storm. I spotted a boulder, approximately basketball size, that hadn't been there before. Attached to the boulder was a large holdfast, anchoring a fully grown bull kelp (*Nereocystis sporophyte*). The stipe extended all the way through the water column to the surface. I realised I was observing a fully mobile individual, capable of travelling great distances, borne aloft on the crests of ocean

waves. I imagined that small to medium swells must result in small to medium steps for this wayfarer, but surely excessive wave height would result in leaps and bounds, potentially casting this specimen many miles from its natal reef. And it was not alone in kin or company, for I observed no less than a dozen similarly-attached drifters throughout the site, and spied numerous invertebrates and epiphytes of one form or another sheltering in its holdfast, encrusting and sprouting from stipe and blade.

I've known kelp can become vectors for transport by tearing loose and forming "wracks", but I'd never observed kelp carrying its own personal anchor, bouncing from inlet to inlet, dispersing spores from its native

forest, picking up and dropping off passengers while it idles between Pacific storms. Sure enough, after a second large swell passed through, some of these visitors were gone, and several more had appeared seemingly out of nowhere. Those that remained were either wedged in fissures and couldn't be wrenched free, or had attached to a particularly large boulder, likely requiring a more energetic set to be wrested from where they lay. As weeks passed, in accordance with their yearly cycle, the kelp stipes broke free from their bounds, and the resulting holdfast was consumed presumably by urchins. All that remained was a strange rock on a foreign reef. I felt privileged to have caught just a fleeting glimpse of its journey.

## REEF CHECK MALAYSIA RELEASES 2020 ANNUAL SURVEY REPORT: SUGGESTS STRONGER LOCAL MANAGEMENT

BY **REEF CHECK MALAYSIA**

Reef Check Malaysia has published its 2020 report on the status and health of coral reefs around Malaysia. The report concludes that, while overall coral reef health is reported to be in fair condition, some areas are showing signs of decline that need to be addressed. The surveys are a continuation of a National Reef Check Survey Programme that has now run for 14 years.

A total of 210 sites across Malaysia were surveyed in 2020. The results indicate that the average live coral cover, a key health indicator, is 41.3%, receiving a "fair" rating. This is a slight

increase over 2019 (40.63%), reversing a slow decline that has been observed for five years. However, the average masks a wide range, and many sites recorded indicators of disturbance. Pollution, Crown of Thorns (COTs – a coral eating starfish), fish bombing and tourism impacts appear to be the greatest threats facing coral reefs in Malaysia.

Coral reefs are valuable, economically and biologically. Lau Chai Ming, manager of the survey programme and co-author of the report, explains, "Coral reefs are a source of both food and jobs for coastal communities.

Islands like Tioman and Perhentian rely on reefs for tourism, which is the mainstay of the economy. Not only that, but they are important biologically, providing a habitat and breeding ground for a third of marine species. Put simply – no reefs, no fish. On a broader scale, they can connect ecosystems over large areas. Tioman, for example, is part of a reef system that has been identified by scientists as among the 50 most important reefs in the world – reef areas that we simply can't afford to lose. It's that important."

The report calls for stronger local management,



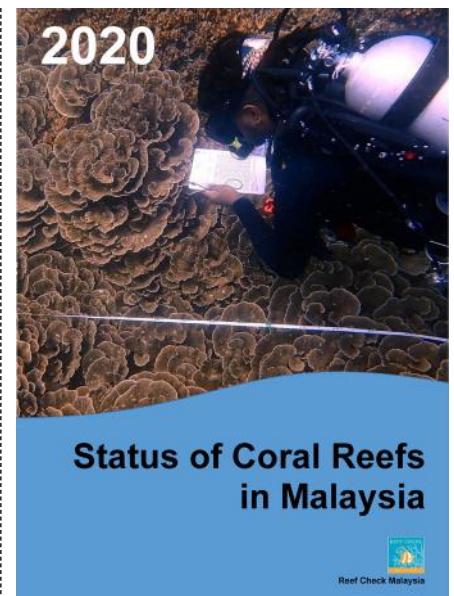
with the participation of local stakeholders, to ensure their interests are taken into account. Julian Hyde, General Manager of Reef Check Malaysia, said, "The results for the whole of Malaysia suggest little change on previous years. But this highlights the importance of looking at the data site by site."

There is a wide range in Live Coral Cover, for example – from over 80% to just 5%. So it is clear that some sites are very healthy, while others are heavily impacted – even though they can be quite close to each other. This supports the argument for strengthening local management capacity, so that individual problem areas can receive more attention. And involving local stakeholders can increase buy-in to management objectives and programmes."

The report also notes the importance of incorporating resilience concepts into reef

management. Resilience describes the ability of an ecosystem to recover from external shocks – such as those that are expected as climate change impacts grow. Hyde says, "There are actually some very simple, low cost measures that can be taken to improve reef health. Making sure waste is well-managed, supervising divers and snorkelling operations to reduce physical impacts to reefs, improving sewage treatment to reduce pollution – some of these measures can be implemented quickly and cheaply and can improve reef health in the short term. So it's not the end of the world – but we do have to take action now. We are living in an era where there is increasing concern about biodiversity conservation. We can all help to conserve Malaysia's marine biodiversity."

**DOWNLOAD THE FULL REPORT HERE:**  
<https://bit.ly/2QWwTCp>



# PALAWAN TRAINING DEVELOPS REEF MONITORING TEAM IN THE PHILIPPINES

BY **ANITA GARDNER, ATELIER AQUATIC** PHOTOS **ATELIER AQUATIC**

The Philippines is situated at the apex of the Coral Triangle, the epicentre of global marine diversity. Sibaltan is on the east coast of Palawan, located on the shores of the Sulu Sea, home to the UNESCO World Heritage Site, Tubbataha Reefs Natural Park. The Sulu Sea, as with many seas in the Philippines, is an area of extreme natural beauty, containing essential marine habitats including extensive colonies of reef-building corals and high levels of marine biodiversity, including species such as the Reef Manta Ray (*Manta alfredi*).

As part of a COVID-19 lockdown collaboration with Dive Sibaltan, Atelier Aquatic requested special permission from the local government to deliver Reef Check Eco Diver Training and conduct reef surveys in the area which is currently under threat from destructive fishing practices. The group has a mixture of local and international marine biologists, conservationists, divemasters and instructors. Local divers were supported by the Malampaya Foundation to develop skilled reef monitoring teams in Palawan.

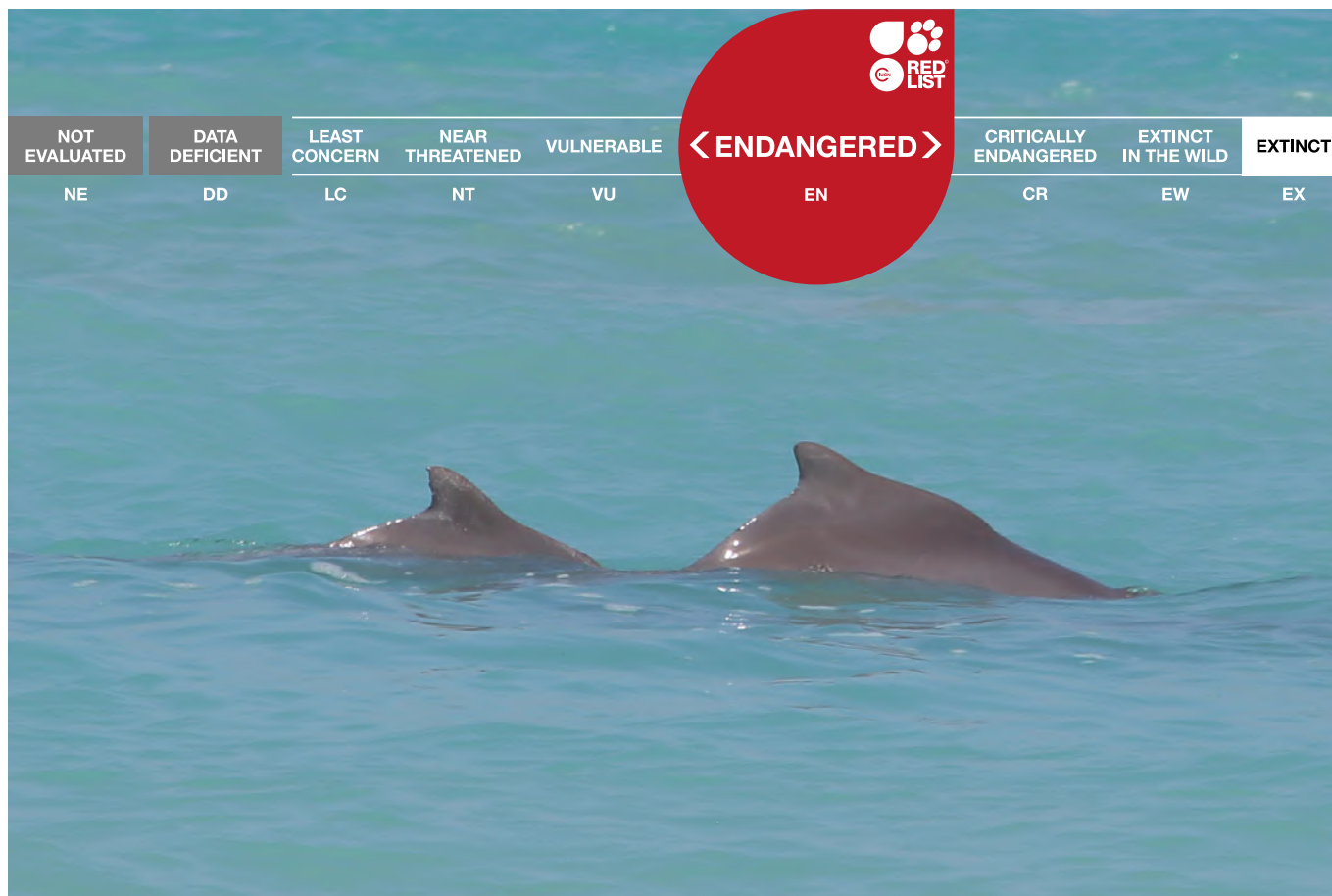
Atelier Aquatic is a small NGO offering Reef Check Eco Diver training to local groups to support community capacity building and marine conservation initiatives, especially important in lockdown times whilst marine tourism is inactive. The aim is to inspire community engagement through outreach and education into marine conservation action. For more information, please contact [info@atelieraquatic.org](mailto:info@atelieraquatic.org).



# FEATURE CREATURE

## INDIAN OCEAN HUMPBAC DOLPHIN (*SOUSA PLUMBEA*)

FEATURE **IUCN RED LIST 2017** PHOTOGRAPHY **DR. ADA NATOLI**



### RED LIST CATEGORY & CRITERIA: **ENDANGERED**

**Scientific Name:** *Sousa plumbea*

**Synonym:** *Delphinus plumbeus* (G. Cuvier, 1829)

#### Common Names:

English: Indian Ocean Humpback Dolphin

French: Dauphin à bosse

Afrikaans: Boggelrugdolfyn

Arabic: Dukhs

Hindi: Fukariyo, Gada/Gad/Gaadha reda, Goonu, Kadal ongi, Kadal panni, Paru vedan, Sori vedan, Thella thoralu

#### TAXONOMIC NOTES

*Sousa plumbea* has been recognised as a species since taxonomic revision of the genus *Sousa* in 2014 (Committee on Taxonomy 2014, Jefferson and Rosenbaum 2014). Previously this species was lumped with the Indo-Pacific humpback dolphin (*Sousa chinensis*) but animals occurring in the Indian Ocean from South Africa to India are now recognised as taxonomically distinct from those that occur further east, based on genetics, skeletal morphology, external morphology and colour. There is uncertainty about the taxonomic affinities of the humpback dolphins that occur

in the Bay of Bengal and future studies will confirm whether *S. plumbea* actually occurs east of the southern tip of India.

#### JUSTIFICATION

In the places where studies have occurred, Indian Ocean Humpback Dolphin subpopulations were found to be small: always fewer than 500 and generally fewer than 100 individuals in discrete, or semi-isolated areas. Humpback dolphins have one of the most specific habitat preferences and restricted distributions of any marine megafauna, and both of these characteristics are well known to reduce the resilience of species to environmental change and anthropogenic threats and to increase their extinction risk (Davidson et al. 2011, Dulvy et al. 2014, Purvis et al. 2000). Indian Ocean Humpback Dolphins are concentrated in coastal waters within 2 km of shore and they are often sighted only a few hundred metres from land. This distribution places them in exactly the same location as the majority of small-scale fishing effort prevalent throughout their range in the same nearshore habitat. As a result, humpback dolphins encounter large numbers of coastal

gillnets and are at high risk of entanglement. High and clearly unsustainable mortality rates have been reported from several areas and frequent encounters with fishing gear can be inferred from the high degree of scarring and injury – for example, 41% of individuals in Pemba, Tanzania bore gear-related scars (Braulik unpub. data). Although information on population size, threats and mortality is available only for portions of the species range, there are strong reasons to suspect and infer that the threats will be similar or possibly even more intense elsewhere.

The deaths of only 4.2 individuals per year from a population of 100 would result in a 50% decline (Moore 2015). The available evidence on the studied subpopulations in South Africa and all indications from elsewhere in the range suggest that mortality rates are consistently at or above the rate that would result in a 50% decline in 75 years (three generations). The species' preferred habitat and small populations overlap in both space and time with several ubiquitous and pervasive threats that are increasing in severity, leaving no refuges for these dolphins. The



threats are serious enough in a large enough proportion of the total species range that a range-wide decline of at least 50% over three generations spanning both the past and the future (about 75 years, from 1960 (the start of intensive mono-filament gillnetting in this region) to 2035) is suspected and inferred and the causes of the decline (by-catch and hunting [both considered here to constitute 'exploitation'], decline in habitat quality and possibly pollution) have not ceased. Therefore, the Indian Ocean Humpback Dolphin qualifies for Endangered A4cd.

The factor primarily responsible for the decline is incidental mortality in small-scale coastal fisheries, but the loss, degradation and pollution of habitat in numerous coastal areas is a contributing and increasing factor. The threats have not been mitigated anywhere in the species' range, even though threat levels are increasing virtually everywhere. All evidence suggests that threats and declines will continue and are likely to increase in the future and worldwide there are almost no examples where cetacean by-catch in small-scale artisanal fisheries has been successfully addressed. Alternative methods for small-scale fisheries to replace gillnets are not generally available. Therefore, the species also qualifies for Endangered 3cd as a decline of over 50% can be projected to occur over the next three generations (75 years from 2016 to 2091). It also qualifies for Endangered A2cd as a decline of over 50% is suspected over the last 75 years beginning with the expansion of the use of gillnets in global marine fisheries from around the end of the Second World War up to the present day.

## GEOGRAPHIC RANGE

Indian Ocean Humpback Dolphins are found in a narrow strip of shallow, coastal waters from False Bay, South Africa, in the west, through the coastal waters of South, East and North Africa, and the Middle East to approximately the southern tip of India and possibly further east. Distribution includes the Red Sea, the Arabian/Persian Gulf, the Arabian Sea, the Gulf of Aden, western Madagascar and several offshore islands including the Andamans, Mayotte, and Zanzibar. Significant portions of the species range have not been surveyed, particularly in many parts of northeast and the middle east of Africa, (including Somalia, Yemen, Djibouti, Eritrea, Sudan, Saudi Arabia, Egypt, etc.) where these animals are known to be present only from a handful of sighting or stranding records (Baldwin et al. 2004).

The level of knowledge about this species is greatest in South Africa, the Southwest Indian Ocean, Oman and the UAE. The species has a very narrow habitat niche and typically occurs less than 3 km from shore and/or in water less than 25 m deep, and populations are usually, but not exclusively, found in locations with extensive shallows such as protected

bays and estuaries. Known areas of *S. plumbea* concentration include Kleinbaai, Saint Sebastian, Plettenberg, Algoa, Richards and Mossel Bays in South Africa (James et al. 2015, Karczmarski 2000, Keith et al. 2013, Koper et al. 2016), Maputo Bay (Guissamulo and Cockcroft 2004) and the Bazaruto Archipelago, Mozambique (Guissamulo and Cockcroft 1997), Nosy Be and the Nosy Iranja/Ampasindava Peninsula in Madagascar (Cerchio et al. 2015), the west coast of Unguja (Stensland et al. 2006) and Pemba Islands in Tanzania (Braulik, unpub. data), Shimoní in Southern Kenya (Meyler et al. 2011), much of the Arabian Sea coast of Oman (Minton et al. 2010), and Cochin in India (Afsal et al. 2008). They are among the most common cetaceans in the Arabian/Persian Gulf (Baldwin et al. 2004, Braulik et al. 2010). However, recent surveys in the United Arab Emirates in the Gulf suggest that each humpback dolphin population is small and discrete, probably consisting of less than a 100 individuals (A. Natoli, pers. comm). In India, they are distributed almost continuously along most of the west coast and they also occur in northwest Sri Lanka (Sutaria and Jefferson 2004). There are no sighting records from oceanic archipelagos such as the Lakshadweep and Maldivé Islands (Sutaria and Jefferson 2004), or from eastern Madagascar (Cerchio et al. 2015). Humpback dolphins have not been recorded in the Union of Comoros (Kiszka et al. 2010b), however they do exist in very small numbers in the neighbouring island of Mayotte (Kiszka et al. 2010a). There is a hiatus in distribution of several hundred kilometres along the northern coast of Oman (Baldwin et al. 2004, Minton et al. 2010). It is unclear if this results from the influence of recent human population expansion and associated development or has an ecological basis, however superficially the habitat appears suitable (Baldwin et al. 2004, Minton et al. 2010). Survey effort in early 2015 revealed a possible distribution hiatus along several hundred kilometres of the southern Tanzania coast where the continental shelf is very narrow and shallow habitat almost non-existent (Braulik et al. 2017a). While additional survey efforts will likely reveal more areas of concentration, it will likely also reveal areas of absence along exposed and deep coastlines, or areas of high human impact, and more discontinuities in distribution than are currently known or assumed.

## POPULATION

Indian Ocean Humpback Dolphin abundance has been estimated, using mark-recapture of photo-identified individuals, from several discrete locations in South Africa and the Southwest Indian Ocean, but there are no absolute abundance estimates from anywhere in the species range north of Kenya. The total population is estimated to be as low as tens of thousands.

All populations that have been quantitatively evaluated have been small, always fewer

than 500 individuals and usually fewer than 200. Richards Bay in KwaZulu-Natal has a population composed of a small core of residents (5%) along with many transients (81%) passing through the area that probably range widely along the coast (Atkins et al. 2016). Abundance for the KwaZulu-Natal province was estimated as 160 (95% CI 134-229) in 1991-1992 (Durham 1994) and 74 in 1998 (95% CI 60-88) (Keith et al. 2002). No marked animals from Richards Bay were recorded in Algoa Bay, where Karczmarski et al. (1999) estimated the total abundance at 466 (95% CI 447-485) animals during fieldwork conducted from 1991 to 1994. Populations in Plettenberg Bay were estimated at about 112 (95% CI 75-133) (Jobson 2006) and in Mossel Bay as 125 individuals (95% CI 61, 260) in 2011-2013 (James et al. 2015), although marked individuals are known to move between these areas. Although 52 marked individuals were identified in the area between False Bay and Mossel Bay, no abundance estimates are available at this stage. All four populations evaluated in Mozambique, Tanzania and Kenya are estimated at approximately 100 individuals or fewer (Guissamulo and Cockcroft 1997, Guissamulo and Cockcroft 2004, Meyler et al. 2011, Stensland et al. 2006).

In the early 2000s, in Oman and much of the Arabian Gulf this species was amongst the most commonly recorded coastal cetacean, with large reported group sizes, frequently more than 40 individuals and up to a hundred or more (Baldwin et al. 2004), the situation has deteriorated considerably since that time. Now in the UAE and probably elsewhere in the region, each population is discrete and likely to number less than 100 individuals (A. Natoli, pers. comm). Pilleri and Pilleri (1979) conducted limited surveys in the Indus Delta of Pakistan and based on these made an educated guess that there were approximately 500 individuals in the entire delta. Indices of abundance for *S. plumbea* were recorded for the Gulf of Kachchh and the Goa coast of India, and the sighting rate was over six times higher in Goa (Sutaria and Jefferson 2004). The limited data presented above indicate that *S. plumbea* occurs in restricted habitat, is discontinuously distributed, and is not abundant anywhere in its range. There is no estimate of total species abundance, but Jefferson and Rosenbaum (2014) stated that the available estimates for specific populations suggest that range-wide abundance is probably no higher than the low tens of thousands.

Like most cetaceans, *S. plumbea* has a low reproductive rate. These dolphins occur in small, relatively discrete and localised populations that cannot sustain even a moderate level of anthropogenic mortality without suffering population declines. As an example and to place this in the context of the Red List criteria, assuming a 3% recruitment rate (Moore 2015), a discrete subpopulation of 100 individuals would decline by 30%

over 75 years (three generations) if only 3.7 individuals were removed per year due to anthropogenic mortality. Similarly, removal due to anthropogenic mortality of only 4.1 animals per year from such a subpopulation would result in a 50% decline over 75 years (see Table 5 in Moore 2015). Extrapolation from single, small, isolated subpopulations with data-based estimates of mortality obviously requires consideration of whether the conditions of those subpopulations are representative of the global population.

Modelled population growth rates for the dolphins in Algoa Bay were -3 to +2% per year (Karczmarski 2000), but there are no quantitative estimates of population growth rate (rates of increase) for any of the other small populations across the range of the species. Consequently, trends must be inferred by evaluating the magnitude of mortality or the magnitude of declines in relative sighting rates or group size. In Algoa Bay over a sixteen year period, the mean humpback dolphin group size halved (Koper et al. 2016). Along the KwaZulu-Natal coast the rate of incidental capture deaths ('by-catch') of humpback dolphins in shark nets has been very high; 203 animals were caught between 1980 and 2009, which corresponds to an average of 6.8 animals per year (Atkins et al. 2013). Given the estimated maximum growth rate for this species of 3%/year (Moore 2015), a constant mortality rate of 4.2%/year would result in the observed number of deaths (with an abundance of 160 in 1992 (Durham 1994)). The annual rate of decline, assuming that the population is growing at a maximum potential rate, would be 1.3% resulting in a 63% decline in three generations. In the Arabian Gulf, aerial strip transect surveys between 1986 and 1999 recorded Indian Ocean Humpback Dolphins as the second most commonly sighted cetacean after *Tursiops aduncus* (Preen 2004). The data from those surveys indicated a statistically significant decline in abundance of 70% for all cetaceans observed, including humpback dolphins, bottlenose dolphins, and finless porpoises (Preen 2004). In Madagascar there was an observed decline in sighting rates of humpback dolphins in the southwest region (off Anakao) along with a decrease in mean group size between 2004 and 2013, likely as a result of hunting, by-catch and habitat degradation (Cerchio et al. 2015).

Although few quantitative data on population trends exist, because of the restricted distribution and the generally small size of subpopulations of this species, only 4-8 deaths per year in a given subpopulation of 100 individuals would be sufficient to cause a 50% decline in that subpopulation over three generations. The overwhelming level of threat due to intensive use of this species' exclusively near-shore habitat by humans, and the consistently high reported mortality rates throughout the parts of the species' range



where monitoring has occurred, means that the global *S. plumbea* population size is almost certainly decreasing (Friedmann and Daly 2004, Reeves et al. 2008).

## HABITAT AND ECOLOGY

Throughout their range, Indian Ocean Humpback Dolphins occur in coastal habitats that include mangroves, rocky reefs, lagoons and shallow, protected bays. The over-riding habitat preference appears to be for water less than 25 m in depth. In Richards Bay, South Africa all encounters with humpback dolphins were in water shallower than 20 m. Dolphins used the area within 2 km from shore extensively and were rarely seen more than 3 km from land (Atkins et al. 2004). In Algoa Bay over 80% of sightings were within 400 m of the shore, average depth at sightings was 6.6 m, and there was a consistent preference for feeding near shallow rocky reefs throughout the year despite considerable changes in dolphin abundance (Karczmarski et al. 2000, Koper et al. 2016). In Zanzibar, distribution of humpback dolphin groups was restricted to a median distance of 830 m (min-max: 200-1,550 m) from the shore and a median water depth of 11 m (min-max: 2-26 m) (Stensland et al. 2006). In Nosy Be, Madagascar the mean depth of sightings was 8.2 m with 95% of sightings in water less than 20 m deep (Cerchio et al. 2015). In Goa and the Gulf of Kutchchh, India most groups were sighted in water less than 10 m deep (Sutaria and Jefferson 2004), and similarly in Chennai, dolphins occurred in water between 10 and 25 m deep (Muralidharan 2013). In Oman and the Arabian Gulf, humpback dolphins generally occur in water depths of less than 20 m with an average depth recorded of 8.3 m in 31 of 34 recorded sightings (Minton 2004, Minton et al. 2010). In some areas, such as the Musandam Peninsula and parts of Dhofar (Oman) they occur along rocky shores with a narrow continental shelf, but in such cases they occur very close (a few hundred metres at most) from the coast or within fjords. Humpback dolphins occur in channels within the mangroves of the massive Indus (Kiani and Van Waerebeek 2015; Pilleri and Gühr 1972) and Ganges-Brahmaputra deltas (Smith et al. 2006).

