



THE OCEAN'S GIANTS NEED YOUR HELP

PLUNGE INTO THE WONDERS OF THE DEEP ON A MISSION
TO HELP REUNITE A FAMILY OF WHALES.





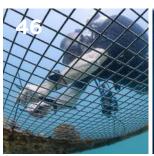
Dreamscape is a VR experience like no other. It combines the emotional power of Hollywood storytelling, the excitement of great theme-park rides, and mind-bending new technology to create immersive stories and worlds.

BOOK TICKETS AT DREAMSCAPEMENA.COM

@Dreamscapemena









REGULARS

- **EDA Director's Note**
- **30** Feature Creature Indo-Pacific Finless Porpoise (Neophocaena phocaenoides)
- 79 Round-Up Upcoming Events and Updates
- **79** Did You Know? The Tide | Founded by Sea Legacy

NEWS

- 6 A Virtual EDA Movie Screening
- 8 The EPAA of Sharjah and Zayed University Responds to Stranded Bryde's Whale in Jebel Ali, UAE
- 10 Welcoming the World: Deep Dive Dubai Opens Public Bookings and Adds New Experiences
- 11 Dugong and Seagrass Toolkit Selected Among Top 25 UAE Government Innovations
- 12 Hamdan Bin Zayed Launches Largest Coral Reef Rehabilitation Project in the Region
- 13 The Environment Agency - Abu Dhabi Implements Executive Regulation to Improve Marine Water Quality
- 14 **EAD Uses Satellites to Track Three** Rehabilitated Turtles In Abu Dhabi Waters
- 15 EAD and Wetlands International Launch New Online Portal For the World's Waterbird Populations
- 16 EAD to Continue Marine Scientific Research
 - in the Region with a New State-of-the-Art Marine Conservation and Fisheries Research Vessel
- 17 PADI and the Ocean Cleanup Join Forces To Tackle Ocean Plastic Pollution

- 18 PADI Positions Membership as Mission Hubs And Announces the PADI AWARE Foundation
- 19 PADI Launches New Job Board To Meet Growing Demand for PADI Professionals
- Ocean Diving Center's Underwater & Beach Clean-up

KIDS CORNER

- 21 My Diving Experience
- Dubai 92 Coral Reef Conservation

REEF CHECK

- 26 Global Study Uses Reef Check Data to Show Reef Corals Survive Bleaching When Less Algae are Present
- Reef Check Kelp Forest Programme 27 Expands into Oregon
- 28 Reef Check Malaysia Talk Reef Resilience
- 29 The Value of a 20-Year Coral Reef Dataset: Local Conservation Can Help Protect Reefs from Climate Change

FEATURES

- 34 Deep Dive Dubai The Deepest Pool in the World is not a Pool
- 42 Dreamscape's theBlu: Deep Rescue
- 46 **Artificial Reefs** Provide Foundations to Restore and Rehabilitate Natural Reefs

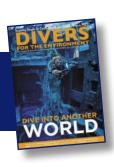
DIVERS FOR THE ENVIRONMENT

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

COVER

PHOTO BY JESPER KJØLLER Dive into Another World at Deep Dive Dubai www.deepdivedubai.com





52 The Eyes are the Window to the Soul

56 My Buddy

The Hand-Fin Diver

EQUIPMENT REVIEW

60 Sinapsi

The Future of Exploration

DIVING DESTINATIONS

64 Zanzibar

An Escape to Paradise

HEALTH

76 Finding Wellbeing

In Diving via Improved Regulation

78 DAN Europe's Answers

To Your Medical Ouestions



EDITOR & GRAPHIC DESIGNER

ALLY LANDES

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

COVER STORY

JESPER KJØLLER

Jesper fell in love with diving 30 years ago and became an instructor in 1994 and a PADI Course Director in 1999 when he was offered the editor chair of the Scandinavian Diving Magazine DYK. Jesper became a GUE instructor in 2011, and in 2015 he moved to Dubai to apply his skills in underwater storytelling and imagery as the Marketing Manager of Deep Dive Dubai. From Dubai he travels the world to participate in dive projects such as the vearly Mars field studies in the Baltic Sea or deep wreck explorations in Egypt. In 2021 he became the Editor-in-Chief of Quest, the GUE Member Journal.

THE QUARTERLY CONTRIBUTORS

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

DAVID SERRADELL

David grew up in Barcelona next to the shores of the Mediterranean Sea where he spent more hours underwater than at the surface. He has an eternal love for the sea and all its creatures. In 2018 he moved to Baja California Sur, Mexico to follow his dream working on conserving the ocean and capturing it with his camera. It was here that he further explored the path of underwater photography and videography. David uses his photography to further promote the messages of marine conservation to protect the oceans that give life to us all.

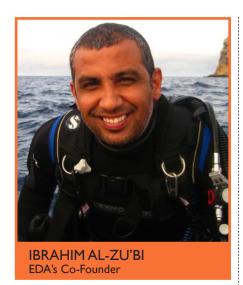
ALEXANDRIA BRERETON

Alexandria Brereton has spent many hours diving and studying marine biology at the Oregon Institute of Marine Biology. When she's not tidepooling in class, she's most likely outside with a pair of binoculars or a pair of fins. Alex is passionate about protecting the marine environments that all humans rely on and understanding the links between environmental degradation and human injustice to better repair these social and environmental issues that society faces today.

PATRICK VAN HOESERLANDE

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

THE FUTURE OF OCEANS





Oceans cover more than two thirds of the Earth's surface. They are home to millions of species, provide a key source of protein to people on every continent, and play an enormous role in regulating our planet's climate, water cycle, and more. They are facing tremendous disruption from human action, from rising temperatures and overfishing, to acidification, to