## THREATS

The habitat preference of humpback dolphins for shallow waters places them in some of the world's most intensively utilised, fished, shipped, modified and polluted waters. The primary threat to the Indian Ocean Humpback

Dolphin throughout most, or all, of its range, is incidental mortality in fisheries ('by-catch'), including in gillnets throughout its range and in shark control nets in South Africa. The by-catch threat likely emerged in the early part of the 20<sup>th</sup> century as the use of gillnets in global marine fisheries started to expand dramatically. Fish production increased at 3.2%/year from 1961-2009, and the increase in global landings began several decades earlier (FAO 2012). Marine mammal by-catch likely escalated

with the gradual introduction of monofilament netting in the 1960s and 1970s (Klust 1973, Potter and Pawson 1991, Tarbit 1984). There are no known areas that offer a refuge for this species from the pervasive threat of incidental mortality in fisheries.

With the exception of the KwaZulu-Natal shark control programme, there have been no on-board observer studies from which by-catch estimates could be generated. In virtually all countries around the Indian Ocean, fisheries, and particularly those that operate in the near-shore areas where these dolphins occur, are small-scale and artisanal, and involve small boats or canoes, that are frequently oar or sail-powered. The fishing effort is concentrated within the preferred near-shore habitat of humpback dolphins. For example in Pemba in Tanzania approximately 90% of humpback dolphins sighted during recent surveys occurred less than 1 km from shore, and 95% of recorded fishing vessels occurred in exactly the same habitat. Of 27 photo-identified humpback dolphins in the same area, 41% had clear injuries from previous entanglements in fishing nets (Braulik, unpub). This demonstrates the degree to which most humpback dolphins must frequently encounter fishing gear and there is every reason to believe that this example from Pemba is the norm throughout the species range.

Substantial incidental mortality of humpback dolphins in coastal gillnets is reported from most countries within their range (IWC 2002). The best studied by-catch is for the KwaZulu-Natal province in South Africa, where 203 humpback dolphins (50% in Richard's Bay) were captured in shark nets in the 30 years between 1980 and 2009. This corresponds to 4.2% annual mortality rate (Taylor supplemental spreadsheet "Sousa plumbea Natal.xlsx") assuming the population is potentially able to grow at 3%/year (Moore 2015). A high proportion (8%) of 109 distinctive, catalogued individuals were recognised among the shark net by-catch between 1998 and 2006 and while individuals naturally emigrate from the Richards Bay area, this points to mortality in shark nets as a driver of the permanent loss of individuals from the area which may also be negatively affecting the wider population (Atkins et al. 2016). In Mozambique, intense coastal fishing effort is considered to be the main threat to this species, and shark fishery gill nets and trawl nets have incidentally killed



dolphins throughout the country (Guissamulo 2008). Incidental catch of humpback dolphins has been documented in gillnets off the south coast of Zanzibar in Tanzania (Amir et al. 2002). There are currently no estimates of the magnitude of the by-catch, but given that even two humpback dolphins taken per year would exceed 2% of the population, it is very likely that by-catch represents a threat to the dolphins in the area (Stensland et al. 2006). In Oman, the high incidence of stranded humpback dolphins was presumed to be the result of interactions with fisheries (Collins et al. 2002). The reported mortality rate due to fisheries interactions (both by-catch and directed take) in the southwest region of Madagascar was noted to be almost certainly unsustainable (Cerchio et al. 2015). Although it is impossible to evaluate the magnitude in most areas, in all areas where it has been evaluated, the rate of incidental mortality of this species in fisheries appears to be high, unsustainable and causing rapid local population decline.

There are very few areas within the known range of humpback dolphins where anthropogenic alteration of habitat has not occurred. The destruction of inshore habitats is likely to be one of the greatest threats to humpback dolphins, particularly in the southern Africa region (Atkins et al. 2015, Plön et al. 2016) and in the Arabian/Persian Gulf and many other rapidly developing urban coastal areas (Baldwin et al. 2004, Karczmarski 2000). Dredging, land reclamation, construction blasting, port and harbour construction, pollution, boat traffic, oil and gas exploration and development (including inshore seismic surveys), and other coastal development activities occur, or are concentrated within, humpback dolphin habitat and threaten their survival in ways that are challenging to quantify (IWC 2002). The continued presence of humpback dolphins in highly degraded habitats does not rule out that habitat degradation has had adverse behavioural or health effects (IWC 2002, Piwetz et al. 2015). This is a pervasive threat that is increasing throughout the species range and there is no reason to expect this trend to change in the foreseeable future.

In comparison to other marine mammals with wider and more oceanic distributional ranges, the exposure of *S. plumbea* to environmental contaminants and their bioaccumulation is likely to be very high (Jefferson and Karczmarski 2001). Many of the large urban centres and ports around the Indian Ocean, including Mumbai, Karachi, Dubai, Aden, Mombasa, Dar es Salaam, Maputo and Durban, release a toxic cocktail of untreated human and industrial waste into coastal waters, which are inhabited by humpback dolphins. Of six dolphin species in South Africa *Sousa plumbea* was found to be the most contaminated by total Persistent Organic Pollutants (POPs) and concentrations of DDTs in *S. plumbea* were among the highest levels reported in delphinids globally, above the likely effect threshold for impairment of

immune functions (Gui et al. 2016). Elsewhere the effects of such pollution on humpback dolphins have yet to be studied but may be severe (Gore et al. 2012). For example, in Pakistan very high levels of chemical pollution in creeks of the Indus delta are toxic enough to cause fish kills, and are likely to have adverse effects on cetaceans (Kiani and Van Waerebeek 2015). In Gadani, Pakistan up to 100 ships per year are scrapped and dismantled leading to the release of large amounts of heavy metals, asbestos, dioxins and other persistent organic pollutants in coastal water. These problems are widespread and increasing in many countries; their impact on coastal dolphins has not been evaluated but pollution is likely contributing to local declines in range and abundance and may have caused extirpation adjacent to major industrial centres.

Other threats that appear somewhat less serious (possibly because of lack of information) or only affect a certain portion of the species range include direct killing, boat traffic/harassment, and oil spills and exploration (Piwetz et al. 2015, IWC 2002). There is little evidence for intense hunting of humpback dolphins except for those in Madagascar (IWC 2002); in the southwest, dolphins were historically taken with harpoons but are now targeted with gillnets or in a drive hunt. Andrianarivelo (2001) estimated a minimum of 61 deaths of *S. plumbea* between 1985 and 1999 in Anakao related to the directed takes including drive hunts (Cerchio et al. 2015). Given the relatively small populations sizes reported throughout the region, the reported mortality rate due to hunting is likely unsustainable and contributing to local population decline (Cerchio et al. 2015). Dolphin hunting used to occur in Menai Bay in Zanzibar; the last hunt occurred in 1996, taking 23 individuals, assumed to be *S. plumbea* and *Tursiops aduncus*. This would represent an annual mortality close to 12% for a combined population estimate of 199 animals for the two dolphin species in the area. This was certainly unsustainable resulting in a negative impact on the status of the dolphins off the south coast of Zanzibar (Stensland et al. 2006). Humpback dolphins were hunted in former years in the Arabian Gulf, and there was some evidence that there was continued hunting of dolphins until the early 2000s in Oman from small, motorised boats using harpoons (Baldwin et al. 2004), but this is now thought to have ceased. In Maputo Bay, Mozambique dolphins were also reported to be hunted for meat in intertidal shallows areas and estuaries (Guissamulo 2008).

Blast fishing using dynamite or other explosives is an intense threat to humpback dolphins in the few countries in which it occurs frequently; Tanzania (Braulik et al. 2017b, Cagua et al. 2014) and Sri Lanka (Cornelis et al. 2008). This illegal activity is concentrated in near-shore areas that are also specifically humpback dolphin habitat.

## USE AND TRADE

Throughout the majority of their range, except perhaps South Africa, accidentally captured humpback dolphins are generally used for human consumption and other local purposes. They are reportedly eaten (termed 'marine bushmeat') in Madagascar (Razafindrakoto et al. 2004), Mozambique (Guissamulo 2008), Tanzania (Amir et al. 2002) and India (Kumarran 2012). The meat is sometimes used as bait for sharks (Amir et al. 2002) or for crabs and fish (Kiani and Van Waerebeek 2015) and the oil is used in some areas as wood preservative for boats (Berggren and Coles 2009), for cooking or as medicine (Gore et al. 2012). A dolphin drive hunt in the southwest of Madagascar is exclusively to capture dolphins for human consumption (Cerchio et al. 2015). A hunt that occurred on Zanzibar killed many dolphins until the early 1990s but has now ceased. Although the dolphins are often utilised, reports of actual market sales are uncommon. Humpback dolphins were reported as being for sale at three different locations on the west coast of India (Goa, Malpe in Karnataka and Trivandrum in Kerala) (Kumarran 2012, Mohan 1994) and in Madagascar they were for sale in local villages (Cerchio et al. 2015). Non-consumptive uses of humpback dolphins include dolphin watching tourism. However, because of their low abundance and shy behaviour they are often not the primary target of the activity.

## CONSERVATION ACTIONS

For many countries and regions throughout their range Indian Ocean Humpback Dolphins are extremely poorly known, and although many threats exist, there have been very few effective conservation actions. One exception is KwaZulu-Natal in South Africa where since 1999 attempts have been made to reduce the large and unsustainable accidental capture of dolphins in the shark nets by using acoustic deterrents (pingers) and whale alarms (Cliff and Dudley 2011) but these have so far been unsuccessful (Atkins et al. 2013). Acoustic pingers were also trialed on gillnets in Tanzania.

Dolphins used to be hunted in Menai Bay in the south of Unguja Island, Tanzania, however since 1990s the hunt has been replaced by swim-with-the-dolphin tourism (Berggren et al. 2007). Similarly, in the southwest region of Madagascar there has been a focus on community engagement to mitigate marine mammal hunting and by-catch through the establishment of community-based nature-oriented tourism, local protection and enforcement, and social outreach campaigns, that have met with some success (Cerchio et al. 2014, Cerchio et al. 2009).

## CITATION

Braulik, G.T., Findlay, K., Cerchio, S., Baldwin, R. & Perrin, W. 2017. *Sousa plumbea*. The IUCN Red List of Threatened Species 2017.

[www.iucnredlist.org](http://www.iucnredlist.org)

# ENTANGLED

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FEATURE **DAVID ABEL**

In an effort to tell this story, I have accompanied scientists and lobstermen to sea. I travelled to a remote island off the Acadian coast of New Brunswick in Canada to observe the necropsy of a whale that died while migrating in search of food in the Gulf of Saint Lawrence. I have flown with scientists over the calving grounds to better understand why the whales aren't reproducing at rates that might allow them to avoid extinction.









BOSTON — As the research vessel cut through the glassy waters of Cape Cod Bay, a charcoal-coloured fluke thrust out of the cobalt chop. Seconds later, a few metres away, another smaller fluke emerged. It had been a rare sign of good news for the beleaguered North Atlantic right whale, among the most endangered species on the planet.

As their population has plummeted by 25 percent over the past decade, the scientists were thrilled to spot a thriving calf, one of just seven born in 2019.

Michael Moore was staring through an enclosed viewfinder to guide a drone to just the right spot over the whales, which in recent years have experienced a spike in deaths and a drop in births. He had the tricky task of flying through a fine mist showering from their blowholes, to collect vapour samples that would help his team test for bacteria to gauge the health of the whales. “The good news is the right whales are still out there doing their thing,” Moore, director of the Marine Mammal Center at the Woods Hole Oceanographic Institution, told me that cold spring morning aboard his boat. “They still have the potential

to do what they have to do to survive as a species. We just have to let them do it.”

It was my first shoot directing a new film I started working on that sought to chronicle the efforts to protect right whales from extinction; the impacts of those efforts on the lobster industry, the most valuable fishery in North America; and how the National Marine Fisheries Service in the United States has struggled to balance its conflicted mission of promoting commercial fisheries and protecting endangered species.

I had been writing about right whales for years as the environment reporter at The Boston Globe. But this was my first time seeing the iconic species, and we were greeted with an acrobatic spectacle, as scores of whales that were congregating in Cape Cod Bay to feed on a rice-sized form of plankton kept breaching the surface and belly flopping with a huge splash, sometimes a few metres from the boat.

I was drawn to the story of right whales in part because of a landmark report by the United Nations that found that more than a million species are at risk of extinction by

the end of the century. That number was overwhelming and hard to comprehend. After writing a story about the report for the newspaper, I wondered how anyone could grasp the magnitude of such an unfathomable loss of biodiversity.

I thought one way to do that would be to tell the story of one of those species, North Atlantic right whales, which the International Union for Conservation of Nature has designated as “critically endangered” on its Red List of Threatened Species, the last classification before they’re considered extinct or “gone from the wild.”

Right whales had been hunted for centuries. Large and laggardly — they can grow to 60 feet long and weigh more than 250,000 pounds — the whales would feed near shore, making easy targets. With valuable stores of blubber, and a tendency to float after being killed, that’s how they earned their name: They were considered the “right” whale to kill.

The oil from right whale blubber lit homes and brought great wealth to New England. By the time hunting of the mammals was banned





in 1935, there were few right whales left. Scientists estimate there was once as many as 20,000 right whales. Late last year, scientists estimated there were just 356 whales left, with only about 85 reproductive females.

Risks today include noise, pollution, and large ships. But scientists say the greatest danger to right whales comes from millions of fishing lines – mainly those that run from surface buoys to lobster pots or crab traps at the bottom – creating a lethal obstacle course in their feeding grounds.

Between 2010 and 2019, the majority of deaths were attributed to entanglements, which can drown the whales quickly or kill them slowly by impairing their ability to feed. Moreover, nearly all right whales have scars from fishing gear. When caught in the gear, the whales tend to worsen the problem by spinning around in an often-futile effort to escape.

The decline of right whales comes as the Gulf of Maine off New England – their primary feeding grounds – has been warming faster than nearly any other body of water on the planet. Since 2010, the temperature in the Gulf

of Maine has been above average 92 percent of the time, and at “heatwave” levels for 55 percent of the time.

That has led to a collapse in the population of calanus, a small crustacean that is the whales’ main source of food. Recent studies have found that calanus colonies have declined by as much as 90 percent in parts of the Gulf of Maine. As a result, the whales have been migrating north in search of new food sources, making it harder to protect them. In 2017, right whales were recorded for the first time in large numbers in the Gulf of St. Lawrence in Canada. Twelve died there, many of them from entanglements in fishing lines. In 2019, nine of the deaths were in Canadian waters. The 10<sup>th</sup> death, found off the coast of New York, was last seen entangled in fishing gear in the Gulf of St. Lawrence.

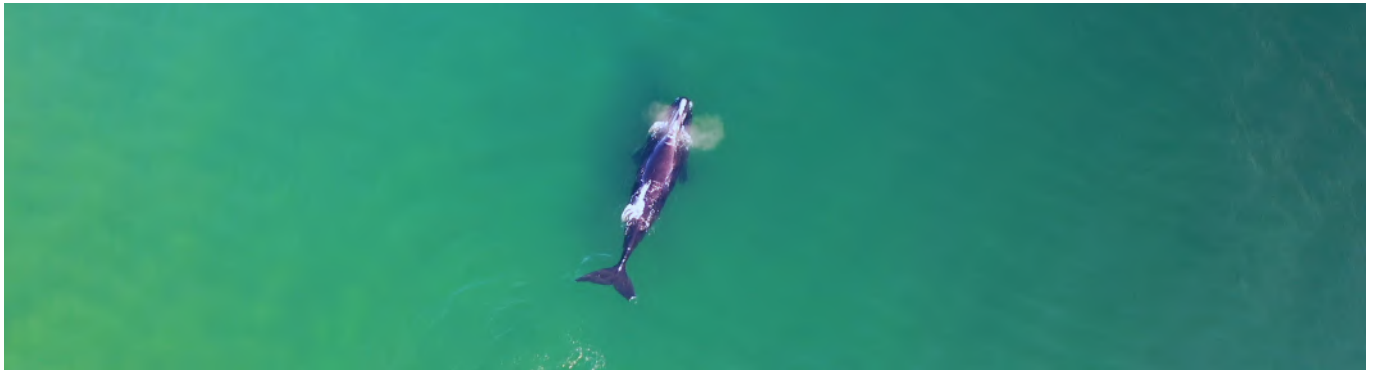
In all, over the past four years, 33 right whales have been found dead in US and Canadian waters. An additional 14 are seriously injured, considered swimming while dead. The most recent death was a newly born calf killed in February by a vessel strike in the calving grounds just off the coast of northern Florida.

At the current rate of decline, scientists say the whales could go extinct within 20 years. As a result, officials in both countries are searching for ways to protect them. Canada has imposed a raft of new regulations, including closing off some migration routes and feeding grounds to ship traffic and fishing. In the United States, under pressure from lawsuits by environmental advocates to reduce right whale deaths, the federal government has been considering controversial regulations that pit the region’s politically powerful lobstermen against scientists and environmental advocates trying to save the whales. The proposed regulations could reduce lobster lines by half in much of the Gulf of Maine and require lobstermen to use weaker rope, which would be more likely to break if a whale becomes entangled.

Both countries are also testing a new technology that could dampen the conflict and secure a brighter future for right whales: ropeless fishing systems that use remote-controlled, balloon-like devices to bring traps to the surface.

But the potential remedies are controversial: Lobstermen say they would be too expensive





and risk wrecking their livelihoods. They have launched an aggressive campaign to fight the proposals, holding rallies and using their political power to sway decision-makers.

In an effort to tell this story, I have accompanied scientists and lobstermen to sea. I travelled to a remote island off the Acadian coast of New Brunswick in Canada to observe the necropsy of a whale that died while migrating in search of food in the Gulf of Saint Lawrence. I have flown with scientists over the calving grounds to better understand why the whales aren't reproducing at rates that might allow them to avoid extinction.

On my last trip for the film just before the pandemic hit, I boarded a rubber speedboat last winter on St. Simon's Island in southern Georgia with Clay George, a senior wildlife biologist with the state's Department of Natural Resources, who was searching for a newly born calf that had been severely injured by a vessel. After a few hours at sea, a call came over the radio from the National Oceanic and Atmospheric Administration's slow-moving Twin Otter, flying just above them. They spotted a whale.

George's crew gunned the boat's powerful twin outboard motors, racing 10 miles east of St. Simon's Island. Until that cloudless morning, just six newborns had been documented through the calving season, which typically extends from December through March. Each one is critical to the species' survival, and in 2018, none was born, which was unprecedented.

When George's crew arrived at the coordinates, they motored toward a flock of seagulls, moving slowly in their 18-foot Zodiac to avoid any collisions with a species known to spend as much as 20 minutes submerged before coming up for air. Scanning the ocean with binoculars, they spotted a blow, and then a dark fluke emerge from the water. And then another smaller fluke. It was another hopeful sign, but it wasn't the injured calf, which was never to be found again.

The loss of that whale was devastating, and another calf would be found dead a few months later, leaving just eight calves surviving last year. The species needs at least three times that number to remain viable.

## THE FILMMAKERS

### DAVID ABEL



David Abel is a Pulitzer Prize-winning reporter who covers fisheries and environmental issues for The Boston Globe. Abel's work has also won an Edward R. Murrow Award, the Ernie Pyle Award from the Scripps Howard Foundation, and the Sigma Delta Chi Award for Feature Reporting. He co-directed and produced "Sacred Cod," a film about the collapse of the iconic cod fishery in New England, which was broadcast by the Discovery Channel in the spring of 2017. He also directed and produced two films about the Boston Marathon bombings, which were broadcast to

national and international audiences, on BBC World News, Discovery Life, and Pivot. His other films include "Lobster War" and "Gladesmen: The Last of the Sawgrass Cowboys." "Lobster War," which is being distributed by Gravitas Ventures, won the 2018 award for "Best New England Film" at the Mystic Film Festival and was runner-up for the Grand Prize for Best Feature Film at the 2018 International Maritime Film Festival. "Gladesmen" won the 2018 Made in Miami Award at the Miami Film Festival. Both of those films are also being distributed by Bullfrog Films. Abel, who began learning to make films as a Nieman fellow at Harvard University, is the film's director, producer, writer, and director of photography.

### ANDY LAUB



Andy Laub, founder and director of Andy Laub Films, has hiked more than 7,000 miles in search of compelling stories. From nature films to cultural documentaries, he's worked as a writer, cinematographer, editor, visual effects artist, expedition coordinator, and soundtrack composer for networks including the Discovery Channel, National Geographic Channel, and BBC World News, Amazon Prime, and Hulu. He co-produced and directed "Sacred Cod," "Lobster War," and "Gladesmen" with Abel. Laub's other films have explored the urban boom in Mongolia, the application

of ancient building traditions by Hopi Indians, wildlife in the Pyrenees, and a trek he made across the Pacific Northwest Trail. His film, "As It Happens: Pacific Crest Trail," has been viewed by nearly a million people worldwide. Laub is the film's producer, editor, writer, soundscape designer, and soundtrack director.

### ENTANGLED SCREENING FOR EDA MEMBERS COMING SOON

EDA will be screening Entangled for its EDA Members on the 4<sup>th</sup> of August. More details to follow soon.

David Abel's award-winning film "Entangled," which premiered in the summer of 2020 at the Woods Hole Film Festival on Cape Cod, has shown at more than a dozen film festivals and is slated this spring for a national broadcast in the United States.

### FOLLOW DAVID ABEL

Twitter: @davabel











# HOW EIGHT PACIFIC ISLAND STATES ARE SAVING THE WORLD'S TUNA

FEATURE & PHOTOGRAPHY **CHRISTOPHER PALA**  
UNDERWATER PHOTOGRAPHY **DAVID SERRADELL ZAMORA**

They have created a strikingly successful scheme that prevents overfishing and raises local incomes at once.





**ABOVE AND TOP OF OPPOSITE PAGE:** Pohnpei, in the Federated States of Micronesia, is a major transshipment point for purse seiners who tie up next to refrigerator ships known as *refers* and hand over to them their frozen catch of skipjack and juvenile bigeye.

They control the richest tuna waters on the planet, an area of the Pacific roughly one-and-a-half times the size of the United States. But 10 years ago, eight island states in whose waters most of the world's canned tuna is fished were seeing almost none of the profits. In 2011, however, they scored a striking success for small-state diplomacy when they devised a system to raise the fees foreign fleets were paying them for the privilege of fishing in their exclusive economic zones, which extend 200 nautical miles off their coasts. At the time, all they got was a scandalously low fraction of the tuna's value – as little as 2.5 percent.

Today, the eight island nations have succeeded beyond their wildest dreams. They increased their take tenfold – from \$50 million in 2010 to around \$500 million last year. Not only did they grow their income, but they also imposed controls that stabilized catch rates and prevented overfishing, a rare success story in a world where ravaging the oceans is still the brutal norm. “They’ve been very clever,” said Glen Holmes, an officer for the Pew Charitable Trusts’ international fisheries programme.

Six members of the agreement are microstates scattered between the Philippines and Hawaii: Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, Palau, and Tuvalu.

The other two are much bigger: Papua New Guinea and the Solomon Islands, both closer to Australia.

The tuna fees have turned from relatively small change to serious income – and for some of the smaller states, it's virtually the only non-aid source of foreign exchange. They were therefore highly motivated to make the system sustainable in the long run. For that, they had to make sure the foreign fleets did not do in their waters what they have done almost everywhere else: take too many fish, thereby reducing some populations like the bluefin tuna to 3 percent of their original numbers.

As a result, the group – formally known as the Parties to the Nauru Agreement (PNA) – have become a global model showing how poor, culturally disparate, and isolated small countries can take on the likes of the United States, China, and the European Union – and win. Some are now saying other countries whose waters have been plundered by foreign fleets, such as the nations on West Africa's coast, should copy the PNA and do the same. Others hope the weak international bodies trying to manage fishing in the Indian, Atlantic, and Eastern Pacific oceans will also emulate them in the decades ahead.

The equatorial belt of the Western and Central Pacific is the single biggest tuna fishery in the world, worth around \$6 billion. That's because half the world's skipjack tuna – a particularly tasty and prolific species – calls it home. About 1.5 million tons are fished there every year; virtually all of it ending up in cans. Canned tuna is one of the world's most affordable proteins because it is caught by a method that is both relentlessly efficient and biologically absurd.

Like most tuna, skipjack – which average under 2 feet long and around 10 pounds – travel in schools. When they come across schools of smaller fish, such as anchovies, they drive them to the surface and gobble them up, attracting seabirds that are then spotted by sharp-eyed ship captains. Fishermen speed to the feeding frenzy and encircle it with huge nets, known as purse seines, that close up at the bottom and are craned into the ship's hold. The catch is so big that the skipjack at the bottom get crushed, but no one cares because they will end up in small pieces in cans.

For reasons that are poorly understood, skipjack schools also like to congregate around floating objects – logs, barrels, anything. The purse seiners discovered that setting their nets around these objects yields even bigger catches, sometimes reaching 300 tons of fish





**BOTTOM LEFT:** President Maamau of Kiribati. **BOTTOM RIGHT:** In Kiribati, skipjack caught offshore are a mainstay of the diet and often sold fresh by the roadside in Tarawa.

at once, according to fisheries scientist John Hampton of the Pacific Community in New Caledonia.

But here's the rub: While the skipjack schools catching anchovies swim mostly alone, the ones circling floating objects attract company – sharks, turtles, and juveniles of other tuna species – that make up 20 percent of the catch. About 3.3 percent of the total is immature bigeye tuna, Hampton explained. That doesn't seem like much, but more than five times as many bigeyes are caught accidentally as juveniles around floating objects than as adults, which aren't netted in purse seines but caught by hook-and-line vessels called longliners.

It so happens that when a bigeye grows to its full size of almost 6 feet and 250 pounds (and no longer hangs out around logs), its rich, buttery flavour makes it the most sought-after delicacy for sushi and sashimi lovers after the catastrophically overfished bluefin. Adult bigeye fetches around \$6,600 a ton; juvenile bigeye, mixed with skipjack, a paltry \$1,300, said Megan Bailey, a fisheries economist at Dalhousie University in Halifax, Canada.

In other words, 80 percent of the bigeye die for nothing before they've even had a chance to reproduce – simply to line the pockets of

the purse seiners who could easily forego floating objects and cast their nets around free-swimming schools of skipjack, which attract no hangers-on. Because canned bigeye doesn't even taste good, juvenile bigeye end up as cat food or vaguely labelled "light tuna" sold in the developing world. The purse seiners would like to avoid catching them, but it's irresistibly more profitable to catch skipjack around floating objects than in a free school.

In the early 2000s, things took a turn for the worse with the advent of the so-called fish-aggregating device (FAD) – a floating object with brains. A barrel or two and a bit of netting that attract the fish are equipped with a transponder that transmits its position in a code that only its owner can read.

Soon, they added echo-sounding that automatically estimates how many fish are below, their size, and often their species. Bingo! Fishing became a video game, where ship owners follow their FADs on screens in real time to see how many fish have congregated below each one and order the ship to hop from one to the other. Today, around 80 percent of skipjacks are caught around FADs, killing, in addition to young bigeye tuna, hundreds of other species, including sharks, turtles, and other fish, most of which are tossed overboard.

Although fertile skipjack remained at a relatively healthy 44 percent of the unfished population, the stocks of more slowly reproducing bigeye plummeted.

A decade ago, faced with this situation, the eight members of the PNA (plus the Tokelau Islands, a New Zealand possession) jointly decided that any fishing in their waters would have to jettison the then-current system under which each vessel declared its catch and paid 5 percent of its value to the host country. PNA officials said that fishers grossly underreported their catch, effectively only paying 2.5 percent of its true value and contributing to uncontrolled overfishing of the stock.

Instead, the countries devised a new system known as the Vessel Day Scheme, where vessel owners would bid for each day they wanted to fish. Soon, the PNA countries set a minimum of \$8,000 a day; today, the average is closer to \$12,000. Under the new scheme, "we sell opportunities to fish, not fish," said Ludwig Kumoru, the PNA's CEO. They also banned the use of FADs for three months each year, reducing the senseless slaughter of young bigeye. The move cut the number of purse seiners from 300 to 250, though their daily catch increased on the back of technological advances. The scheme stabilised the bigeye





Hawaii longliners fish for adult bigeye and billfish.

population at a relatively healthy 38 percent of its original size, according to Hampton.

To capitalise on their success, PNA countries created a brand of canned tuna called Pacifical that contains only skipjack caught in free-swimming schools, which have close to zero bigeye bycatch. The brand is already popular in Germany, according to Rainer Froese, a scientist at the Helmholtz Centre for Ocean Research in Kiel, Germany.

Unlike many other small-country governments that suddenly got an oil bonanza or mining windfall and egregiously wasted or stole it, the PNA countries seem to be spending their bonus' rather wisely, redistributing much of the new income among their populations.

Take Kiribati, a nation of only 117,000 people whose exclusive economic zone is about the size of India and the biggest of the group. The country saw its fishing income rise in the past decade from \$27 million in 2008 to \$160 million last year – even as it set aside around 11 percent of its EEZ as the Phoenix Islands Protected Area, where it eventually banned all fishing.

Kiribati's extra income "has made a huge difference in the life of the people," the country's former president, Teburoro Tito, told Foreign Policy. He said there are now benefits for the unemployed, pensions for the elderly,

stipends for students, and aid for the disabled. In addition, the current administration, led by President Taneti Maamau, has embarked on a bold programme to put cash in the pockets of citizens by tripling the price of copra, dried coconut meat. The trees grow on virtually all of the country's 33 atoll islands and are harvested by a large part of the population. Spending on health – Kiribati suffers from a high incidence of diabetes – and education has soared.

The government is also working on an ambitious plan to dredge sand from the inside lagoon of the ring-shaped atolls and raise the islands in the most populated areas to mitigate the effects of any future sea level rise. Normally, there is little reason to worry about Pacific atolls – storm waves will raise land levels naturally in unpopulated areas, scientists said. "PNA income has provided Kiribati a golden opportunity to show how robust adaptation work can be undertaken to secure the future of small island states," Paul Kench, the dean of science at Simon Fraser University near Vancouver, Canada, wrote in an email. He is the lead scientist on a research project documenting how atolls react to sea level rise – they rise with it. "Such work would serve as a model for other atoll nations," he wrote.

Rashid Sumaila, a leading fisheries economist at the University of British Columbia in Vancouver, said the PNA model should be

applied to West Africa, where nutrient-rich coastal waters produce exceptional amounts of fish. Unfortunately, he said, coastal states stretching from Mauritania to Nigeria have allowed foreign fleets – mostly Chinese and European ones – to ravage and vastly reduce their fish populations, paying them only between 4 and 8 percent of the landed value of their catch.

Sumaila suggests going to a similar system where vessel days are auctioned to the highest bidder and only boats that continuously report their positions are allowed to operate. That would achieve three goals, he said, "First, you can raise the license fees to a point where it can make a real difference to the economies of these countries. Second, you can reduce overfishing so the fish populations can grow back and local fishers can start getting more fish. And third, you can make a big dent in illegal fishing."

Quentin Hanich, who studies fisheries governance at the University of Wollongong in Australia, said if the PNA has succeeded in limiting overfishing, "I see no reason why the tuna commissions managing the Indian, Atlantic, and Eastern Pacific fisheries couldn't adopt their system."

The PNA's example shows that when financial and conservation goals coincide, even the unlikely players can score major victories.

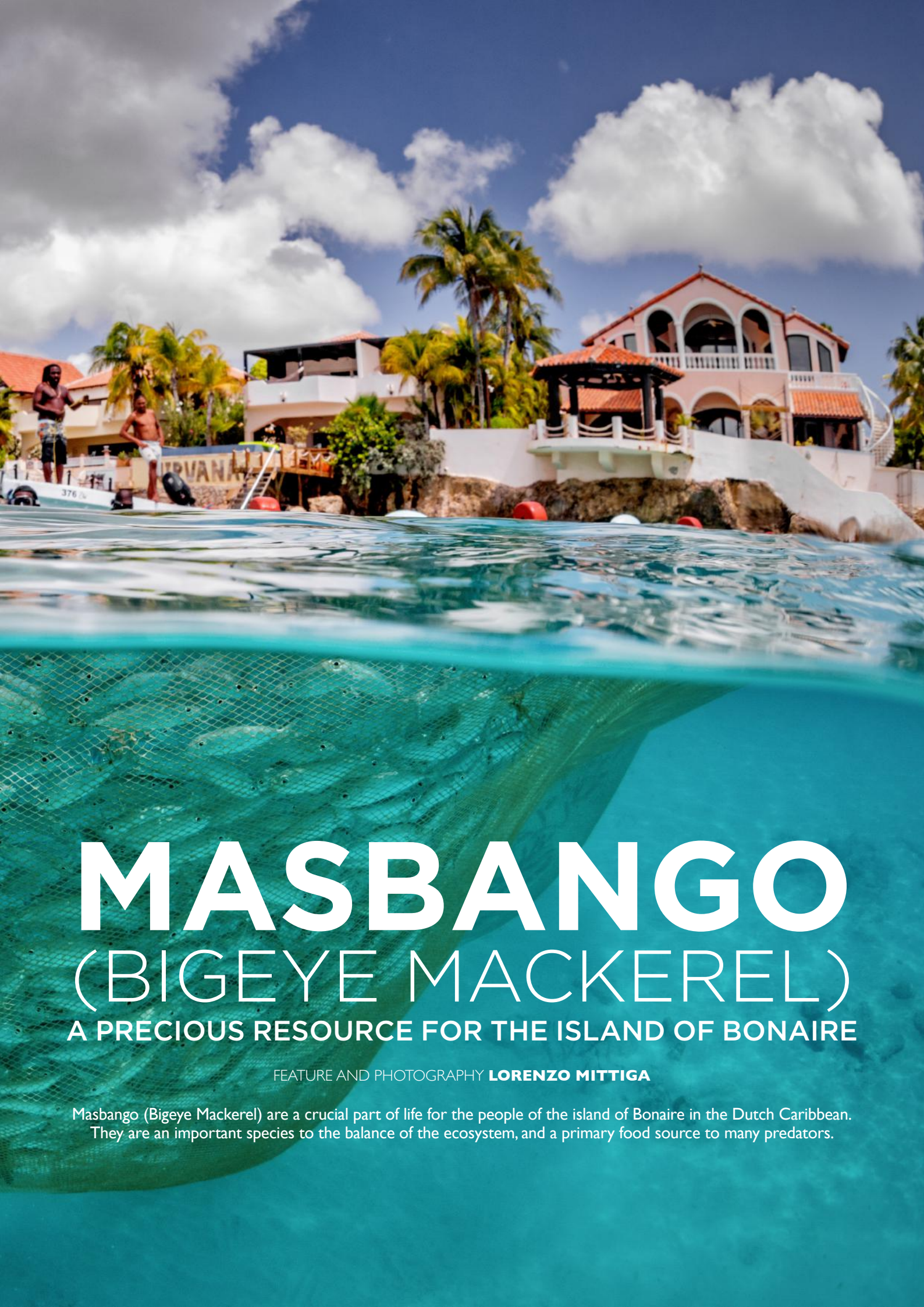












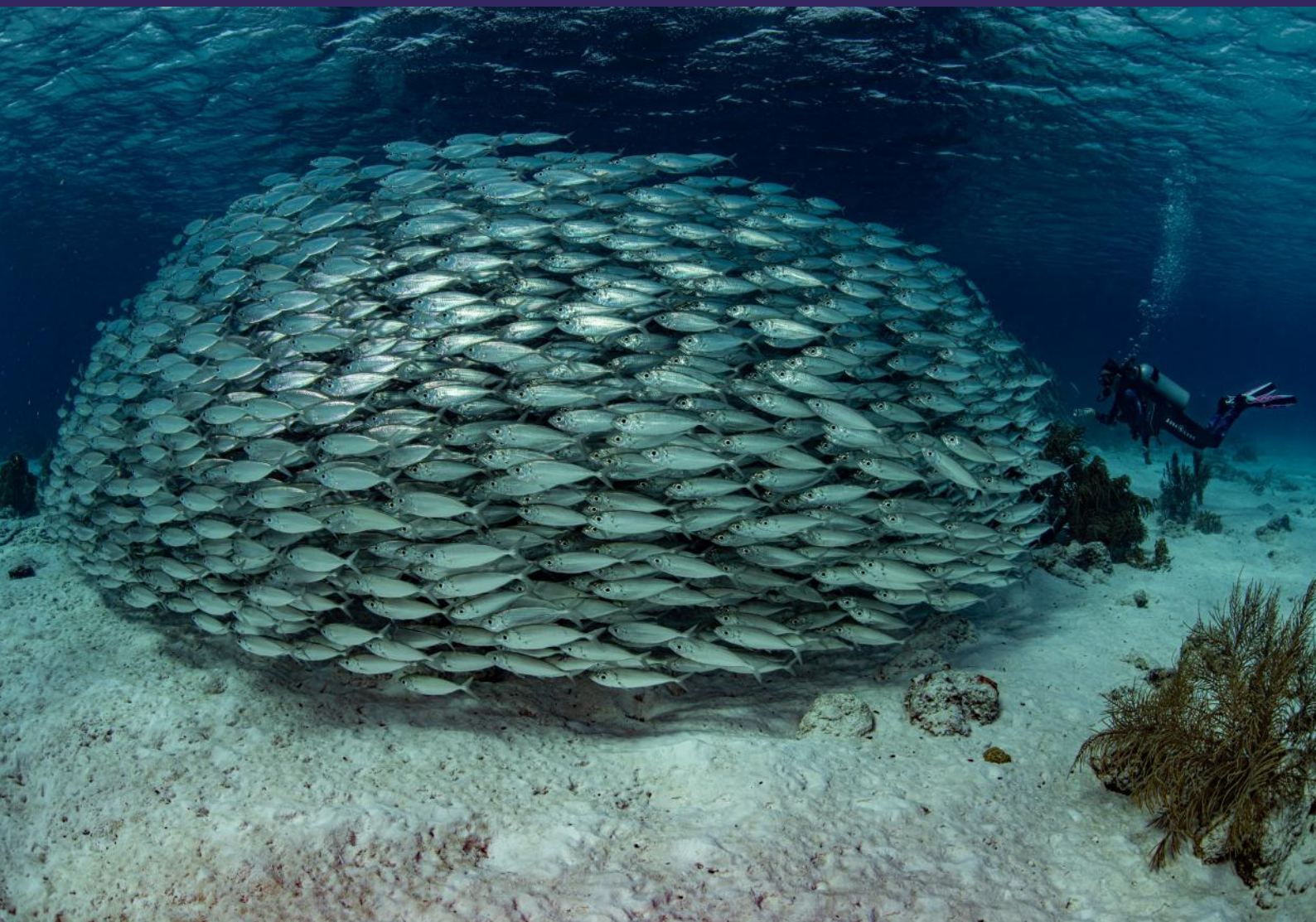
# MASBANGO (BIGEYE MACKEREL)

A PRECIOUS RESOURCE FOR THE ISLAND OF BONAIRE

FEATURE AND PHOTOGRAPHY **LORENZO MITTIGA**

Masbango (Bigeye Mackerel) are a crucial part of life for the people of the island of Bonaire in the Dutch Caribbean. They are an important species to the balance of the ecosystem, and a primary food source to many predators.





**COVER PAGE:** The net with its content of fish getting tighter and closer to the boat. **ABOVE:** Scubadiving with a bait ball. **OPPOSITE PAGE:** Freediving above a bait ball.

Masbango (Bigeye Mackerel) are a crucial part of life for the people of the island of Bonaire in the Dutch Caribbean. They are an important species to the balance of the ecosystem, and a primary food source to many predators.

These fish create large aggregations called "bait balls" which are a huge underwater attraction for divers and snorkellers alike, thus playing an important role in the island's tourism economy. Bait balls are defence measures adopted by small schooling fish to protect themselves from predators. Small fish such as these bigeye mackerels are naturally preyed upon, which is why they are known as bait fish.

Local fishermen's families heavily rely on the presence of this species throughout the year in order to make an income. Traditionally, part of the catches are shared with some of the other poorer, less fortunate families.

The shoals get close to the coast of the leeward side of the island and stay for a few months (from the end of March through to October) ensuring a constant source of food for the local people and predators in the ocean. These Masbango bait balls are seen scattered along the south-west coastline of Bonaire, in

the shallow waters. Each shoal moves daily along the coast searching for zooplankton to feed on and to carry out their reproduction (spawning) cycle. Sighting the shoal is amazing, even seen from the shore through the clear and turquoise water. Each shoal appears as a dark cloud that constantly changes shape as predators follow them.

For Bonaire island, the presence of the Masbangos is an important tourist attraction. Divers and snorkellers can spend hours observing and interacting with these large aggregations of fish in the shallowest, clearest, warmest and safest waters they will ever find.

As a source of food, Masbangos are very important too. They are relatively cheap and affordable to anyone. The fishermen not only catch the fish to be sold at the Curacao Market to make a living during these months of the fishing season, but they also sustain the poorest families of the island.

## SUSTAINABLE & TRADITIONAL FISHING METHODS

For local Bonarians, Masbango fishing is a tradition that has been passed down through many generations.

This style of fishing is a family business during the Masbango season. All the active members (women included) from the fishing families get involved and work together as a team. They camp on the beaches for weeks to follow the bait ball movements and survey the nets at all times.

The first stage of fishing is to spot the fish in the shallow, clear coastal waters and wait for the shoals to stop somewhere in order to set up the nets. The net is initially stretched from the shore to the beginning of the drop-off. The shoal moves in to the shallows and when they encounter the net, the fishermen encircle it around the fish, creating a large enclosure.

This traditional way of fishing does not call for any other tools apart from the individual fishermen's skills and experiences. The "spotter" swims close to the bait ball to estimate the movement of the fish heading towards the net, and the fishing net is managed with the help of skin divers. These fishermen are required to have swimming and freediving skills in order to be a success.

These traditional fishing methods follow important rules and guidelines in order to win the species over and ensure the



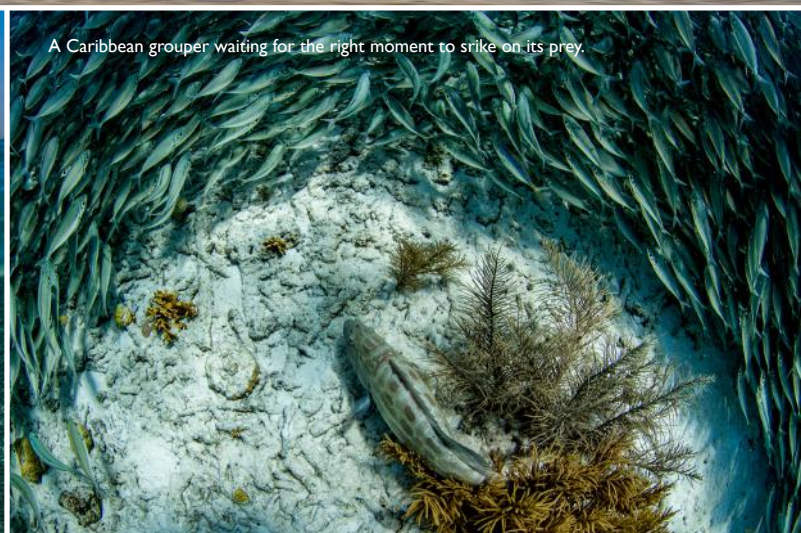




# FEATURES



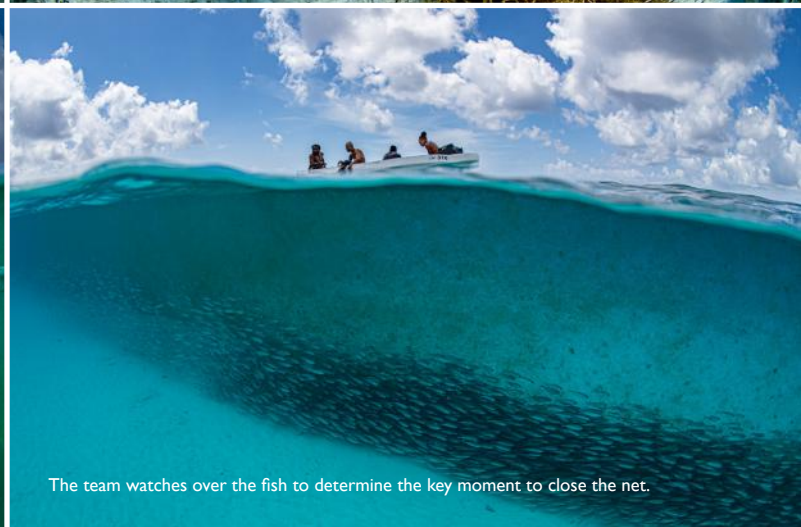
A brown Caribbean pelican floating over a bigeye mackerel bait ball.



A Caribbean grouper waiting for the right moment to strike on its prey.



Fishermen need swimming and freediving skills to set these nets in position.



The team watches over the fish to determine the key moment to close the net.



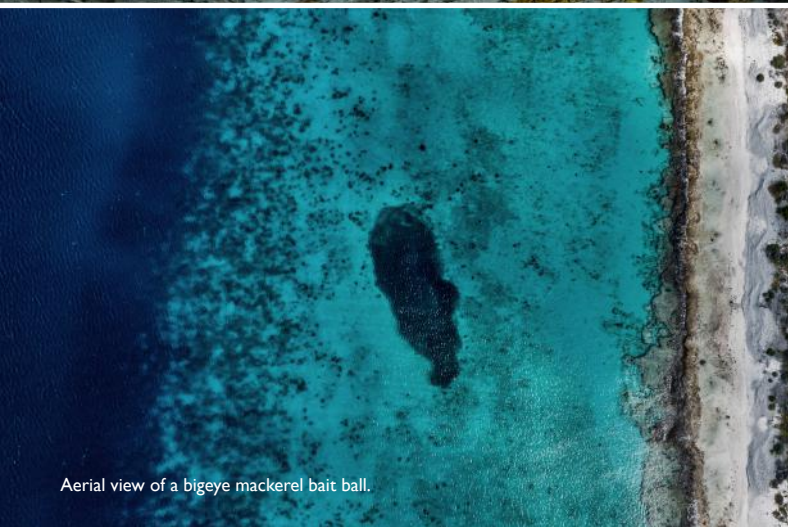
An aerial view of Bonaire's south-west coast.



A great barracuda on the hunt.



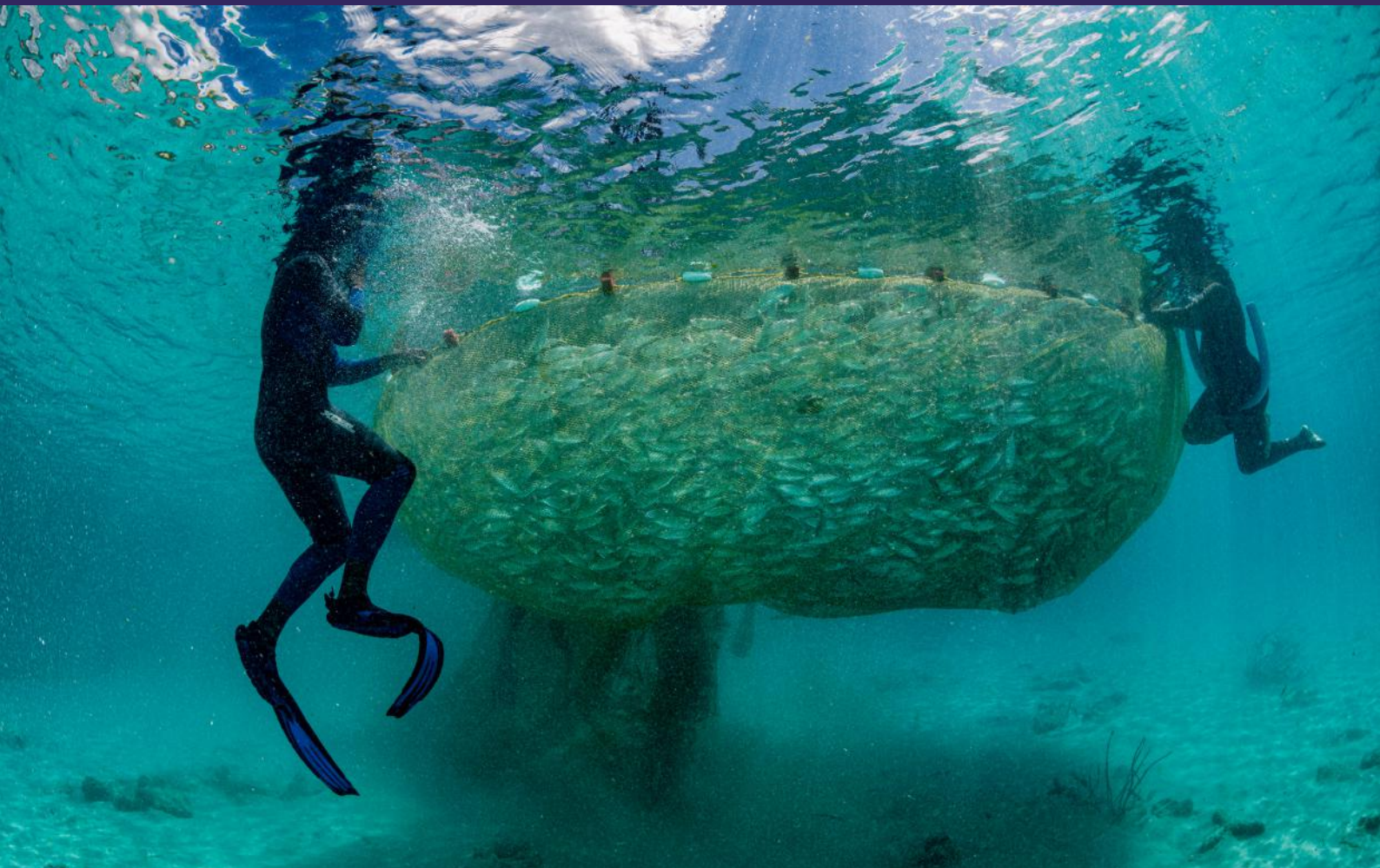
A blue trevally chasing the bait ball.



Aerial view of a bigeye mackerel bait ball.







**ABOVE:** Skin divers helping to recover the net. After part of the net is hauled on to the boat, the bait ball is ready to be harvested. **BOTTOM LEFT:** When it is the right moment, the net is closed with the fish inside it. It stays under the constant surveillance of the fishermen for as long as it is needed to complete the harvest. **BOTTOM RIGHT:** A fishing net set in shallow waters of the residential coastline.

continued long term practice for the future. Unfortunately, uninformed people are always there to criminalise the fishermen as they harvest their beloved bait balls from the water, without thinking that the fish are not only an attraction, but also a source of food.

The Masbangos aggregate for one main reason: reproduction. If this biological function is not completely terminated, there will be far fewer Masbango shoals in the future. The fishermen have to be sure that the fish spend enough time and reach a certain size in order to establish that the reproduction takes place.

Waiting for the right moment is mandatory. The fishing team watch over the fish to determine the key moment for closing the net. Once the Masbangos are in the fishing zone, close to the net, the fishermen circle them, and close the net around them. As the fish are ensured in the enclosure, they can be left for several weeks until they complete their reproduction.

No mistakes are permitted as it could ruin an entire season of fishing. The responsibility for a successful catch is high as fishermen's families and many other local people depend on it.

In respect to the surrounding environment and other sea creatures, these nets are not designed to catch the fish by "entanglement", but rather used to create an enclosure where the fish can remain within it. Later, the fishermen will harvest them manually, box after box, from a small boat. A lot of effort is put into this fishing method. The group of fishermen coordinate as a team in order to succeed.

A skin diver continuously checks that the net doesn't get entangled on small coral patches or that other species are caught inside it, such as turtles, tarpons, barracudas or other reef fish.





**ABOVE:** Harvesting is done by hand with the use of a plastic fruit box. The fish are scooped out until the boat has been fully loaded. The left-over fish remain in the net to be harvested later. **BOTTOM LEFT:** Skin divers check the net to make sure everything is okay before they start harvesting. **BOTTOM RIGHT:** The chief fisherman is satisfied with a successful day's catch.

Laws and governmental fishing rules are very well respected and take a lot of consideration. Bad conduct can result in expensive fines and net confiscations which can destroy many families' economies.

The fishing doesn't go unnoticed to opportunistic feeders. Active predators are attracted by the multitude of fish in and near the net. Common predators of the Masbangos are pelicans, barracudas, jacks, trevallies, groupers, tarpons, and occasionally, dolphins.

The fishermen never underestimate the fact

that the bigeye mackerel is an important species for the ecosystem and has to be shared with the other creatures of the reef.

#### THE HARVEST

The responsible fishermen will wait as long as needed before starting the harvest. They wait because this is the most important moment of the year for the bigeye mackerel to release their eggs and fertilise them.

Respecting the natural events when the reproduction is completed will ensure that new stocks of bigeye mackerel will grow

the following year. This is a sustainable way of fishing. A tradition with many years of experience passed over from generations.

The harvest can last from a few days, to a few weeks if the shoal is a large one. Only the required amounts of fish are harvested each time. The rest will have more time for reproduction.

500 to 1,000 kg of fish are harvested every single day. Initially the catches are shared between families, then the rest are sold to local fisheries, restaurants and sold at the Curacao Market.







# DIVING & COVID-19

## A FOCUS IN THE MENA REGION

FEATURE **MUHAMMAD ELEBRASHI** PHOTOGRAPHY **BELEN ANDRES & JONG MOON LEE**

Although the region's governments took responsible steps to protect citizens while maintaining its economy since COVID-19, people's behaviour, including stigma, is critical. It is believed that with the proper interaction between individuals and entities, the diving industry might propagate a responsible diving environment in the MENA region.







The world is currently witnessing a dramatic disruption of everyday life owing to the rapid progression of the COVID-19 pandemic. As the pandemic evolved, there was a need to better understand its characteristics and potential impact in order to identify ways to avert pandemic-related mortality. Currently, medical and public health experts are still learning about COVID-19 and its vaccine, though a number of vaccines are being issued to the global markets. Focusing on the diving industry and how it might affect fellow divers, diving medicine physician Dr. Manuela Schoch was encouraged to issue an educational video addressing the topic, including recommendations on how to get back to diving in late February 2021.

The Middle East (MENA) region is still in the process of identifying COVID-specific issues related to the diving industry, and developing strategies to avert pandemic-related mortality within their diving and other communities. A number of interviews were done with personnel from the diving community in Egypt, Lebanon, Saudi Arabia, Kuwait, the United Arab Emirates, and Bahrain. From experience, it is believed that these six nations are the most active countries with regards to diving in the

MENA region. The purpose of the interviews was to uncover personal experiences and practices for divers living in MENA, while presenting relative regulators' requirements.

#### COVID-19

Similar to any country, the World Health Organization (WHO) cooperated with the MENA countries' Ministries of Health (MoH) to disseminate standard messages to the population. The purpose of these messages is to deliver valid information regarding COVID-19 and ways to reduce its spread. The messages were communicated in several languages to address the different nationalities living in the region.

#### HOW MESSAGES ARE DELIVERED TO THE MENA'S DIVING INDUSTRY

In addition to messaging from the MENA countries' MoH, certain agencies and government related entities were assigned to act as intermediaries for efficient management by MoH. It was reported that a number of MENA countries (such as Egypt, Saudi Arabia, and the United Arab Emirates) have diving regulatory bodies. For example, the Chamber of Diving & Water Sports (CDWS) is Egypt's diving regulatory body; also, Saudi Water

Sports & Diving Federation (SWSDFKSA) acts as Saudi Arabia's (KSA) diving regulator. The Dubai Sports Council and the Federal Sports Authority act as diving regulators in Dubai, UAE.

It is worth mentioning that previously mentioned regulators are in close contact with their respective country MoHs. For example, KSA's SWSDFKSA distributes training materials to diving instructors and dive centres on how to behave in order to avoid COVID-19 as stated by Majed Abed, a PADI diving instructor. Besides, Egypt's CDWS issued several guidelines on how to deal with and avoid COVID-19. Also, according to the Egyptian dive centre owners interviewed, the dive centres have to meet MoH's criteria as enforced by CDWS, in addition to the regular quality control audits. Similarly, the UAE diving regulatory bodies specified clear instructions to dive shops and boats on how to deal with COVID-19 as stated by the UAE's Ministry of Health officials, and confirmed by Richard Lundgren, a Technical Administrator/GUE Board of Director member.

#### COUNTRIES WITHOUT DIVING REGULATORS

While Egypt, KSA, and the UAE have diving





regulators, Lebanon, Bahrain and Kuwait do not, although Kuwait has recently tried to establish one. In these countries, the respective MoHs and Ministries of Tourism co-ordinate together in order to reach out to the vast majority of their stakeholders including hospitality-focused organisations and dive centres. Not having specific regulations to follow, dive centre owners in these regions reported the adoption of specific operational frameworks from other MENA's mature diving regulators, such as CDWS. According to Faisal Al-Qahtani, a Kuwaiti trimix diver, all dive centres sanitise rental gear after each use. Hala El-Khoury, a GUE diver, stated that the compressor room is also a restricted area in dive centres.

In Bahrain, a government MoH official reported that several regulations were issued and not limited to diving. Ahmad Al Husaini, a Kuwaiti trimix diver and the Bahrain Underwater Theme Park's project manager, stated that the park is being largely controlled by the Ministry of Tourism and has since stopped diving activities in the park following COVID-19. It is believed that the park is attracting touristic diving i.e. mainly people living in the neighbouring GCC countries;

thus, closing the theme park would stop non-Bahraini residents from coming to Bahrain to dive. Other Bahraini dive sites are however believed to be open for locals to dive.

#### MENA RESPONSIBILITY

Although clear statements were circulated in all MENA countries regarding precautionary measures, people show mixed approaches towards those measures. The behaviour showed by a number of divers is a reflection on their responsible attitude, regardless of whether there is a diving regulator or not. For example, Patrick Nohra a Lebanese GUE fundamental diver, recovered from a COVID-19 case. Nohra got infected after going out with a friend who was infected. Once he received his positive COVID-19 test, he immediately informed his family and colleagues, and secluded himself from everyone to prevent the virus from spreading to avoid risking anyone else's health.

Ali Fikree, a GUE Rec/Fundamental/DPV Instructor living in the United Arab Emirates, stated that he suspected being infected with COVID-19 a year earlier, but he did a blood test as well as a PCR test and they indicated that he was clear.

After consulting a doctor, it turned out to be normal flu. However, he was quarantined until his doctor's clearance. It is believed that the UAE government officials realised that people are not responsible and the only way to ensure compliance is to punish non-compliance.

Imad Farhat, a Lebanese trimix instructor, stated that he always follows medical check-ups, PCRs, and quarantine practices following his continued travels. He mentioned that one of the major downsides during this pandemic is the vicious circle of being forced to do PCR tests and quarantine after even the speculation of infection, such as the incident that happened to him after the announcement of a suspected COVID-19 case on one of the flights he was on. However, the announcement turned out to be misleading as the passenger was on a flight two weeks prior to his.

#### WHAT ABOUT THE OTHER COUNTRIES?

While Nohra, Fikree, and Farhat's behaviours are examples of responsible divers irrespective of the existence of diving regulators in their countries, there are plenty of divers who are not quite so responsible and do not follow safe practices. For example, a Kuwaiti government official mentioned





that diving boats were not included in the lockdown. Al Qahtani confirmed that at the start of the lockdown, there was a sharp increase in demand for diving activities as there are not many opportunities for recreation in Kuwait. Accordingly, Al Husaini stated that he has to deal with waiting lists to join a diving trip following this increased demand. Unfortunately, it was mentioned that dive centres with boat operations do not adhere to social distancing on board.

### THE STIGMA

Despite the new measures to control the spread of the virus, people's behaviours sometimes contradict with the critical situation they are living in on a daily basis. While both behavioural and economic studies are beyond the scope of this article, behaving responsibly is always challenged by economic factors. This leads to the situation where some of those who were infected with the COVID-19 virus do not communicate that they were infected and they show up on work premises while they should be quarantined.

Fikree stated there is a stigma in the Middle East for people with COVID-19 and this might be used against them for losing their jobs (this is how employers get rid of their employees to cut costs) or other benefits. However, he mentioned that this stigma is not the case in the UAE, as employers ask their employees to stay at home (it is unclear how long the stay at home

could be considered paid leave though) so as not to spread the virus, a case which exactly happened to him when he had flu a year ago.

Sharing many cultural topics of the Middle East, some Egyptian people believe that being a COVID-19 patient is a stigma, as such, they will not mention it, an irresponsible behaviour that endangers healthy people surrounded by others infected with the virus. My personal COVID-19 story was triggered as a result of said stigma.

### DIVING AND COVID-19

The diving industry is not an exception from people's stigma. Some divers are believed to show irresponsible behaviour while diving. This is similar to diving practices in Kuwait as mentioned earlier with the lack of social distancing on dive boats. Yet, it is believed that divers and instructors might enforce health regulations. For example, Fikree stated that he would let his community members know if he or anyone else he knew had COVID-19 and had recovered. This is in the interest of transparency, and safety of the community as well as stopping the spread.

### RECOVERING FROM COVID-19 & DIVING

There are many divers who have had the COVID-19 virus and they are eagerly looking forward to their next diving trip. In addition to Dr. Schoch's presentation, the Diving Alert Network (DAN) is undertaking a number

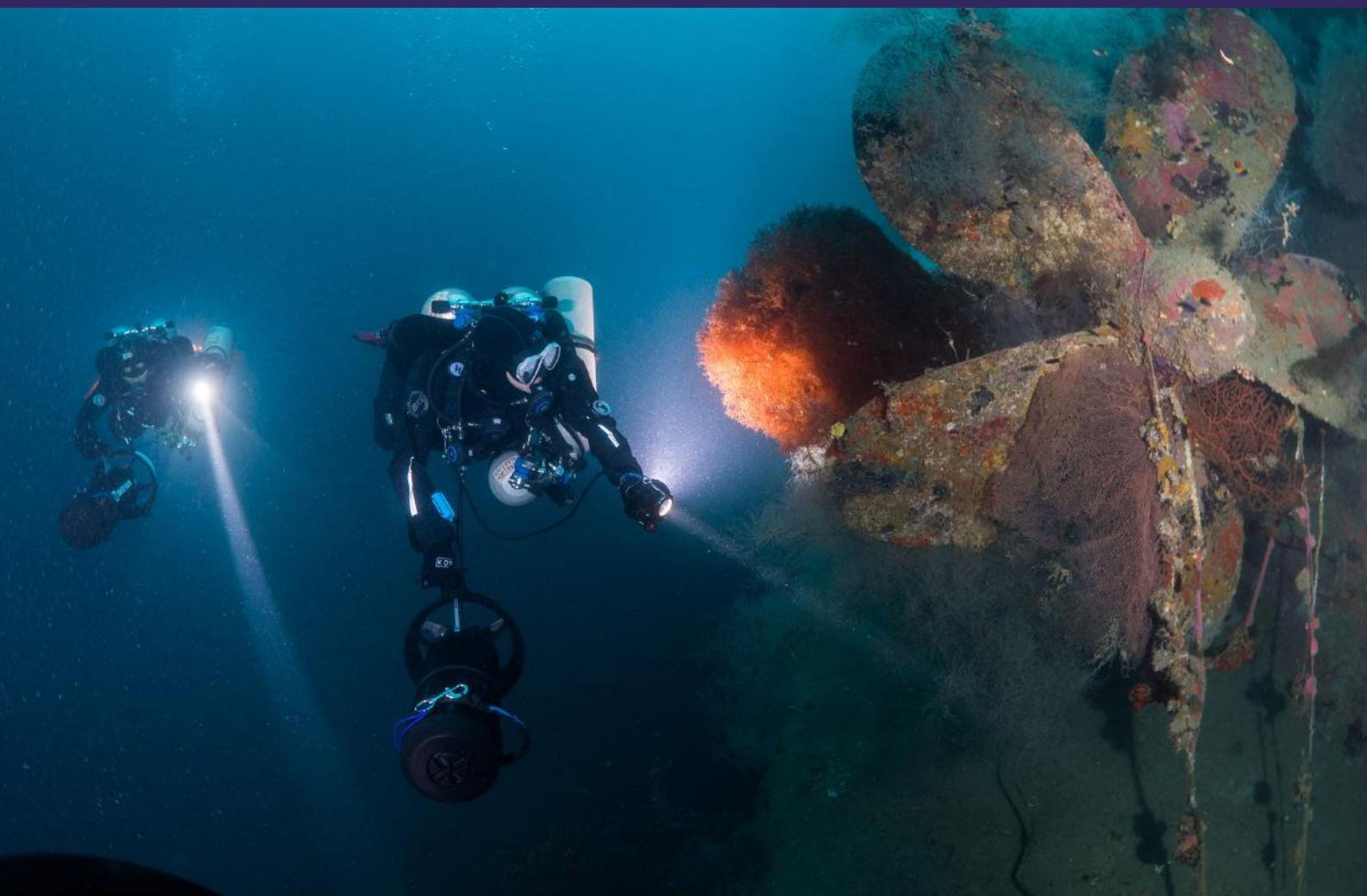
of activities to support the global diving community and many instructors would recommend approaching them directly for guidelines or advice.

DAN has global presence, and Dr. Adel Taher, Director of DAN-Egypt and a Consultant in Diving and Hyperbaric Medicine, confirmed his willingness to assist Egypt's diving community. Dr. Adel said, "There are several issues related to COVID-19 that pose problems where diving is concerned. Among them, the fact that you could be carrying the virus and not be aware of the fact and go on a dive boat and infect others. Also, you may or may not have had pulmonary symptoms and in both cases did not realise that your lungs have been affected. A CT scan of the lungs is crucial to determine that. Most of the changes appear to the examiner as Ground Glass Opacification (GGO) and areas showing consolidation of the lung tissue.

Many of these changes are reversible and the body does that on its own. But it needs time to do so. It is important, if such changes are discovered, the CT scan is repeated after six months. A spirometry test is also needed to ensure the pulmonary functions are within the normal range."

Dr. Adel also mentioned that any diver who does not follow a strict recovery period according to a physician might face several





critical health problems, including an arterial gas embolism that could lead to a brain or spinal cord embolism. This is because lung tissues lose their elasticity and the compliance decreases during a fast ascent. This could lead to a disruption of the lung tissues and air will be released to the adjacent blood vessels causing an embolism. To address these potential side effects, he recommended performing CT scans of the lungs and spirometry, and discussing the results with a diving medical specialist prior to returning to diving.

Gareth Lock, owner of the Human Diver, confirmed the importance of proper recovery from COVID-19. He added that there are stages to getting back to normal life and regaining fitness to dive safely. According to Gareth, the stages are: 1) heal or be COVID-19 clear; 2) recover; a person is healed with no pulmonary or respiratory symptoms; and 3) be fit to dive, when a person's body is back in shape, their physical fitness fully regained and they can withstand the effects of the increased pressure of diving.

He added that a COVID-19 recovered diver should consider his physical fitness (pulmonary and cardiac fitness) before resuming his diving activities. Besides, he explains that "what might be worth thinking about is that people may not have dived for a while, so their skills will be rusty, they will feel that they might want to push limits because they have not had an opportunity to dive. These are human factor aspects." In

addition, he affirmed the importance of DAN's role to support diving communities.

Going back to Nohra, he mentioned that he was longing to dive because the sea was at its best during that period. After 21 days, he tested negative and did further examinations including a CT scan which was recommended by DAN. He stated that he was the happiest after his first dive that was done at a max of 15 metres.

#### SUMMARY

It is necessary to mention that the MENA governments' and divers' reactions are realistic reflections to Steven Shorrock's article, 'The Varieties of Human Work' that was published in December 2016. According to the article, it is believed that people have to consider four varieties to understand human work. These varieties are 1) "work as imagined" i.e. assumptions on what people's scope of work is, 2) "work as prescribed" i.e. work formalisation and documentation, 3) "work as disclosed" i.e. how the description of work is being communicated, 4) "work as done" i.e. execution.

For elaboration purposes and linking to the MENA's diving industry, countries with no diving regulators (Lebanon, Kuwait, and Bahrain) issued generic protective regulations that are believed to fit all communities, "work as prescribed" based on broad assumptions

about different communities' scope of works, "work as imagined". Also and as supported with the article, there is a gap between how these generic health standards could fit specific communities such as the diving communities because of the lack of field exposure. Accordingly, diving communities in those countries may be encouraged to adopt diving regulatory framework from other countries with diving regulators as mentioned earlier. On the other hand, countries with diving regulators that claim the development of tailored standards to protect their diving industry i.e. "work as prescribed", it is still "impossible to prescribe precisely and achieve by adjustments, variations, trade-offs, compromises that are necessary to meet demand" as stated by the article.

This article is a reflection on the MENA region and how the diving industry was affected by the pandemic. It is based on several interviews with officials, diving instructors, divers, and a number of relevant divers across Egypt, Lebanon, KSA, Kuwait, the United Arab Emirates, and Bahrain.

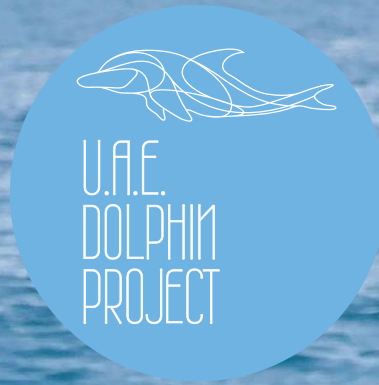
Although the region's governments took responsible steps to protect citizens while maintaining its economy since COVID-19, people's behaviour, including stigma, is critical. It is believed that with the proper interaction between individuals and entities, the diving industry might propagate a responsible diving environment in the MENA region.





Photo by Bryana Cope. A group of bottlenose dolphins observed during the eighth sighting this year on April 1<sup>st</sup>.





# UAE DOLPHIN PROJECT UPDATE: RELAUNCHING THE REPORT A SIGHTING CAMPAIGN

FEATURE **BRYANA COPE** PHOTOGRAPHY **DR. ADA NATOLI**

The UAE Dolphin Project is back in action with a new year-long survey well under way.







**TOP:** An Indo-Pacific bottlenose dolphin performing a side leap during the second sighting of the year on February 2<sup>nd</sup>, 2021. **BOTTOM:** The rare finless porpoise with a calf, sighted just offshore of the Burj Al Arab during the February 15<sup>th</sup>, 2021 survey.

The UAE Dolphin Project is back in action with a new year-long survey well under way. With the support of Zayed University, Atlantis the Palm, F3 Marine and Dubai Municipality, the UAE Dolphin Project began a second survey of Dubai waters at the beginning of February. This survey covers more area than the first survey conducted in 2013-2014 and will help support the data collected then, in order to further understand the population of dolphins frequenting Dubai waters.

The previous survey covered over 2,000 nm, with a total of 250 hours of navigation, observing 212 dolphins over 20 separate sightings and confirmed the presence of three species. The three species, which are the focus of the project, are the Indo-Pacific bottlenose dolphin, the Indian Ocean humpback dolphin and the Indo-Pacific finless porpoise. These species are listed on the IUCN Red List as near threatened, endangered and vulnerable, respectively.

This year's survey has had 16 outings, with nine dolphin sightings so far, six sightings of bottlenose dolphins and three of finless porpoises, and no sightings of humpback dolphins.

With many sightings of other marine wildlife, including sea snakes, Green and Hawksbill turtles, the endemic Socotra Cormorant as well as the Great Cormorant, and multiple species of sharks and rays. With the onset of the second survey, we are relaunching the Report a Sighting Campaign, and we need your help!

Citizen science is increasingly being used in all areas of the scientific community to support research and conservation goals. With the help of the public, large amounts of data can be gathered and then analysed for important information on occurrence, population and distribution of key species. Dr. Ada Natoli, Founder and Director of the UAE Dolphin Project, and Assistant Professor at Zayed University, along with her colleagues, has painstakingly collected and reviewed all the sightings received and compiled a database now counting over 1,300 sightings of whales and dolphins, of which 1,103 had the species confirmed. This data was utilised in 2019, alongside the survey data and data gathered by other authorities to successfully support the identification of

Important Marine Mammal Areas in the UAE: [www.marinemammalhabitat.org/immas/](http://www.marinemammalhabitat.org/immas/). Furthermore, the data has now been utilised to assist with the identification of more suitable habitats for the most regular species, and to better understand how they share resources in the UAE waters. They are in process of being published, watch this space for more information!

Sightings were reported all over the UAE as well as other countries surrounding the Gulf. Not only were the three main species observed, but sightings were reported of rare species, including killer whales, humpback whales, false killer whales, pygmy sperm whale and Bryde's whale. One thing is certain, citizen science data has proven to be vital to the conservation of dolphins in the UAE.

Knowing how important the data from the public has been, it is crucial that we begin gathering this data again. Reporting your sightings is relatively simple, the hardest part is spotting the dolphins!

You will need to record the date, time,





**ABOVE:** Taken during the sixth sighting on March 4<sup>th</sup>, 2021. **BELOW:** Photo-identification is used to identify individuals during a sighting. This individual has clear notches that are used to match them with data gathered in the 2013-2014 survey.

approximate location, and if you can the approximate number of individuals, including the presence of calves. Any photos or videos of the individuals would be a great addition to the report, we can use these to aid in identifying the exact individual you encountered and observe their behaviour. To get the location, you can send a dropped pin on Google Maps, the GPS coordinates or any landmarks that were nearby.

#### REPORT YOUR SIGHTINGS

To report your sightings, head over to the website at [www.uaedolphinproject.org](http://www.uaedolphinproject.org), message us on Facebook, Instagram or Twitter, or email the information to [sighting@uaedolphinproject.org](mailto:sighting@uaedolphinproject.org).

We look forward to seeing your sightings and we will keep you updated on our new survey with thanks to the Emirates Diving Association. Thank you to our sponsors for making this survey possible, Zayed University, Atlantis the Palm, F3 Marine and Dubai Municipality.







# THE SSI SERVICE CENTRE'S REVAMP IN THE UAE

FEATURE **PAUL EMOUS** PHOTOGRAPHY **SSI**

For **EDA Members** who read this, we're offering you the Open Water Diver Certification **OR** the Enriched Air Nitrox materials for the month of June **FREE OF CHARGE!**









The SSI Service Centre re-entered the UAE market in early 2020 under the management of Paul Emous. We sat down with Paul to understand a bit more about what makes SSI unique.

## First of all, who is SSI? Give us a breakdown.

Scuba Schools International is the largest professional business-based training agency in the world. Established in 1970, today SSI represents more than 3,500 Training Centres and Resorts in 130 plus countries with over 50,000 affiliated SSI Professionals and growing everyday. For over 50 years now, SSI has provided the ultimate training experience for millions of certified divers, not only in Recreational Scuba, but in every training category; Freediving, Extended Range, Rebreather Diving and Swim & Lifeguard. SSI completely embodies the industry by being a founding member of the RSTC (Recreational Scuba Training Council) and holding the internationally acclaimed ISO certification playing an active role in setting industry minimum training standards.

## How did your journey with the SSI Service Centre begin?

Initially I was looking for a proactive training agency that could offer more local support for my dive centre. Being a PADI Instructor and a Diving Centre Manager for a few years, I was struggling with access to physical materials, getting prompt answers and support therefore making the change to SSI seemed a good alternative. This change solidified even more when I got to know that SSI Headquarters were planning to make changes with the Service Centre in the UAE. We came to an agreement and took over the local management in December 2019. With a company structure already in place and access to knowledgeable divers, this seemed like a great and exciting opportunity! We were ready to hit the ground running.

Then COVID-19 happened.

Without going into too much detail, obviously COVID-19 was not good for anyone, and as most of us know, the travel and diving industry was hit exceptionally hard.

However, the pandemic gave us time to regroup and think of what are our strengths were, compared to competition. SSI is a completely digital training agency, with the valuable support of a local Service Centre (us).

For example, SSI works a bit dissimilarly when it comes to training materials: differently from competitors, SSI doesn't require dive centres to purchase training material and certifications in advance: SSI only bills their partner dive centres at the end of each month, meaning that training centres can start courses, issue training materials and certifications without buying them in advance. This is positive for the cash flow of dive centres and prevents having to worry about not having stock of training material and/or certification cards; something that can cause a lot of problems.

## What digital platform does SSI offer and how can divers and students benefit from these?

Digital learning is the way forward and the MySSI app, as well as the Educational Management System (EMS) platform are great examples of this with more than 60 digital programmes in 40 plus languages. There is not one training agency that comes close to the digital offering that we have. SSI's Total Teaching System effectively masters the use of technology to strengthen the learning experience digitally; HD videos, animations, graphics, photos, personal notes and bookmarks to stimulate learning on any device or operating system with a fully responsive design to fit any screen size.





Students can decide to use their smartphone, tablet, or laptop to read the materials. It really doesn't matter. We are not forcing the student to make a decision and then get stuck with it. If you like reading a chapter of the Open Water Divers course on your phone, and then later want to continue on your laptop. No problem!

On top of that, through SSI's advanced training programmes, divers can choose from a wide variety of specialties directly after completion of the Open Water Course. This allows SSI (and its Training Centres) to hold the highest continuing education ratio in the diving industry.

Next to the digital training materials, the MySSI app also offers an overview of all previously earned certifications as well as a logbook (with all the dive sites) incorporated. Divers can log their dives inputting data manually as well as by scanning pre-generated QR codes: logging dives has never been easier!

In this regard, you should be aware that SSI is the only training agency that recognises and rewards (through FREE recognition cards) courses as well as experience.

**No more plastic cards! Music to our ears! Could you explain this recognition further?**

Sure! The SSI recognition programme awards students and divers that do log their dives.

Some examples: If, after completing your Open Water Diver course, you complete two specialties and log 12 dives, you automatically get the SSI Speciality Diver Recognition card.

Doing 4 specialties and logging 24 dives awards you the SSI Advanced Open Water Recognition card.

SSI Master Diver is the next recognition card. Which is SSI Advanced Open Water + Diver Stress and Rescue, and 50 dives logged. Again, the recognition card gets generated. There is no need to buy anything for that. How cool is that!

**Can you tell us a bit more about the customer journey when it comes to continuing education?**

Something that is completely new for most divers and instructors is that with SSI we are also able to combine specialties. Why wouldn't it be possible to combine Deep and Wreck diving together while we are diving deeper than 18 metres? Also doing Navigation and Deep is a great example, since deeper

dives require more planning. Normally doing multiple specialties requires many weekends of diving and can become very costly. The reality is that people shy away from that. Combining specialties makes the dive training really fun, entertaining and rewarding! The student gets true value for their money and it also makes it more interesting for the student and the instructor.

Personally, I love teaching multiple specialties at the same time. For example, at the dive centre we offer a package where people can do 4 specialties over one weekend and our guests love it!

**This indeed sounds really fun, and beneficial for both students and diver centres. What other benefits can training centres enjoy when partnering with SSI?**

Being part of the SSI family is also great for dive centres since the SSI system offers a lot of free tools people can use to engage with the customers. The MySSI system is all a modern professional needs: a personalised dashboard (available in 35+ languages) which contains everything important at one glance. Some examples are: a CRM software, an event creator/planner, media database, QMS





reports, affiliated dive sites, etc.

When it comes to marketing, SSI provides free acquisition/marketing programmes such as Try Scuba, Try Freediving, Try Mermaid and Snorkelling: easy learning opportunities (including certification) without any financial commitment. Powerful acquisition tools to win new clients and improve business. Free access to marketing collaterals database and constant FREE marketing support from service centres (flags/posters/flyers/etc.)

Another important aspect is that SSI aims to protect and support dive centres by requiring independent instructors to teach a course affiliated to a diving centre.

### So, SSI doesn't have Freelance Instructors?

We do, the dive centre (owners) can decide to allow an instructor to be affiliated and teach with its facility. This works great for dive centre owners, so they keep control. At the same time, if there is an independent instructor who generated a lot of certifications, the dive centre can give him/her access to the dive centre to deal with the customers directly. We leave this up to the dive centres to decide.

As mentioned earlier this not only protects dive centres from unfair competition, but also grants a higher level of quality.

### Can you explain what you mean?

Quality is a big concern in the diving industry and at SSI we take this very seriously. SSI has a really powerful Quality Management System (QMS), where we actively track feedback from each diver that wishes to participate in a survey

after the completion of the course. Every dive centre has to appoint a monitor who is responsible for the quality of the training, instructors, paperwork, etc. This can be the dive centre owner or the most experienced instructor. To give you an example, if a standard is violated, the monitor automatically gets an email with details about the student, the instructor and what might have happened. On top of that, the UAE SSI Service Centre gets a notification about the violation. This way we can investigate if there is indeed a problem and we can then act accordingly. Luckily, this happens very rarely, but as mentioned earlier, we take safety and standards very seriously. QMS not only tracks standards violations, but it also provides dive centres with reports about the students' questionnaire; this includes: Overall Course Evaluation, Quality of Training Materials, Training Equipment, Instructor Performance, Comfort & Confidence, Overall Customer Service, Friendly Atmosphere, and Cleanliness. All this feedback is really beneficial in helping dive centres monitor the quality of the service offered and identify the weaknesses and strengths.

### What are a Service Centre's main duties?

To offer local support! Since we have a local office, divers, instructors and dive centres can contact us 7 days a week and receive an immediate response. This is one of our strengths! Professionals are not subjected to European working hours, don't have to wait weeks for a reply, or need to dial international numbers to receive support.

### What questions do you mostly get?

It's mostly about lost C-cards (Certification-cards) or account login problems, which we

can sort out directly. As previously mentioned, digital cards are stored in the MySSI app, and if required, we can print them locally. As much as we promote the digital system, we know that loads of divers still like to receive a physical card. We can print a certification card made of environmentally friendly BIO-PVC and bring it to the dive centre. This is another advantage of the SSI system compared to other training agencies where students have to wait for cards to be shipped from Europe (and quite often get lost).

### It all sounds great, but why would people consider SSI over other agencies?

Look, in the end it's the diver's choice. Getting a PADI Open Water Diver certification vs an SSI Open Water Diver certification does not make a lot of difference in the end. Both courses are ISO 24801-2 (Autonomous diver) certifications. Both courses are equal and internationally recognised. You can still use a PADI certification in an SSI Dive Centre and vice versa.

From a student's perspective, I personally like the SSI Digital Material for the students a lot. The videos are always up to date, as well as the information in the courses. Besides, the interface to access your materials is a lot nicer and exceptionally smoother compared to other training agencies. We give people multiple ways to access their training materials. All courses have quick reviews of each section, people can make notes they can share with their instructor and instructors can track where the students are. This is super handy when people get stuck and need assistance or have questions for their instructors. The majority of courses have an online final exam so no need to waste valuable dive time at a





dive centre doing boring exams! Also, courses that are bought will be accessible forever. No expiry dates!

Upon course completion, students instantly receive their digital certification through the MySSI App. Dive Centres also have the option to generate a wall certificate which can be printed or forwarded to the student.

When it comes to the instructors, SSI Professionals have FREE access and can download options of all the updated materials in all languages; this includes student training material, cue cards, exams, instructor manuals, lesson guides, etc. On top of that, SSI Professionals earn PRO REWARDS for each certification issued: real money which can be redeemed during Membership Renewal.

Something unique is also the fact that the instructor manual, for each and every course, is integrated in the student materials. As an instructor you have the option to tap on the instructor icon to change the view of the manual you are using from student to instructor. This is an excellent reference point to assist student with questions they might have.

But my favourite of the SSI System is the Personal Training Records. Instead of browsing around to get the right forms, the system automatically generates training records for the student with photo and name. Super professional and personalised.

Last but not least, SSI takes responsibility with the BLUE OCEANS initiative – a free programme accessible to everyone through MySSI with the goal to create environmental awareness and to protect the oceans. The

BLUE OCEANS logo is a display of role model behaviour and sustainable diving practices.

**Obviously, SSI has a strong competitor in the market. What do you do to convince local divers to try SSI?**

SSI has quite a bit of catching up to do. But we are strong and very flexible, and this is very convenient for divers in the UAE. For example, we run monthly promotions for our dive centres where we offer speciality courses where SSI UAE sponsors the training materials. For example, last month we ran a promotion on our Ecology programmes where all kits are given away for free. Students can register online and we don't charge money to the dive centres. Another example was the FREE Nitrox Course we offered last year where we had 83 people registered for the course. This is a great way for students to learn something new and get acquainted with the SSI system.

We also work with our dive centres individually to find the best way to attract more customers. For example, we have some really nice wrecks in the UAE. So, selling a Wreck Diver course would be a logical thing to do. If a dive centre wants to make a special offer to sell Wreck Diver, or perhaps Wreck Diver and Deep Diver as a combo, we can do that!

Finally, we at SSI are ready and committed to stand beside our existing and future partners and support them for years to come, even when the pandemic is over; you will find us by their side especially now that Teo Brambilla has become the SSI Regional Manager in charge of the Middle East. Most divers know Teo, how much he cares about the UAE's operators, and the support he is able to provide.



## SCUBA SCHOOLS INTERNATIONAL

### SPECIAL OFFER FOR EDA MEMBERS

Do you have any special offers for our readers?

Of course we do! For EDA Members who read this, we're offering you the Open Water Diver Certification OR the Enriched Air Nitrox materials for the month of June FREE OF CHARGE!

### FOR PROFESSIONALS WHO WANT TO KNOW MORE

For Diving Centres and Instructors who want to know more about the training materials, please download the MySSI app to access the free programmes or use the EMS to preview any course you wish, for free! (just google "divessi ems + name of the course").

### WE WANT YOU CAMPAIGN

For professionals or dive centres interested in crossing over, ask us about the 'We Want You' campaign: a special promotion we are running worldwide to welcome new members into the SSI family with affordable fees!

### GET IN TOUCH

For more information or to start diving, please send an email to:  
[adrienn.irmalos@divessi.com](mailto:adrienn.irmalos@divessi.com)  
and we will help you get connected to the right dive centres.









# GREEN FINGERED DIVERS

FEATURE AND PHOTOGRAPHY **JAMES CAMPBELL**

Localised conservation efforts contribute towards global conservation efforts, driving change. One successful methodology for localised conservation is coral propagation or coral gardening where we can invoke our inner underwater horticulturalist and like a terrestrial garden, we can start to grow specific coral organisms.







Jimi Hendrix once wrote a song called, "1983 a merman I should turn to be", about his dream to become a merman. He wanted to escape beneath the waves from the machine of modern progress before the life on earth self-destructs through war, greed or becomes the world prophesied by George Orwell in the novel 1984. An underwater Atlantis was perceived by him as a haven where he could find sanctuary and become harmonious with aquatic creatures, living a life of tranquillity and peace. The machine he describes would be left behind on the surface granting him his freedom and I believe it's something a lot of divers can relate to, leaving the stress of the modern world to go and dive even if just for a couple of hours on the weekend to regain the peace in their lives, experiencing and exploring a forgotten underwater world. The problem lies in that the machine of progress has overspilled into the oceans and will, if we do not act, destroy this underwater paradise leaving us with no refuge.

Beneath the waves of the oceans lie small oases, paradises which Hendrix sung about, beautiful natural gardens where life can flourish and create one of earth's most astounding natural spectacles, the coral reef ecosystems. Like an oasis, these coral reefs are found in deserts of sand barren of life and only exist because certain factors combine to make it

habitable. Coral reefs are the most biodiverse ecosystems on the planet, from the smallest nudibranch to the largest sharks, with a vibrant spectrum of weird and wonderful in-between. These are innocent bystanders caught in the crossfire of modern progression. Coral reefs and the organisms which inhabit them never went to war; never gained anything from the raping of natural resources, but they are the environments which are on the front line when it comes to being affected by the changes that we as a species are inflicting on the planet.

Although these coral reef ecosystems only cover around 0.15% of the ocean, they are home to over 30% of known marine species, this is due to the architectural abilities of the reef building Scleractinian corals, also known as hard or stony corals. As these hard corals grow, they deposit a mineral form of calcium carbonate called aragonite. The intricate complex structures formed by these corals create habitats for small marine animals whilst providing the base of the food chain due to their unique symbiotic relationship with Zooxanthellae. In these ocean deserts where nutrients are lacking, the coral animal fertilises the symbiont Zooxanthellae algae with its waste products as well as providing a raised position in the water column closer to the light. In return the algae provide oxygen and sugars as by-products of photosynthesis. This

harmonious symbiotic relationship forms both the habitat and the energy to support the ecosystem which is why coral is referred to as an ecosystem architect

Hopefully, we as divers should all know these coral reef ecosystems as well as the global ocean and the planet are under a barrage of anthropogenic threats. Rising atmospheric greenhouse gas levels increase the global, and in turn, the sea surface temperatures, whilst also causing ocean acidification. Anthropogenic pollution, coastal development and nutrification of these coastal waters puts even more stress on an already vulnerable system leaving the door open for coral diseases to take hold.

Unless we as humans take action to curb the detriment of coral reefs, it's predicted that by 2050 the vast majority will be gone, like a castle made of sand, it will slip into the sea. Not lost beneath the waves, but lost to all but memory and divers photographs of what once was. With it the spectacle and parade of creatures that inhabit these underwater natural metropolises will be without a home, succumbing to the elements and a lack of food, they too will be lost to the planet. In decades to come, will the once beautiful reefs we dive become part of myth, a fable of the past dismissed so easily? So what can we do?





Sit back and say, "well that's a shame"!

Or we can act. Action as individuals may be perceived to be nothing more than a drop in the ocean, but collectively, we can drive change, after all, what is an ocean but a multitude of drops?

Terrestrial plants need light, fertile suitable ground, space and water to grow, if these factors are lacking in any form, then it inhibits their growth. An oasis in the desert, the life there relies on the water source, without water the plants die, the animals which inhabit the foliage, feed on the plants and drink the water are lost to the desert sands. This is a bottom-up trophic cascade when the ecosystem collapses as the primary producing foundations which harbour the sun's energy through photosynthesis, are removed, so can no longer support the ecosystem. Ecosystems components including all the abiotic and biotic factors within them, are intrinsically connected in a delicate equilibrium.

Coral however when compared to terrestrial plants and other ecosystem engineers, are rather obtuse in its preferred growth medium, specifically Scleractinian hard stony reef building corals we associate primarily with the coral reefs. Corals are the roses and orchids of the oceans, these plants will not grow unless

the soil is fertile, the PH and temperatures are within their preferred range, it also needs to be well watered. Only with a delicate balance of factors will the plants grow. Corals however require an environment with a lack of nutrients. The shallow crystal azure water we associate with coral reefs are clear because they lack these nutrients and particulates. Nutrients are provided by the coral's symbiotic relationship with the zooxanthellae. In areas of shallow water with sufficient nutrient availability we will not find corals, we will find micro and macro algae, these are marine plants which are truly autotrophic meaning they, like terrestrial plants, feed themselves, harnessing sunlight through photosynthesis and drawing the required nutrients from their environment. Excess nutrification of coral reef environments causes what's known as an algal phase shift, whereby the corals die off and algae dominates leaving just a green sludge rather than the reefs we love. So, in contrast to purposely fertilising and providing nutrients for plants to grow, we need to ensure that the coral is in an environment devoid of nutrients, but that is not all.

Coral needs a solid substrate to grow, in the marine desert of sand in the shallow coastal waters, coral cannot grow unless there is a stable substrate on which to attach. This requirement of a solid substrate and clear warm waters at the correct depth, limits

where coral can grow. Millions of acres of coastal waters with the correct balance of factors are barren as there is no solid substrate for coral to develop from its humble planula origin. This is where the idea of artificial reefs and coral gardening comes into play, providing adequate substrate in an artificial form for a permanent fixture; or nurseries which are permanent fixtures where the coral can grow before being removed and "planted" elsewhere on natural or artificial reefs. It's these underwater coral nurseries where we can, like on land, start to do some gardening, purposely growing and cultivating species. This however is not easy, it requires divers with green fingers and strategised production, most importantly time and effort. The more people we can educate and get involved in localised conservation projects, the more drops go to the ocean which is marine conservation.

Localised conservation efforts contribute towards global conservation efforts, driving change. One successful methodology for localised conservation is the afore mentioned coral propagation or coral gardening where we can invoke our inner underwater horticulturist and like a terrestrial garden, we can start to grow specific coral organisms.

Multiple factors need to be considered when setting up our coral gardens or placing





nurseries for success to occur. The nurseries need to be shallow enough so that the corals get sufficient light throughout the day. Light availability is a major consideration when placing nurseries, hard Scleractinian corals need light to grow, the symbiotic algae zooxanthellae within the coral provides over 60%, even up to 80% in some species of coral, of the corals net energy gain. Too shallow however will cause the corals to bleach and die over the summer months with high water temperatures. They need to be placed somewhere accessible so that maintenance can be undertaken on a regular basis. The nurseries need to be placed somewhere safe, safe from boat activity, potential pollution and disturbance. They need to be stable which is factored in during the construction stage, but a flat sandy area will provide a suitable surface and allow the nurseries to “bed in”, placing one on rocks defies the point as coral can already grow there and even if it’s a flat surface it could potentially be unstable in adverse weather. A raised position is also favourable as this will reduce the amount of sedimentation onto the coral which reduces growth rates.

Coral gardening exploits corals natural process of fragmentation and budding. Budding is the a-sexual replication process which allows a single polyp to develop into a coral colony. This can be done in one of two ways. Budding can

be extra or intra tentacular; Intratentacular budding occurs when the parent polyp divides itself into two or more daughter polyps. Extratentacular budding occurs when daughter corallites form adjacent to the parent colony, external to the wall. The resulting daughter corallite polyp is usually smaller than the parent and surrounding polyps but will grow overtime to the same size. Only corals that have separate walls will reproduce through extratentacular budding.

Coral fragmentation which is the initial point of coral gardening, is the method remarkably similar to taking a cutting in terrestrial based horticulture. It is the process by which a fragment of a coral colony in the event it is broken off can, if in a stable substrate, grow to form a new genetically identical clone colony. We can take these fragments of coral, plant them in certain places directly on the reef or secure them in nurseries to create a stock of seedlings if you will, ready to be planted on the natural reefs or artificial reefs. What this means is that in the event of damage be it coral bleaching, a storm, anchor damage or a medley of other reasons why a reef may be damaged; we can take these seedlings and plant them on the reef to rejuvenate, rehabilitate and restore the reefs. Coral Gardening allows the corals to optimise their growth and saves the fragments from potential death if they have broken and

would otherwise just roll around in the sand.

Through this method of coral gardening and in conjunction with artificial reefs, we can help implement restoration and rehabilitation conservation strategies to help reefs weather the storm of progression. Imagine a green house full of seedlings and healthy specimens which can be utilised to replant an area of deforestation or an area hit by frost. The presence of healthy coral promotes the rejuvenation of coral and inhibits algal dominance. It is especially important during this process to not create fragments by purposely breaking healthy coral but rather to find fragments which have occurred naturally. A high amount of collection sites from around the reef also ensures genetic variance which will help over time generate healthier corals.

The history of life on the planet is strongly thought to have originated in the oceans, sharks existed before trees, the ancestors of marine mammals did once walk the earth but prior to that their ancestors swam in the oceans. Primordial organisms arising from the pressurised depths before blossoming into the life we see around us today; without the oceans we would not exist. “Deep beneath the rolling waves, in labyrinths of coral caves, the echo of a distant time comes willowing across the sand”, lyrics by Pink Floyd, which





I think portray in a poetic fashion the sheer power of how ancient the oceans are, better than I ever could. We must not forget as we advance this age of man that without the oceans, we would not have this opportunity to create this modern world.

We have created this modern world of man-made structures, metropolises of concrete, metal and plastic, outshining even dreams. The towering technological achievements of man have surpassed even the most creative minds of past science fiction writers, global communication at our fingertips, the collective knowledge of time accessible whilst lying in bed on a Saturday morning, any product we desire mere clicks away, global travel no longer a pipe dream. What we have seen over the past 18 months is how fragile this is. A virus, microscopic, biological, seemingly insignificant has brought this modern world to a standstill. Medical technology has provided us with vaccines and helped us weather the storm but in the end a small protein bag of genetic material could have crippled mankind. The importance of healthcare and its workers pulled into the limelight as the virus shows us what is important which in case you missed it, was not profit margins. The enduring situation of, "you do not know what you've got till it's gone" perseveres, community, social interaction, family and health were all deprived

from us, reminding us of their importance.

We take the climate, the air we breathe and the natural world for granted and haphazardly squeeze it for resources with little to no concern for the damage done. How bad does climate change have to get before collectively we realise the importance of the planet, the oceans and all organisms we share this rock in space with and do something about it. The big villa, fancy watch, expensive car and Italian suit will be worthless if the very air we breathe cannot sustain us, if crops cannot grow to feed us, and there is no water to quench our thirst. The planet will still be here long after we are gone, our achievements will be lost to time becoming ruins like civilizations of past, we are not omnipotent. We as a race are more fragile than most realise.

"My name is Ozymandias, King of Kings:  
Look on my works, ye Mighty, and despair!  
Nothing beside remains. Round the decay  
Of that colossal wreck, boundless and bare  
The lone and level sands stretch far away."

We should use our gifts of this modern age to ensure that we strive to make our home planet earth habitable for everyone and everything. There is nothing wrong with enjoying the luxuries of modern life so long as we see the total cost and not just the

price plus delivery. Everything we do as a race has an impact, everything we do as an individual has an impact. In 1960 there were 3 billion of us, 2,000 around 6 billion, we are now almost at 8 billion people on the planet so our impact as a race is becoming greater each day. If we can start to have a positive impact as individuals, then collectively on a global scale we can have a positive impact on the very world which gives us life. We should strive for a world of gardens, be it Babylon, Eden or Atlantis, creating a natural home with all species thriving. Gardens do not just grow plants; they provide and create a complexity of harmony. We create gardens on land, let's use our knowledge and create them in the oceans as well.

Coral gardening is often perceived to require extensive training. You don't need a degree in horticulture or marine biology to take up coral gardening, it's easy for you to get involved with these localised conservation efforts to help protect the UAE's reefs for the future. If you would like to learn more about coral gardening, the oceans and marine conservation whilst expanding your diving experiences, we offer a full curriculum with in-water training so that you can have a positive impact on the oceans.

Please contact [James@freestyledivers.me](mailto:James@freestyledivers.me) for more information.







A full-page photograph of a beach scene. On the left, a person in a black wetsuit and diving gear is partially visible, pointing their right hand towards the ocean. The ocean is a deep blue with a yellow buoy visible in the distance. The foreground is a sandy beach. On the sand, there is a pair of white and black fins and a green mesh bag. The sky is clear and blue.

# STAR INTERNATIONAL SCHOOL MIRDIF'S QUEST TO BECOMING OCEAN AMBASSADORS

FEATURE **GILL ROBERTS**

Star International School Mirdif are not new to the call of the ocean; they have been learning about the ocean, particularly the Arabian Gulf and the Indian ocean for the last couple of years through themed projects in their Primary curriculum and through distance learning in lockdown.





Star International School Mirdif are not new to the call of the ocean; they have been learning about the ocean, particularly the Arabian Gulf and the Indian ocean for the last couple of years through themed projects in their Primary curriculum and through distance learning in lockdown.

The children have recently learnt about how historically, these two oceans supported the economy of Dubai through pearl diving. As part of this theme, the children learnt about the fearless divers who risked their lives by freediving to gather the pearls in order to make a living. One of Star International Mirdif's Year 4 children, Farouk Ounah was so enthused by this theme, that he actually learnt to freedive. He has recently become the youngest child to freedive in the Dubai aquarium (we are very proud of him).

Ms Gill, the Principal of the school is passionate about diving and the conservation of the ocean. She is herself a PADI IDC Staff Instructor and over the course of her time in school has passed on this passion and enthusiasm to others. She has certified several teachers to become Open Water and Advanced Open Water divers. Her latest recruit is Nikan, a Year 5 student who is soon to have his 10<sup>th</sup> birthday in which he will be old enough to complete his Junior Open Water Diver certification... so this is just what he is doing – how's that for enthusiasm and passion!

As you can see from above, the school is already working towards becoming ocean ambassadors, so imagine their delight when it was broadcast that DUBAI 92 would be working with schools and Freestyle Divers on an ocean coral reef conservation project.

The school immediately signed up and took a part in the Dubai 92 competition. This was highlighted to all the children and staff through different key stage assemblies; the work of PADI and their Ocean torch bearers was also introduced to the children. As part of the Dubai 92 competition, the older children have designed an artificial coral reef to act as a home for corals, fish and juvenile sharks. Everyone in the school and community listened to a webinar led by Freestyle Divers' Marine Biologist about what coral reefs are and how to protect them. This knowledge supported the children with their designs.

As additional events, the school didn't stop there; they got together with Mohamed Helmy, the PADI Course Director at Al Boom Diving and created events for the younger children in the school community to participate in.





As a school, Ms Gill believes that children need to be educators, in order to be an educator regarding the ocean, the children have to understand how the ocean works. At an early age children learn about the hazards to animals that human litter/rubbish causes. The EYFS children have been investigating the creatures of the deep and have been surprised to see that some of the creatures in their artificial ocean have become tangled in debris. They have been discussing how they, as 4 year olds can stop this from happening. Their conversations, even at 4 years of age have been incredibly inspirational.

Taking their inspiration from these children, Ms Gill and Mohamed from Al Boom Diving have created a hazard competition. The aim is for children to think like conservationists and become aware of how different types of litter

impact our marine life. If they can think like conservationists and be proactive, then they can educate others around them to do the same... even at the age of 4.

To initiate a whole school community event supporting Dubai Cares and the Dubai 92 initiative, Star Mirdif certified divers: Jack, Donal, Marion, Poppy and Kyle completed a dive for Debris at Jumeirah beach accompanied by Ms Gill. It was an incredible success, enriched with a lot of teacher enthusiasm for supporting the clean-up of reefs. Different sorts of debris were found, the most popular items being water bottle tops, cigarette butts and COVID-19 masks. Staff will be sharing this information with the children on their return back to school where children will be analysing these results against other global results to see if they can ascertain any common factors.

At the end of the event, Ms Gill voiced, "The Ocean is a place which leaves you mesmerised after your first initial experience; it's a place of vibrant beauty, a place where, for me, time stands still and I am able to become at one with nature. I want others to have the opportunity of experiencing these feelings and seeing the beauty that the ocean has to offer.

I am delighted with the way the children have embraced their learning about the ocean. Dubai 92 is only the beginning; Star International School will use this initiative as the platform to launch our status of Ocean Ambassadors and work alongside Dubai 92, PADI, Project AWARE, Emirates Diving Association and of course, Al Boom Diving to really make an impact on the coastlines in the United Arab Emirates".







# MY BUDDY

## THE FREEDIVING INSTRUCTOR

FEATURE **PATRICK VAN HOESERLANDE**

Freediving, now a vibrant discipline, was a minor one only a few years ago, and a completely unknown one within the Flemish Diving League.







Freediving, now a vibrant discipline, was a minor one only a few years ago, and a completely unknown one within the Flemish Diving League. When there was a freediver in the vicinity, it was exciting news to the scuba divers present who always tried to catch a glimpse of said freediver during their dive. We've all had to perform a freedive and perform static apnea in order to pass our scuba certification exams, but not because we wanted to dive without a tank in open water. Its recent leap to popularity was accomplished by a small group of enthusiasts. Today I am going to dive with a freediving instructor who was involved in turning that corner.

I drove two hours to get to the dive quarry in Esneux to meet my new buddy. Despite having a GPS, I needed to concentrate on the final approach. It had been a while since I had last driven to Esneux, but I recognised some spots, and parts of the road jolted my memory. The site had changed, but not so much that I did not recognise the place. I found a parking space on the higher ground and looked for a group of freedivers.

They were easy to spot as they had picked a table close to the stairs. The atmosphere was relaxed as is customary with scuba divers. The dive coordinator started his briefing on time. It was to be my first dive in these waters

without a tank, so I listened extra carefully to the instructions. Our dive team consisted of three people, making it easier in terms of safety and individual preparation.

Before we began setting up, I took François aside for a short interview. My first question was to why he started freediving. He told me that as a teenager he had observed some freedivers in action. He found the activity and the sport fascinating. It must be wonderful to glide freely underwater and to swim amongst the fish. It was there and then that he decided to become a freediver too.

Freediving was not as popular back then as it is now and he started training as a sport diver out of necessity. He climbed the certification ladder all the way to instructor. Although he enjoyed scuba diving, something kept gnawing at him. And that something was the wish to be free of all the additional equipment and to be able to move underwater like a fish. Just as the freedivers had been the first time he saw them.

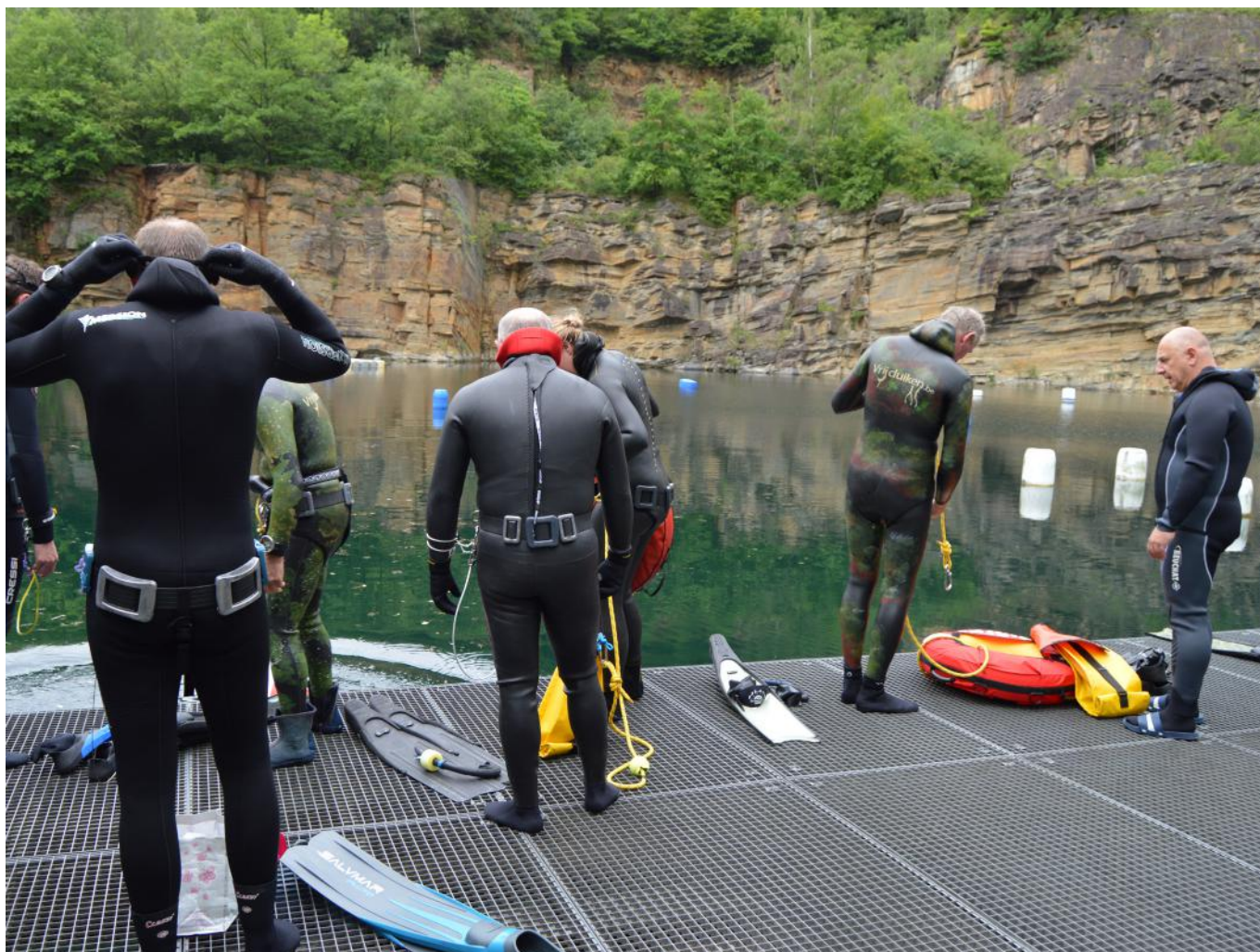
As freediving within our federation was so limited, François researched to see how others did it. Step by step, he learned the tricks to diving on only one breath. Enthusiastic about his experiences, he did not want to keep the joy of this dive discipline to himself but desired

to share it with others. It did not take long to introduce freediving to the league. He was one of the first to be awarded the title of I\* Freediving Instructor. That strengthened him to push further and help others build a network of freedivers themselves. If it had not been for François and the other enthusiasts, apnea diving in Flanders would still be in its infancy.

We started with several shallow dives to warm ourselves up. Then we moved towards our first freediving location, at the Cylinder. I decided not to enter it, but to swim beside it as I did not feel confident enough to move around in such a confined space without a tank at this stage. That was still outside my comfort zone. Because we were three, I had more time to prepare myself mentally. When it was my turn to slide into the water, I almost hit the bottom and spotted François swimming by and disappearing into the opening. During my ascent, I glanced down to check if he was following me, but I did not see him, yet I felt he was close. My suspicion was confirmed when he broke through the water's surface shortly after me.

We dove a few times by taking turns in preparing, diving, and serving as a safety spotter. We were not the only team in the quarry so we switched positions after a while in order to give everyone the chance to dive





the different platforms. Our next station was the aircraft resting in slightly deeper water:

Although the water was a bit murky, we were able to gauge our bearing as to where the wreck lay thanks to the rising bubbles of a group of scuba divers below us. We lowered our weight and shot line. François dove first to make sure that we were positioned above the plane. It took a while before his return to tell us that our buoy hovered just above the tail. This was great, as beginners it was nice to have an early reference on our journey to the bottom.

Between dives, François gave us tips on how to equilibrate our ears better and how to prepare for the next dive.

The last station was located near some stairs made of stone leading to the bottom of the now water-filled quarry. These dives would have a more horizontal profile which was fine by me as I felt that my eardrums had had a tough day by this stage.

These kinds of dives make your work as a safety spotter much harder as you have no indication of your buddy's whereabouts (remember, there are no bubbles to follow). Only a good dive briefing and strictly following the detailed plan can mitigate the lack of visibility. As a bonus, we encountered more

fish, making our dives even more interesting.

When the main safety spotter back on the pontoon waved to the groups of divers, we knew that the diving day had come to an end. Once we had swam back and exited the quarry, we started our dive debriefings and later finished up in the canteen.

A big thank you to François for guiding me through these breath-hold dives and teaching me some new tricks. It's always nice to have a local icon logged into your logbook as your dive buddy. After saying our goodbyes, I drove down the gravel road towards the highway and made my way home.

During our freedives, I recorded some dives with my action camera. You can watch the results via <https://youtu.be/vLQYUdHTqPk>.

For my next story, I will dive with a buddy of a completely different calibre. I have mixed feelings about this one as it will take me out of my comfort zone... You'll have to tune in to find out what it's all about.

Do you have any recommendations for a new buddy? Your suggestions are always welcome.

**EMAIL ME AT:**  
patrick.vanhoeserlande@nelos.be.



#### ABOUT MY BUDDY

**Diver:** François

**First Dive:** Scuba diving in 1972, and freediving in 1998

**Number of Dives:** 400+

**Dive Club:** Scylla Diving, Belgium

**Certification:** 2 \* FDI

**Other Certifications:** Rescue Instructor  
**Special Equipment:** A deco computer with "Taravana" mode and Hektometer Freediving Goggles.

**Favourite Local Dive Site:** Quarries: La Gombe and Lessines, Belgium.

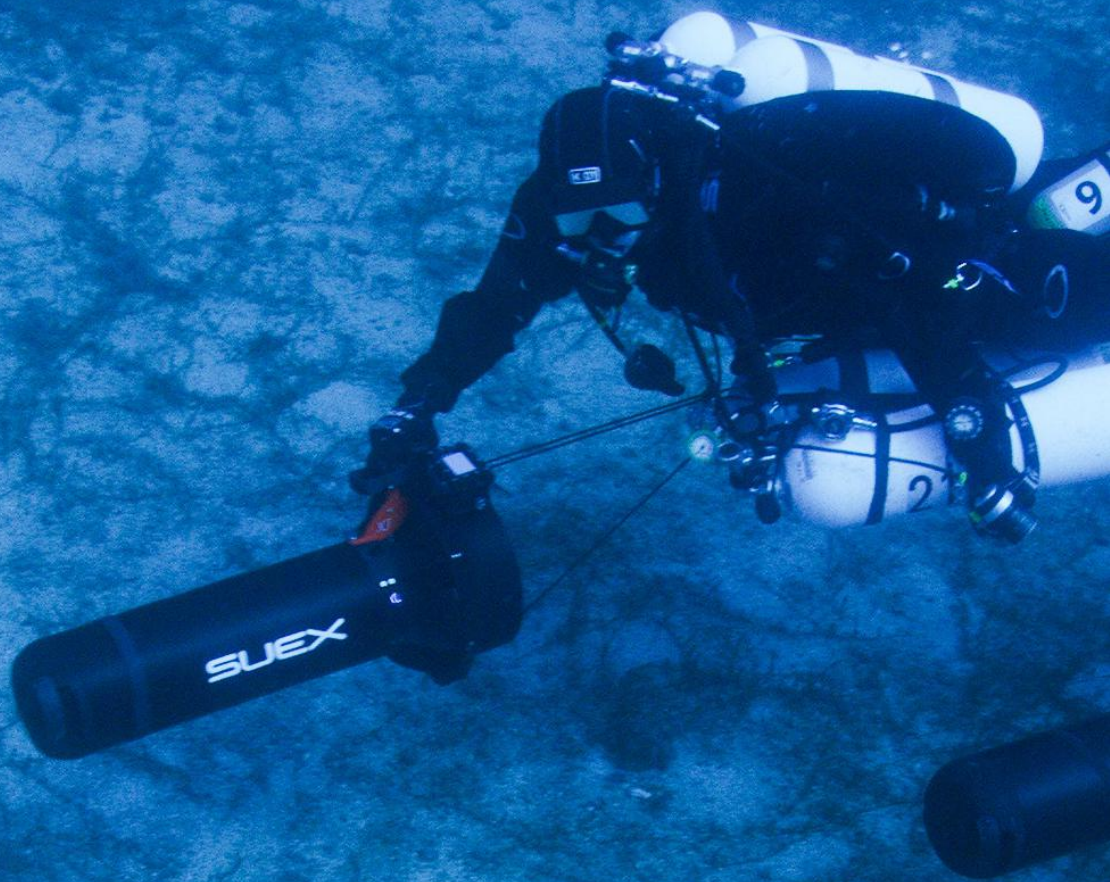
**Favourite Dive Abroad:** Kas, Turkey

**Preferred Type of Dive:** Diving with a weighted sledge (variable weight/no limit).

**Most Spectacular Dive:**

An unforgettable freedive with a dolphin in Spain in 1999, and of course, the Blue Hole in Dahab, Egypt.





# DIVER PROPULSION VEHICLE REVIEW

# SUEX VRT

FEATURE **PAUL FIRTH** PHOTOGRAPHY **SUEX**

Easily covers long distances and conserves breathing gas adding to the diving enjoyment, enabling more underwater exploration and adventure.









As a PADI Master Instructor, I recently put the SUEX DPV's recreational model – the VRT – to the test in Fujairah.

The VRT easily covers long distances and conserves breathing gas adding to the diving enjoyment, enabling more underwater exploration and adventure. The DPV is combined with solid engineering construction and Italian design styling. DPVs are probably the most fun you can have underwater!

Earning a certification in Diver Propulsion Vehicle use adds to the diver experience and enjoyment, but you must have professional training and the correct experience to use a DPV. Working with a team of students, I ran a DPV course to test both the equipment and the students. Fun and of course reliability and safety are important aspects when planning dives with a DPV.

After a dive brief, the students practiced scooter assembly and disassembly, a primary 'O' ring system and simple locking system results in a quick, easy and reliable process.

Two battery choices are available: Lithium and NiMH. The lithium has a good charging time and a longer dive duration. Charging to full power takes a maximum of 3-4 hours. The NiMH is flight friendly for transport, do make sure you present the right paperwork at the airport check in. We found that we were able to do two dives on one battery which makes for a great day of diving.

The VRT with a NiMH battery comes in at 16 kg which seems heavy at first. The VRT comes preset for freshwater, adding a provided set of

salt water weights which is simplicity itself. The neutral buoyancy surprised the dive team in a positive manner.

A crotch harness with D-ring enables a cord connection to the DPV and a simple trigger control activates the motor with two speed modes – 45 m/min cruising speed and top speed of 65 m/min. Get ready to launch!

A shore dive saw the students quickly familiarising themselves with the DPV controls and the perfect neutral buoyancy of the VRT. After some initial straight line movement exercises the students moved on to simple turns by rotating the handle grip, followed by body movement which then creates banking power turns.

In closing it's a hard choice, the Students had a blast and enjoyed the simplicity of the SUEX VRT design and handling. Handling this scooter underwater is simple as they are provided with easy to setup integral weight systems, the VRT's neutral buoyancy aids handling and comfort underwater. The system is perfectly balanced and stable.

The weight is perhaps a challenge above water but this is offset by the ease of handling underwater and the speed options. Neutral buoyancy at any depth is astonishing and the speed is just breathtaking!

#### **SUEX: THE SUBMARINE EXPLORATION COMPANY**

Suex was born in the year 2000 with the aim of producing high performance underwater vehicles. Vehicles intended for long-range exploratory diving as well as deep

technical diving. SUEX is unquestionably the technological leader in underwater mobility.

Performance, reliability, and manoeuvrability. A complete range of products combined with excellent assistance are the company's trademark. The SUEX scooters are suitable for both sports and professional use.

#### **WHY USE A SCOOTER UNDERWATER?**

There are three distinct advantages of using DPVs while diving. Firstly, diving is only for a limited duration. By using a DPV you can see a wider area because you are able to travel faster. Whether you are sight seeing, or searching for an object, covering more ground is your main goal.

Secondly, the scooter does much of the work for you. It reduces your exertion and air consumption. Therefore, not only will you be able to see and cover a wider area, but you will also have more air to explore.

Finally, it is incredibly fun to ride a DPV underwater. Who does not want to move and feel like Iron man?

SUEX developed its DPVs with the top of the range features – connectivity between DPV and the diver. It is much more than just connecting a propeller to a motor.

#### **ALPHA DIVING**

SUEX PARTNER DEALER in the UAE and GCC

Contact Us for More Info

Email: [alphadivinguae@gmail.com](mailto:alphadivinguae@gmail.com)

Tel: +971 50 911 5630



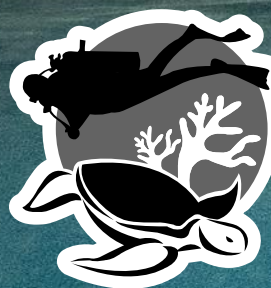


| FEATURES                   | T - SERIES                  | X - SERIES                  |
|----------------------------|-----------------------------|-----------------------------|
| USE                        | Recreational                | Recreational                |
| LENGTH                     | 720 mm (28.3)               | 720 mm (28.3 inches)        |
| WIDTH                      | 340 mm (12.9 inches)        | 340 mm (12.9 inches)        |
| HEIGHT                     | 425 mm (16.7 inches)        | 425 mm (16.7 inches)        |
| BODY DIAMETER              | 200 mm (7.81 inches)        | 200 mm (7.81 inches)        |
| WEIGHT WITHOUT BATTERY     | 11.50 kg (24.51 lb)         | 11.50 kg (24.51 lb)         |
| WEIGHT WITH BATTERY        | 16.50 kg (35.31 lb)         | 16.50 kg (35.3 lb)          |
| MATERIAL TYPE              | Tecnopolymers/Polycarbonate | Tecnopolymers/Polycarbonate |
| MAX STATIC THRUST          | 200 N (44.961 lb)           | 200 N (44.961 lb)           |
| TOP SPEED                  | ml/min 65 (213 rt/min)      | 65 mt/min (213 ft/min)      |
| MAXIMUM OPERATIONAL DEPTH  | mt 101 mt (3311 Ht)         | 101 mt (3311 Ht)            |
| BUOYANCY/TRIM              | Neutral/Neutral             | Neutral/Neutral             |
| IN-WATER USAGE TEMPERATURE | -5/+35°C (+23/+95°F)        | -5/+35°C (+23/+95°F)        |
| RUNTIME-RANGE              | Speed Burn Time             | Speed Burn Time             |
|                            | Full Trigger 60 min         | Full Trigger 100 min        |
|                            | Cruise 45 mt/min 100 min    | Cruise 45 mt/min 150 min    |
| BATTERY TYPE               | Nimh                        | LI-ion                      |
| NOMINAL VOLTAGE            | Volt 24                     | Volt 25.2                   |
| NOMINAL CAPACITY           | 324 Wh                      | 512 Wh                      |
| MAXIMUM RECHARGING TIME    | 4.5 h                       | 6 h                         |
| CHARGER POWER SUPPLY       | Volt 110/22050/60 HZ        | Volt 110/22050/60 HZ        |



# DIGITAL ONLINE'S RESULTS

EDA'S UNDERWATER PHOTOGRAPHY  
AND FILM COMPETITION 2021



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

The Digital Online 2021 results are in! A big congratulations to our EDA Members for their winning picture and video entries to this year's underwater photography and film competition, and a huge shout-out and thank you to our prize sponsors for their fantastic prizes!

## DIGITAL ONLINE 2009-2021

Digital Online celebrated its 12<sup>th</sup> Anniversary in 2021, and we've managed to hold a successful competition for the 2<sup>nd</sup> year running during these unpredictable times of COVID-19!

The competition was introduced by EDA in 2009 to resident photographers to develop awareness and engagement amongst those unfamiliar with our ocean environment. The competition holds both local and global 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 its habitats and surroundings.

The purpose of Digital Online is to keep our oceans visible by displaying their hidden beauty and to exemplify their importance to all life on Earth through their ecosystems, which are under great threat all over the world due to climate change and pollution.

COVID-19 has caused much disruption to the competition, as well as the popular Awards and Exhibition Opening Night, which attains equal success with divers and non-divers alike, who

come together in supporting the participating photographers and videographers. 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, and we look forward to getting back to our event in all its glory.

## COMPETITION CLAUSE

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







# THE SPONSORS AND PRIZES



Digital Online's 2021 Prize Sponsors have offered this year's 9 winners the following prizes to choose from:

NOTE: Participants were only able to win one prize each in the photography section (excluding video). Entrants with multiple winning entries are given priority in the points awarded.

- 1. WINNER: Noémi Stroh | 1<sup>st</sup> Place Video (546)**  
**SPONSOR: XR HUB DIVE CENTER | [www.puretech.me](http://www.puretech.me)**  
 Paralenz® Dive Camera+
- 2. WINNER: Maisa Al Hooti | 1<sup>st</sup> Place Creative Photography (483)**  
**SPONSOR: SCUBA SHADE | [www.scubashade.com](http://www.scubashade.com)**  
 4 Dives to Dubai's dive sites, including equipment, tank and weights.
- 3. WINNER: Khaled AA Alhosani | 1<sup>st</sup> Place Best of Home (452)**  
**SPONSOR: DIVERS DOWN | [www.diversdownuae.com](http://www.diversdownuae.com)**  
 6 Dives on the East Coast, including tank and weights.
- 4. WINNER: Khaled AA Alhosani | 2<sup>nd</sup> Place Video (467)**  
**SPONSORS: AL MAHARA DIVING CENTER | [www.divemahara.com](http://www.divemahara.com)**  
**& LE ROYAL MERIDIEN ABU DHABI | [www.bit.ly/2Zu5mD0](http://www.bit.ly/2Zu5mD0)**  
 2 tank dive at one of Abu Dhabi's coral reef, wreck or artificial reef dives and complimentary one-night stay in Standard Room with breakfast for two persons. Valid from the 18<sup>th</sup> May to 31<sup>st</sup> December 2021.
- 5. WINNER: Sunjay Keshup | 2<sup>nd</sup> Place Creative Photography (456)**  
**SPONSOR: STEVE WOODS | [www.stevewoodsphotography.com](http://www.stevewoodsphotography.com)**  
**Choose an Original Steve Woods Print from:**  
[www.stevewoodsphotography.com/prints](http://www.stevewoodsphotography.com/prints)  
 All prints are 13" x 19" including a signed border. All prints are sent carefully wrapped in recycled paper and placed in a recycled shipping tube for delivery.
- 6. WINNER: Chris Combes | 2<sup>nd</sup> Place Best of Home (437)**
- 9. WINNER: Khalid Alrazooqi | 3<sup>rd</sup> Place Video (271)**  
**SPONSOR: EDA (2 Prizes) | [www.emiratesdiving.com](http://www.emiratesdiving.com)**  
 A copy of the beautiful hardcover photography book: The Best of Digital Online – EDA's Underwater Photography & Film Competition and your choice of 2 of EDA's new Shark and Turtle T-shirt designs.
- 7. WINNER: Michael Rall | 3<sup>rd</sup> Place Best of Home (436)**  
**SPONSOR: AL BOOM DIVING | [www.alboomdiving.com](http://www.alboomdiving.com)**  
 2 dives on East Coast (Fujairah) with full equipment for 1 person.
- 8. WINNER: Suretta Venter | 3<sup>rd</sup> Place Creative Photography (433)**  
**SPONSOR: SANDY BEACH DIVE CENTRE | [www.divesandybeach.com](http://www.divesandybeach.com)**  
 Double tank dive trip, equipment, tanks and weights included.

|    | PHOTOGRAPHY             | BH  | CP  | TOTAL |
|----|-------------------------|-----|-----|-------|
| 1  | Khaled AA Alhosani      | 452 | 481 | 933   |
| 2  | Maisa Al Hooti          | 425 | 483 | 908   |
| 3  | Michael Rall            | 436 | 416 | 852   |
| 4  | Sunjay Keshup           | 386 | 456 | 842   |
| 5  | Ola Khalaf              | 406 | 406 | 812   |
| 6  | Abdulla Alali           | 385 | 413 | 798   |
| 7  | Oliver Farrell          | 373 | 413 | 786   |
| 8  | Khalid Alrazooqi        | 380 | 393 | 773   |
| 9  | Suretta Venter          | 307 | 433 | 740   |
| 10 | Lara El Lakkis Gonzalez | 401 | 338 | 739   |
| 11 | Nassim Miri             | 341 | 333 | 674   |
| 12 | Fakhruddin Dabhoiwala   | 299 | 369 | 668   |
| 13 | Rebekka Pentti          | 330 | 331 | 661   |
| 14 | Winston Cowie           | 401 | 223 | 624   |
| 15 | Chris Combes            | 437 |     | 437   |
| 16 | Alexandre Rigal         | 431 |     | 431   |
| 17 | Gordon T. Smith         | 346 |     | 346   |
| 18 | Marwa El-Agroudy        | 345 |     | 345   |
| 19 | Angela Manthorpe        | 288 |     | 288   |
| 20 | Jamel Abiadh            | 281 |     | 281   |
| 21 | Selim Larlar            | 257 |     | 257   |
| 22 | Aaron Keith Pais        | 247 |     | 247   |
| 23 | Abigail Kate Pais       | 218 |     | 218   |

|    | VIDEO              | MY OCEAN TOTAL |
|----|--------------------|----------------|
| 24 | Noemie Stroh       | 546            |
| 25 | Khaled AA Alhosani | 467            |
| 26 | Khalid Alrazooqi   | 271            |
| 27 | Winston Cowie      | 269            |



# 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](http://www.stevewoodsunderwater.com)

**FACEBOOK:** @SteveWoodsPhotographer

**INSTAGRAM:** @steve\_woods\_photography

## DAVID DILEY | SCARLET VIEW MEDIA

Filmmaker, Underwater Cinematographer and Digital Colourist



David is a multi-award winning Filmmaker, 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](http://www.scarletviewmedia.com)

**FACEBOOK:** @daviddileyfilmmaker

## IMRAN AHMAD BIN RAYAT AHMAD | ESCAPEINC

Internationally Published Underwater Photographer



Imran is a photographer and media lecturer based in Singapore with an extensive portfolio. He is highly committed to the education of future generations and in so doing gives presentations and runs workshops on conservation, underwater, travel, sportsphotography&cinematography. Imran is internationally recognised as a Professional Nikon Photographer, a SEACAM Pro Photographer and

Ambassador, a Blancpain Ocean Ambassador, Mares, DAN, and DEEPBLU Ambassador, and an Ocean Artist Society Member.

He has been published in countless leading media publications around the world including Nikon Focus, Sport Diver (USA), Tauchen (Germany), Unterwasser (Germany), DAN (Asia Pacific) Scuba Diver Australasia, Scuba Diver, Hello Bali (Indonesia), Asian Diver, EZDive (Hong Kong), Scuba Diving (USA), CEO Magazine (Malaysia), MediCorp's Slice of Life (Singapore), Straits Times, and Berita Harian, just to name a few. In addition, Imran has 5 of his own published underwater photography books.

**WEBSITE:** [www.escapeinc.com.sg](http://www.escapeinc.com.sg)

**FACEBOOK:** @IMPESCAPEINC

## 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](http://www.emiratesdiving.com)

**FACEBOOK:** @emiratesdivingassociation





**1<sup>st</sup> PLACE:** Maisa Al Hooti | Creative Underwater Photography – 483  
Sultanate of Oman



**2<sup>nd</sup> PLACE:** Sunjay Keshup | Creative Underwater Photography – 456  
Daedalus, Red Sea, Egypt



**1<sup>st</sup> PLACE:** Khaled AA Alhosani | Best of Home – 452  
Fujairah, United Arab Emirates

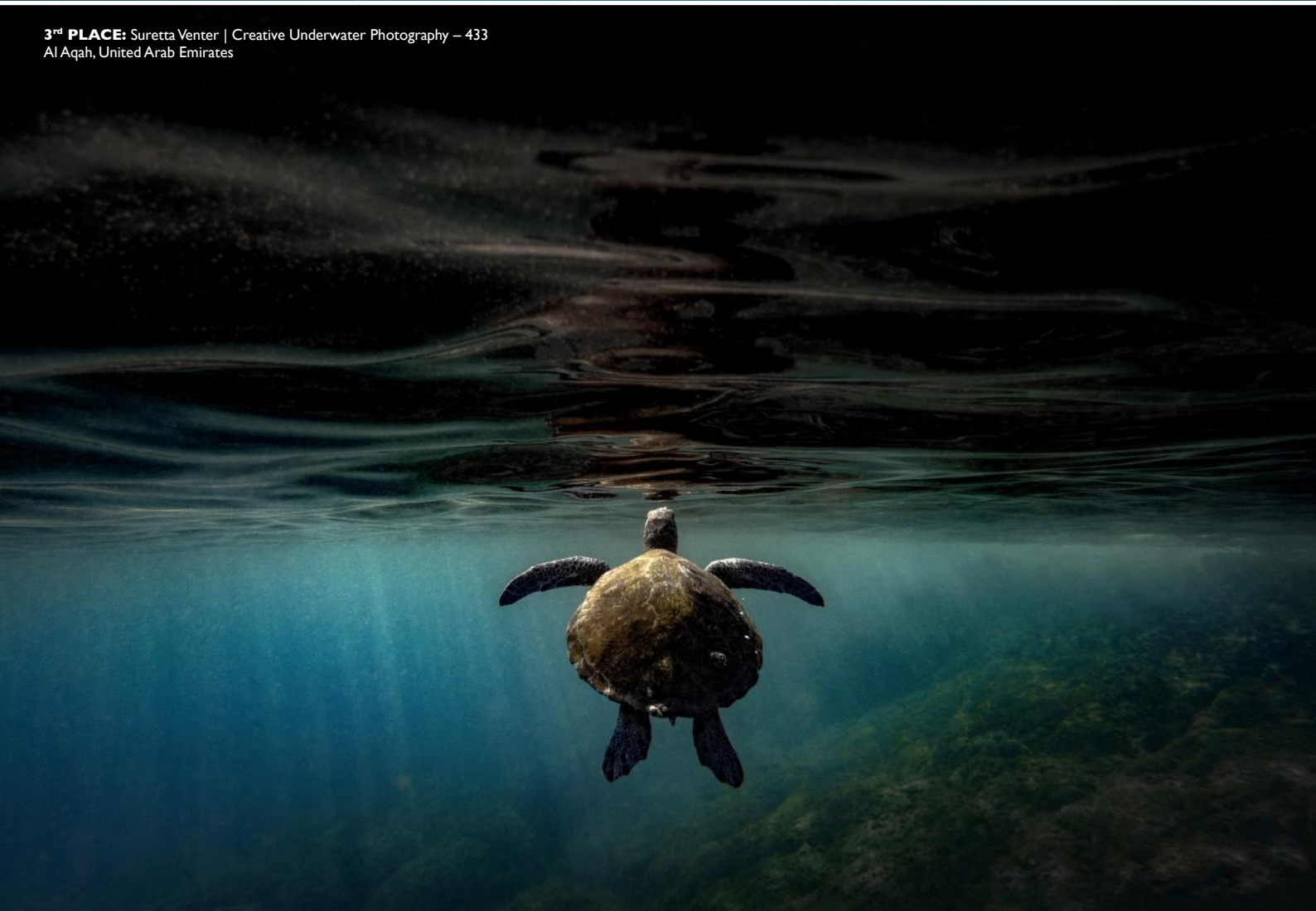


**2<sup>nd</sup> PLACE:** Chris Combes | Best of Home – 456  
XR Tug Wreck, Fujairah, United Arab Emirates





**3<sup>rd</sup> PLACE:** Michael Rall | Best of Home – 436  
Dubai, United Arab Emirates



**3<sup>rd</sup> PLACE:** Suretta Venter | Creative Underwater Photography – 433  
Al Aqah, United Arab Emirates



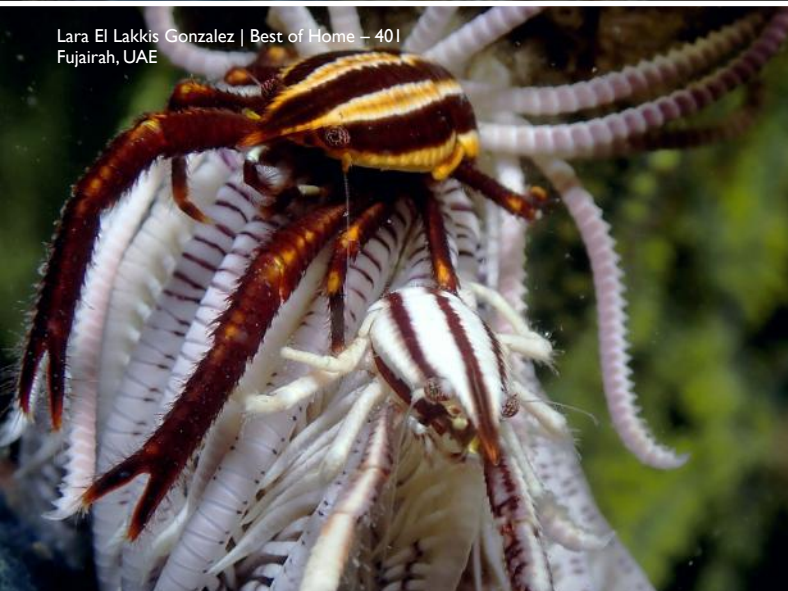
Alexandre Rigal | Best of Home – 431  
Inchcape 10, Fujairah, UAE



Ola Khalaf | Best of Home – 406  
Inchcape 2, Khorfakkan, UAE



Lara El Lakkis Gonzalez | Best of Home – 401  
Fujairah, UAE



Sujay Keshup | Best of Home – 386  
Car Cemetery, UAE



Maisa Al Hooti | Best of Home – 425  
Oman



Winston Cowie | Best of Home – 401  
Al Raha Canal, Abu Dhabi, UAE



Abdulla Alali | Best of Home – 385  
Fujairah, UAE





# UW PHOTOGRAPHY

Khalid Alrazooki | Best of Home – 380  
Fujairah, UAE



Oliver Farrell | Best of Home – 373  
Fujairah, UAE



Gordon T. Smith | Best of Home – 346  
Sharm Rocks, Fujairah, UAE



Marwa El-Agroudy | Best of Home – 345  
Fujairah, UAE



Nassim Miri | Best of Home – 341  
Ras Mohamed, Red Sea, Egypt





Rebekka Pentti | Best of Home – 330  
Dibba Rock, Fujairah, UAE



Suretta Venter | Best of Home – 307  
Al Aqah, UAE



Fakhruddin Dabhoiwala | Best of Home – 299  
Fujairah, UAE



Angela Manthorpe | Best of Home – 288  
Sharm Rocks, Fujairah, UAE



Jamel Abiadh | Best of Home – 281  
Dibba Rock, Fujairah, UAE



Selim Larlar | Best of Home – 257  
Fujairah, UAE



Aaron Keith Pais | Best of Home – 247  
Snoopy Island, Fujairah, UAE







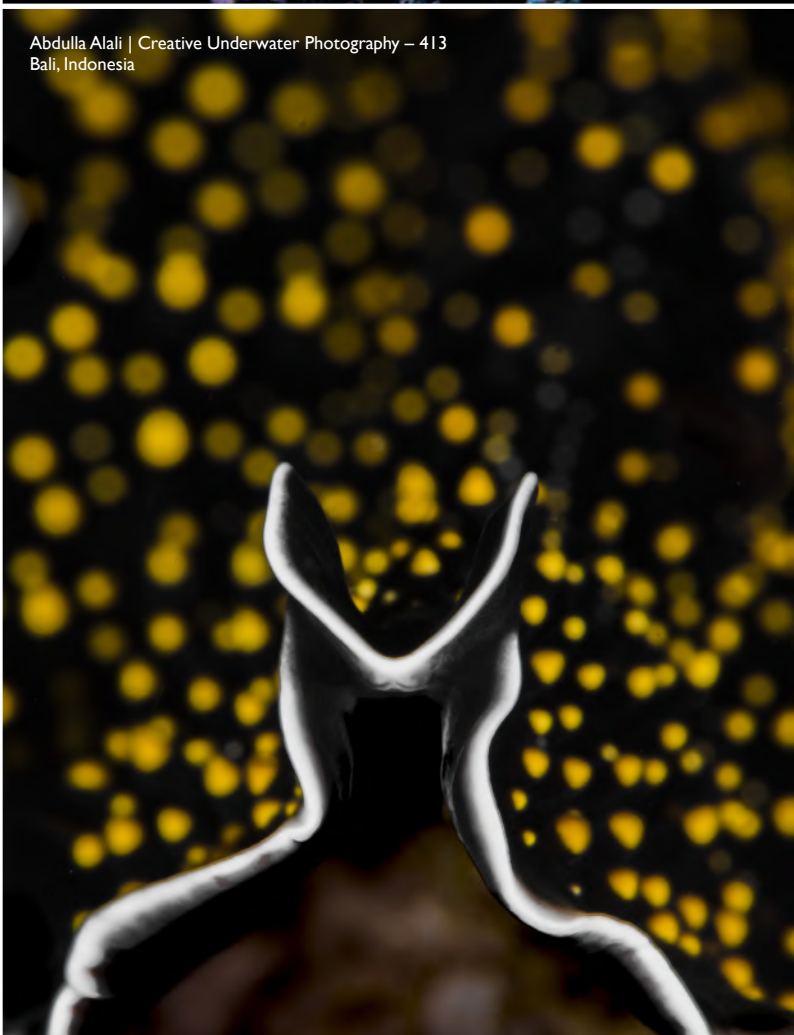
Abigail Kate Pais | Best of Home – 218  
Snoopy Island, Fujairah, UAE

Khaled AA Alhosani | Creative Underwater Photography – 481  
Anilao, Philippines



Michael Ralf | Creative Underwater Photography – 416  
Neom, Saudi Arabia

Abdulla Alali | Creative Underwater Photography – 413  
Bali, Indonesia



Oliver Farrell | Creative Underwater Photography – 413  
Fujairah, UAE and BAA Atoll, Maldives

Ola Khalaf | Creative Underwater Photography – 406  
Dibba Rock, Fujairah, UAE





Khalid Alrazooqi | Creative Underwater Photography – 393  
Fujairah, UAE



Lara El Lakkis Gonzalez | Creative Underwater Photography – 338  
Fujairah, UAE



Fakhruddin Dabhoiwala | Creative Underwater Photography – 369  
Moon Island, Dubai, UAE



Nassim Miri | Creative Underwater Photography – 333  
Shark Bay, Red Sea, Egypt



Rebekka Pentti | Creative Underwater Photography – 331  
Snoopy Island, Fujairah, UAE



Winston Cowie | Creative Underwater Photography – 223  
Al Dhafrah, Abu Dhabi, UAE









# RIA DESEADO AND THE MAJESTIC PENGUIN ISLAND

FEATURE AND PHOTOGRAPHY **DR ALDO GUSTAVO GALANTE**

The English naturalist, Charles Darwin, described Ria of Puerto Deseado and Penguin Island as the “Patagonian Galapagos” and “the most remote place in the world”. The scientist spent a week there during his expedition around the world aboard the HMS Beagle, under the command of Captain Robert Fitz Roy, leaving the young Darwin completely surprised by the imposing beauty and explosion of nature in the region.







**ABOVE:** The Southern Sea Lions (*Otaria flavescens*) of Ria Deseado. **OPPOSITE PAGE:** Southern Rockhopper Penguins (*Eudyptes chrysocome*) at the lighthouse on Penguin Island.

The English naturalist, Charles Darwin, described Ria of Puerto Deseado and Penguin Island as the “Patagonian Galapagos” and “the most remote place in the world”. The scientist spent a week there during his expedition around the world aboard the HMS Beagle, under the command of Captain Robert Fitz Roy, leaving the young Darwin completely surprised by the imposing beauty and explosion of nature in the region.

These two jewels in Argentina’s nature are located near the city of Puerto Deseado, in the province of Santa Cruz. It is reached after travelling 2,028 km by car from Buenos Aires, or by taking a plane to the city of Comodoro Rivadavia. From there you travel approximately 300 km, passing through the towns of Rada Tilly and Caleta Olivia. During the trip through the immense Patagonian steppe, you will come across guanacos, sheep, horses, rheas or choiques (Patagonian Ostrich), foxes, amongst others. In our particular case, we decided to drive from the City of Buenos Aires where I live, to have mobility and to be able to travel around the area more deeply, which is what I

would recommend. The trip can be done both by car and by 4x4 vehicles, the latter being the most recommended way to travel given the number of gravel roads that must be crossed to access the many tourist spots.

Once you arrive, the small town of Puerto Deseado gives you all its charms, highlighting, mainly, the old Railway Station, which today houses the Railway Museum and the Church – Nuestra Señora de la Guarda in whose tower the Beauvoir Lighthouse has operated since 1980. A few kilometres away from the city is the Cañadón de las Bandurrias, a place where the Lourdes Grotto is located, one of the most emblematic and beautiful places in Puerto Deseado.

Regarding accommodation, we opted to stay at Amancay Namasté (<https://bit.ly/3rCIvVb>), which had been recommended to us, and it was undoubtedly the best option to stay in Puerto Deseado. We highlight the kindness and generosity of its owner Mariel, who was attentive to our needs even before we arrived at our destination. The rooms are

comfortable, well equipped and at a very affordable price.

## RIA DESEADO

We fell upon the Ria as soon as we arrive at the city, delighting ourselves with its imposing canyons surrounded by turquoise waters. The misnamed “Ria” originated when the Deseado River, which formerly flowed into the sea about 10,000 years ago, left its natural channel in the last ice age and the sea invaded the river bed, thus forming the Ria that extends about 50 km long. Ria Deseado is the only one in South America. Here, the ocean tide flows up to approximately 40 km from what would be the mouth of the river. Actually, geographically speaking, it is an Estuary and it was named an “Intangible Nature Reserve” for its unique geology and fauna. The Ria, and its islands, Chaffers, Elena, Larga and Isla de los Pajaros, among others, are some of the points full of marine fauna, and populated by about 15 species of Seabirds. Among them 4 species of Cormorants stand out: the Grey or Red-legged Cormorant, the most beautiful and exotic of all (40% of its population is registered













**OPPOSITE PAGE L-R:** The Commerson's Dolphin (*Cephalorhynchus commersonii*); A South American Fur Seal (*Arctophoca australis*); Kayaking on the Ria Deseado. **ABOVE:** The friendly Magellanic Penguins (*Spheniscus magellanicus*) of Penguin Island.

in the area), the Imperial, the Black Neck and the Biguá. Also 2 species of Escúas, 3 species of Terns, 2 species of Gulls such as Cook and Grey, Antarctic Doves, Black Oystercatchers, Giant Petrels of the South Atlantic (which, with their open wings, exceeds 2 metres wide) and the Magellanic Penguins.

We can also see the Commerson's Dolphin (*Cephalorhynchus commersonii*), which is one of the most colourful and smallest marine dolphins in the world, emulating small orcas; the Peale's Dolphin (*Lagenorhynchus australis*), which is a dolphin with a robust body about 2.16 metres long and weighing approximately 115 kg; Southern Sea lions (*Otaria flavescens*), the most frequent species of the Argentine coasts; Black-browed Albatross that flutter through the canyons; followed by a very long list of birds. A simply wonderful place for lovers of such rich nature!

The Ria is convenient to navigate on a guided excursion to explore it and enjoy it in depth. By land, it can be done by vehicle with high clearance, preferably 4x4, or by car you can

visit the Jimenez, Paraguay, Torcido, Indio and Puerto canyons; all of them with spectacular views. In addition, there is the famous Darwin Lookout, a place that astounded even Charles.

When I was there, I was able to snorkel for a while to see its seabed and, although the water is very cold and with poor visibility, I was able to observe its seaweed seabed, which give the estuary a certain greenish colour, and even a sea lion curiously approached me and let me enjoy its company for a while!

In addition, you can navigate to Piedra Toba from where you can watch the "golden hour", as the locals commonly call the "sunset".

#### PENGUIN ISLAND

This Island deserves a separate chapter and I can affirm, in my humble opinion, that it is the most incredible marine fauna that I have seen in my country (Argentina), without a doubt or exaggeration.

On February 15, 2010, the Island was protected and named "Penguin Island Marine

Interjurisdictional Park". The Park is located on the Argentine Sea, 21 km south of the city of Puerto Deseado and 3 km from the continental coast. It covers an area of 159,526 hectares, including a series of coastal islands and islets – Penguin Island being the largest, dominating the area. In its waters, there are a large number of marine species such as the Southern Hake, the Patagonian Prawn and the Argentine Squid, which give rise to the explosion of life of abundant marine birds and mammals. The Island has an old lighthouse that no longer works, but it was formerly powered by kerosene. It measures 22 metres high and it is the one that distinguishes the Island from afar.

In addition to much of the fauna that can be found in the Ria, in a smaller area on Penguin Island you will be able to also see Elephant Seals (*Mirounga*), which measure between 3 and 4.5 metres long, and weigh between 600 and 2,500 kg; and... the icing on the cake... the friendly and very photogenic Southern Rockhopper Penguins (*Eudyptes chrysocome*), famous for their yellow V-shaped feathers around their









### ACTIVITY BOOKING INFO

I would especially like to thank Darwin Expediciones who gave us an unforgettable experience, both on Penguin Island and Ria Deseado, nourished by Roxana's wisdom, our wonderful guide, and Captain Ricardo, who showed us and taught us a lot about the beautiful and diverse local fauna.

[www.bit.ly/3mlGpKC](http://www.bit.ly/3mlGpKC)

Unfortunately I was not able to dive in Puerto Deseado due to the pandemic; but Club Náutico organises dive excursions in this wonderful area.

[www.bit.ly/3sRxaEI](http://www.bit.ly/3sRxaEI)

Diving group excursions can also be organised from Buenos Aires or Puerto Madryn (730 km north of Puerto Deseado). In fact, Madryn is called the "Diving Capital of Argentina". There are plenty of Dive Centres there and divers can enjoy diving in wrecks, with sea lions, and do whale watching during the winter season and dolphin watching all year round. Puerto Madryn could be a great combination with Puerto Deseado.

[www.instructordebuceo.com](http://www.instructordebuceo.com)

[www.bit.ly/3sSY4vk](http://www.bit.ly/3sSY4vk)

Other locations from where it is possible to arrange excursions to Puerto Deseado are Comodoro Rivadavia and Rada Tilly.

[www.bit.ly/3uktlCo](http://www.bit.ly/3uktlCo)

**LEFT:** Southern Rockhopper Penguins (*Eudyptes chrysocome*). **ABOVE L-R:** South American Fur Seals (*Arctophoca australis*); Dolphin Gull (*Leucophaea scoresbii*); Elephant Seal (*Mirounga*); Grey Cormorant (*Phalacrocorax gaimardi*); Ria Deseado.

striking red eyes. These are the smallest crested penguins in the world, they usually measure about 40 to 55 cm in height and weigh about 3 kg. They have a false reputation for being aggressive as they do not hesitate to approach humans and often peck away intruders if they feel threatened. They can also be aggressive towards each other, slapping each other with their wings; but in general, they are very friendly and sympathetic, as the Magellanic Penguins (*Spheniscus magellanicus*) are.

This Island is the only accessible place to observe the Rockhopper Penguins, since the other colonies are in the Falkland Islands and the Sub-Antarctic Islands of the South Atlantic, almost inaccessible to common tourism.

Between October and April, more than 1,000 pairs of Rockhoppers come to this area to nest and change their feathers, after having spent the winter in the southern seas feeding on octopuses, krill, molluscs and crustaceans. Like other penguins, they can sleep floating in the sea. The females arrive on the island a few days later to meet up with the males who have set up their nests. They lay two eggs four days apart, one small and one larger to which they will dedicate the incubation, and the other

they will abandon. The couple takes turns in caring for their egg while the other goes out to fish and fatten up. At 30 days, the chick is born. They remain on the island until April to shed their feathers and do not return until the following year.

After we finished walking around the island with the tour, we sat in front of a large colony of male Elephant Seals to enjoy our lunch. It was a priceless view. A moment that will be etched in our memory forever.

And last but not least, if you have time left to spare, you can go to the Cabo Blanco Natural Reserve, 88 km away from Puerto Deseado by gravel road, where you can see the Lighthouse and South American Fur Seals (*Arctophoca australis*).

In summary, this Island and all its wonders left us completely speechless. It offers such a large variety of bird species for bird watchers and photographers alike, that it can only be described as a place of utopia. Very little is known about this Argentine Patagonia and it is rarely visited. I cannot recommend this destination enough. It is an obligatory stop to make in Argentina.



# WHAT YOU SHOULD KNOW ABOUT DIVING AFTER COVID-19

FEATURE **MICHAEL MENDUNO**



In May 2020, DAN Europe published consensus recommendations for divers returning to diving after having been infected with the SARS-COV2 or Covid-19 virus. The recommendations were included as part of DAN Europe's Health Declaration Form for Covid-19, and were based on the medical advice compiled by the Undersea and Hyperbaric Medical Society (UHMS) in the USA, the Belgian Society for Diving and Hyperbaric Medicine (SBMHS-BVOOG), and the European Committee for Hyperbaric Medicine and Underwater and Baromedical Society (ECHM & EUBS). The University of California at San Diego (UCSD) also issued medical guidelines for recreational, scientific and commercial divers.

Now, with diving resuming in many locations, especially local diving (#DiveLocal), we have received inquiries from divers who have suffered from Covid-19 regarding when they can safely return to diving and what, if any precautions they should take. Accordingly, we thought it useful to republish these medical recommendations as shown below. In addition, we have compiled the recent field experience of some DAN Europe physicians who have treated and or advised divers who have had the infection.

## MEDICAL RECOMMENDATIONS FOR RETURNING TO DIVING

For the most part, the medical advisories cited above discuss the various manifestations of the virus and the risk of spreading, along with some of the known risk factors that likely determine the severity of the illness. The authors were careful to point out that at the time advisories were being prepared, scientific data was scarce, but clinical publications have shown cases with severe deterioration of the lungs, heart, central nervous system and kidneys after Covid-19 infection.

Specific concerns have been raised for divers, as persisting lung or cardiac involvement have been noted. Similar to other serious virus pneumonias, divers who have been infected with Covid-19, require a period of convalescence before returning to full activities, a process that can take weeks or months depending on symptom severity.

Here then are the consensus recommendations for returning to diving after Covid-19. Note that the guidance for divers who tested positive for COVID-19 but remained completely asymptomatic, and the guidance for those who were symptomatic

but not hospitalised have been updated since the original recommendations were made in early spring 2020 and are shown below. Also be aware that guidance and recommendations may vary slightly among European countries. National recommendations were created to cope with what has been a hitherto largely unknown form of cardiopulmonary disease, and cannot be expected to be entirely uniform across counties and cultures. However, all urge divers to exercise caution.

## RECOMMENDATIONS:

- Divers who have tested positive for COVID-19 but have remained completely asymptomatic should wait at least 30 days from the first negative test before applying for fit-to-dive clearance and eventually going back to diving.
- Divers who have had symptomatic COVID-19, should wait at least 30 days from the first negative test, plus an additional 30 days without symptoms (a total of two months) before applying for fit-to-dive clearance conducted by a diving medicine specialist.
- Divers who have been hospitalised with,



or because of pulmonary symptoms in relation to COVID-19, should wait at least THREE months before applying for fit-to-dive clearance conducted or coordinated by a diving medicine specialist. The clearance should include complete pulmonary function testing (at least FVC, FEV1, PEF25-50-75, RV and FEV1/FVC), an exercise test with peripheral oxygen saturation measurement, as well as a high resolution CT scanning of the lungs to verify a return to normal.

- Divers who have been hospitalised with, or because of cardiac problems in relation to COVID-19, should wait at least THREE months before applying for fit-to-dive clearance conducted or coordinated by a diving medicine specialist. The clearance should include cardiac evaluation, including echocardiography and an exercise test (exercise electrocardiography) to ascertain normal cardiac function.

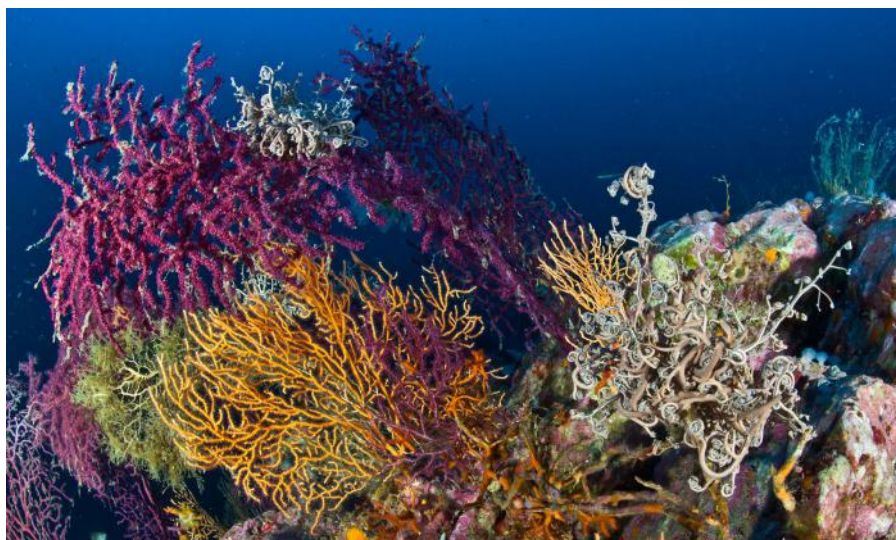
It is important that these pulmonary and cardiac tests should be interpreted and validated by a medical officer with specific knowledge of diving medicine. Note that DAN Europe members are eligible to receive a medical consultation with a diving medical specialist from DAN Europe's diving support network as part of their membership benefits.

#### OTHER RISK FACTORS TO BE AWARE OF

There may be additional potential risks for divers who have had the Covid-19 infection. The best way to determine if you might be subject to a higher risk for pulmonary barotrauma, lung bubble shunting, cardiac or other problems is through a recommended diving medical exam. Divers who may be at higher risk should consider the following in resuming their diving activities in consultation with their diving doctor:

**Pulmonary Overpressure Syndrome (Lung Barotrauma):** Note that divers who experienced severe pulmonary symptoms may suffer from prolonged or even permanent pulmonary damage, even if the lung function seems to have returned to (near) normal. This damage may give a higher risk for lung barotrauma, even after dives without a rapid or uncontrolled ascent. (Reference: Belgian Society for Diving and Hyperbaric Medicine)

**Pulmonary Oxygen Toxicity:** At this time, there is very little known as to a possible increased sensitivity of the pulmonary tissue to the toxic effects of oxygen; therefore, a prudent attitude would be that technical diving with prolonged breathing of hyperoxic gas, with a PO<sub>2</sub> of 1.3 ATA or higher; for example rebreather diving, should be avoided. Simple "nitrox diving," whereby a maximum PO<sub>2</sub> of 1.4 ATA is only breathed for short periods, at the deepest part of the dive, should not present any problem. (Reference: Belgian Society for Diving and Hyperbaric Medicine)



**Decompression Illness:** Even less is known about the possible alteration of the "bubble filter" function of the lung after COVID-19 pulmonary infection. This may imply that the risk for decompression sickness could increase significantly. Therefore, a prudent attitude would be that divers who have suffered from pulmonary symptoms of COVID-19, limit their dives temporarily (or definitively) to well within the no decompression limits (NDL) of their computer (so that at no moment during the dive, the computer indicates mandatory decompression stops). (Reference: Belgian Society for Diving and Hyperbaric Medicine)

#### PREVENT THE SPREAD: COVID-19 AND DIVING OPERATIONS

It is expected that the Covid-19 will persist in the community, leading to a continued risk of transmission between persons if staying in direct proximity or sharing common personal equipment. Every dive centre or diving team should conduct an analysis of risk prevention and mitigation using published recommendations. Divers and dive centres should observe strictly the guidelines for disinfection of diving gear as issued by the

diving federations and DAN Europe and the Divers Alert Network.

#### Generally, it is recommended:

- To continue the social distancing measures as required by the local authorities also during diving operations (mostly during the surface phase of diving operations) including wearing masks and maintaining a safe social distance.
- To disinfect private and rental equipment, including emergency oxygen units, with appropriate disinfectants covering broad spectrum of germs, including fungi, bacteria, spores and viruses.
- To avoid exchange of personal breathing systems except in real emergency situations.
- To plan any "breathing systems sharing" exercises in such a way that personal protection is ensured.

By following the recommendations above, divers can mitigate the risks of spreading the infection, and ensure that divers who had Covid-19 resume diving activities in the safest manner possible.





# DAN EUROPE PHYSICIAN'S FIELD EXPERIENCE REGARDING DIVING AFTER COVID-19

FEATURE **MICHAEL MENDUNO**



There is still much we do not know about COVID-19, and information about the virus and its impact on divers is still evolving. For that reason, in addition to republishing the consensus medical recommendations compiled by the various diving and hyperbaric medical associations, (see: "What You Should Know About Diving After Covid-19") we reached out to a number of DAN Europe physicians and asked them about their experience in the field dealing with divers wanting to return to diving after having had COVID-19.

Specifically, we queried the following physicians; Oscar Camacho (Portugal), Peter Germonpré (Belgium), Ole Hyldegaard (Denmark), Jacek Kot (Poland), Anne Räisänen-Sokolowski (Finland), Adel Taher (Egypt), Ulich van Laak (Germany) and Jürg Wendling (Switzerland). These doctors have each treated from two to twenty divers who suffered COVID-19. Dr. Germonpré has only treated military divers, while Dr. Camacho has treated commercial as well as recreational divers. Here is what they had to say.

**DAN Europe:** What has generally been your experience with those wanting to return to diving after having had Covid-19?

**Oscar Camacho (OC):** All the commercial divers during the acute disease were asymptomatic or with innocuous symptoms as anosmia/dysgeusia (the loss of smell and taste). Regarding the recreational diving, two divers were very sick. Both were hospitalised. One was admitted to a normal ward with non-invasive ventilation. Another was six weeks in the intensive care unit. All of the divers (commercial and recreational) were very concerned about their lung capacity ability to return to diving. The two recreational divers that were hospitalised had lung scans with suggestive images of bilateral fibrosis and tired easily, so I excluded them from returning to dive and will evaluate them again after six months.

**Peter Germonpré (PG):** All were subjected to the medical examinations as per military medical requirements (i.e, exercise test with SpO<sub>2</sub>, pulmonary function test, cardiological examination and pulmonary CT scan). Some were "grounded" for three more months before being allowed to resume diving.

**Ole Hyldegaard (OH):** No problems or major respiratory issues.

**Jacek Kot (JK):** I acted as a medical consultant

for a single individual wishing to return to diving.

**Anne Räisänen-Sokolowski (ARS):** All of them had had mild cases and were very eager to get back in the water as soon as possible.

**Adel Taher (AT):** Most of them appeared to be clinically free with good air entry on both sides. The history taking would reveal that they suffered COVID-19 or they would know and declare it up front. When in doubt I would ask for CT-Lungs. In several cases where the infection occurred less than two months ago, Ground Glass Opacifications (GGO) would appear, mostly basal. A follow up after a period of four and six months following the initial infection, showed resolution of the GGOs.

**Ulich van Laak (UvL):** Reluctant to follow the consensus recommendations in all three cases; they were seeking "quick'n'dirty" permissions.

**Jürg Wendling (JW):** Most of the recreational divers and some professional divers followed our recommendations. All of our patients with mild to severe symptoms during acute COVID-19 had no signs of sequelae in the examinations according to the Swiss flowchart (we conducted a symptom limited stress test



with pulse oxymetry/body plethysmography and DLCO). I would like to note that my comments here are a compilation of experience from the most active diving medicine physicians of the Swiss Underwater And Hyperbaric Medical Society (SUHMS) who report monthly at online meetings about their experiences.

#### Are there any potential problem areas that divers should be aware of?

**PG:** We haven't seen 'curious' instances of DCS (after 'innocent' dives), but this is probably because of the restrictions we imposed early on in the Dutch Society of Diving and Hyperbaric Medicine (DSDHM) guidelines which were published as early as April 2020.

**OH:** Testing of lung function recommended (as a minimum) before resuming to diving if COVID-19 infection caused signs of pulmonary symptoms.

**JK:** Permanent changes to lung tissue (lower compliance) and lower exercise capacity.

**ARS:** Lungs can be problematic.

**AT:** Oxygen saturation on exertion! Apparent changes on the spirometry results. A second opinion of a pulmonologist could be requested.

**UvL:** Published concerns like the Belgium Society of Diving & Hyperbaric Medicine (BSDHM) and others are not widely accepted or understood amongst the sport diving community. It's quite different in scientific diving & military diving.

**JW:** There were no surprising experiences. Divers are informed about potential hazards that mostly manifest themselves through reduced physical performance. We share the alerts of the BSDHM group.

#### What should divers look out for and/or be concerned with before returning to diving?

**OC:** Pulmonary function!

**PG:** I think it is safe to say that the current guidelines are capable of preventing divers to return to diving with significant pulmonary/cardiac damage. Whether the guidelines are too strict is difficult to say.

**OH:** It depends on the severity of their COVID-19 infection.

**JK:** Exercise capability (physical power), decreased spirometry, changes in radiological studies i.e., High-resolution computed tomography (HRCT).

**ARS:** The diver's physical condition needs to return to pre-COVID levels.

**AT:** A gradual return to their 'normal' level of physical fitness, which can often take longer

than anticipated.

**UvL:** Physical and psychological fitness as before COVID to be confirmed by a medical performance analysis (by sports medicine, cardiology, and pulmonary specialists).

**JW:** See our updated flowchart of the Swiss Underwater and Hyperbaric Medical Society (SUHMS).

#### Any specific advice for divers experiencing "Long Covid" in its various manifestations?

**OC:** Divers should have a pulmonary function and cardiac evaluation if they have cardiac problems or previous heart disease.

**PG:** As no specific treatment exists (except physical rehabilitation programmes and time), it is important for divers to be patient, and refrain from scuba diving until cleared by their diving medicine specialist. Swimming pool training may be done, although a pulmonary function test would have to be normal for any training using compressed gas, even at very shallow depths because of the risk of air-trapping.

**OH:** They can resume diving with normal lung function testing and ECG-stress test combined with diving medical advice.

**JK:** Due to unknown long-term consequences of COVID, divers should conduct more conservative diving and less exercise underwater.

**ARS:** A diver's physical condition needs to return to pre-COVID levels; a thorough evaluation of cardio-respiratory system is mandatory.

**AT:** I did not see cases of "Long Covid" here in Sharm.

**UvL:** Our recommendation for two cases of

severe and "Long Covid" was not to dive for six months and get a cardiovascular and lung-focused diving medical check beforehand.

**JW:** As far as it is known at this moment, the Long Covid syndrome is mainly a deconditioning that happens centrally, which means that it represents a kind of somatoform evolution with symptoms but no signs. As such, an early involvement of a psychotherapy is important – a multimodal approach to the rehabilitation! Some patients with Long Covid have somatic sequelae (lung and heart) and they will not pass the fitness to dive examinations as per the Swiss flow chart.

#### Under what circumstances, would you recommend that a diver who had Covid-19 seek an additional consultation with a DAN diving physician (a membership benefit) in addition to their medical doctor?

**OC:** If they were hospitalised regardless of the severity. If they have previous chronic respiratory disease regardless of the severity or whether they have or not been hospitalised. If they remain symptomatic after Covid-19.

**PG:** I don't believe an actual (in-person) medical consultation is part of the DAN membership benefits. However, obtaining remote advice on the results of the medical examinations performed by or prescribed by their medical doctor, can be done in all cases of doubt.

**OH:** Patients with pulmonary symptoms or symptoms beyond normal influenza like symptoms should have spirometry and possibly HRCT 12 weeks after infection.

**JK:** In any case of hospitalisation due to COVID-19 with symptoms either pulmonological, cardiac or neurological.

**ARS:** Always.

**AT:** In any case where their medical doctor







has not examined covid-19 cases before or is not knowledgeable regarding the possible effects that COVID-19 can have on diving.

**UvL:** Any DAN member who had symptomatic COVID-19 should discuss his/her case with a DAN diving medical officer if possible.

**JW:** People who have suffered the COVID-19 infection and want to resume diving should contact and see a diving medicine physician for consultation. In Switzerland we have a network of competent diving doctors that covers our area, so that additional consultation with the DAN diving physician would only be indicated if a second opinion is requested.

**What should divers look out for and/or be concerned with after they begin to dive again?**

**OC:** If they get easily tired and/or have respiratory symptoms like shortness of breath.

**PG:** The dives should be built up gradually as there undoubtedly will have been both a lack of training/habits and a physical deconditioning.

**OH:** Exercise induced dyspnea (shortness of breath) should prompt further examination.

**JK:** Be aware about increased risk for pulmonary barotrauma, limitations for underwater exercise.

**ARS:** Lung injury, even in milder infections.

**AT:** Shortness of breath, especially when overexerting underwater and even more so, if not overexerting underwater! Divers should pay attention to their respiratory rate and breathing gas consumption. The degree of fatigue following a dive after recovery from COVID-19 compared to before the infection.

**UvL:** A "Big" diving medical check. Body

plethysmography and according to the results/pervious lung symptoms, an HR-CT.

**JW:** Divers must be aware of the potential hazards, especially concerning barotrauma, oxygen toxicity and DCI risk, where we do not know the real risk yet. To date, there is no publication showing any evidence of increased risk.

**Is there anything that divers who have had Covid-19 should know about getting vaccinated?**

**OC:** A vaccination will not change or treat any sequelae that eventually exist.

**PG:** Vaccination is recommended even for those who have had COVID-19.

**OH:** No. Get vaccinated ASAP.

**JK:** Just follow the standard recommendation while waiting between COVID-19 and vaccination. Be aware that vaccination does offer a 100% guarantee regarding protection and transmission. Keep regular restrictions (distancing, disinfection, masks).

**ARS:** Follow the instructions of the Health Care Authorities of your respective country regarding the vaccination after COVID-19.

**AT:** I would personally advise the divers receiving the first dose of the vaccine not to dive during the period until they receive the second dose and then wait until they test the antibodies. It is safer for them and for the others to minimise the possibility of being an 'innocent' carrier.

**UvL:** No advice currently.

**JW:** A vaccination is highly recommended as diving is a social activity where the necessary precautions for transmission of virus cannot always be followed strictly.

**In your experience, is there a need for any updates to the Belgian Society for Diving and Hyperbaric Medicine (SBMHS-BVOOG) recommendations?**

**OC:** No suggestions.

**PG:** No; they might be somewhat strict, but other (e.g. University of California at San Diego (UCSD) guidelines) are even stricter.

**JK:** Not at the moment; we need more data.

**ARS:** I think the recommendations are still valid.

**AT:** I see that the flow of new information is quite impressive and that the amount of fake news is also overwhelming. So, I suggest that the SBMHS-BVOOG or DAN would issue a statement every three months, just stating whether there are any changes needed to be taken into consideration or not. The mutating forms of the Corona virus deserve our full attention.

**UvL:** There is no validated data for an update of the concerns.

**JW:** Yes, evidence from Swiss clinics and medical specialists show that those hospitalised with oxygen therapy need more than three months for full recovery and therefore we would recommend six months waiting before a reassessment to resume diving. It should be clearly stated that with regards to pulmonary overpressure syndrome risk, oxygen toxicity and decompression sickness, precaution is recommended based on a theoretical hazard; there is no documented evidence at the present time. Therefore, the risk (determined by probability and severity of complications) cannot be determined yet.

Concerning the assessment of divers with pulmonary involvement by COVID disease: The SUHMS workgroup declares CT-Scans as not useful in the assessment to resume diving. Those with pulmonary involvement will certainly have had more than one CT-Scan during the treatment period. To assess the outcome with respect to resuming diving, the important thing is the functional capacity. Therefore, we recommend to augment the lung function testing by adding tests for diffusion capacity and, to perform an ergometry to maximal capacity with oxygen saturation monitoring, which may be accompanied by spirometry before and after tests.

Concerning assessment of cardiac events: We support the recommended procedures. However, it should be mentioned that during the reassessment by a diving doctor full documentation of clinical details should be available from the hospital period, in particular, the values and evolution of Troponin and Pro-BNP values.



# UPCOMING EVENTS

## CLEANUP ARABIA CAMPAIGN



### INDEPENDENT DIVE & BEACH CLEAN-UPS | ONGOING

The Campaign Post COVID-19 for EDA Members

Cleanup Arabia should not just be about our campaign in November each year over a few weekends. Cleanup Arabia should be every day we are able to get out into the outdoors and give our environment some TLC. With so many of us independently taking part, solo or in small groups, we are able to cover more ground and different areas than we would at one big event. Check out and read the complete Cleanup Arabia Guide for Members here: <https://bit.ly/3pLM6kV>

## EDA ONLINE MOVIE SCREENING WITH LIVE Q&A

### ENTANGLED | WWW.ENTANGLED-FILM.COM (ZOOM & VIMEO)

Wednesday 4<sup>th</sup> August 2021 | Intro: 10 mins, Documentary: 75 mins, Q&A: 30 mins

Intro starts at 6:30pm followed by film, & ends with Live Q&A with Filmmaker, David Abel



ENTANGLED is an award-winning, feature-length film about how climate change has accelerated a collision between one of the world's most endangered species, North America's most valuable fishery, and a federal agency mandated to protect both. The film, by the makers of Lobster War and Sacred Cod, won a 2020 Jackson Wild award, known as the Oscars of nature films. It also won Best Feature Film at the Water Docs Film Festival, Best Conservation Film at the Mystic Film Festival, and the John de Graaf Environmental Filmmaking Award at the Wild & Scenic Film Festival.



**EDA**  
جمعية الإمارات للغوص  
Emirates Diving Association

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### MISSION STATEMENT

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

### LEGISLATION

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

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

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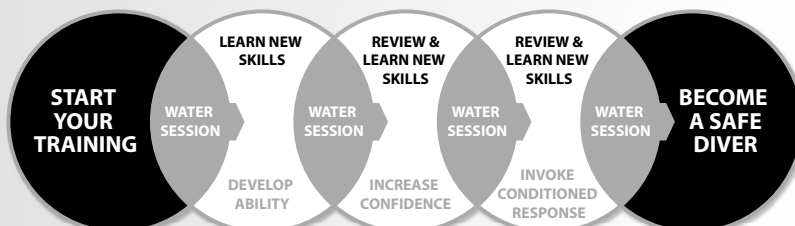
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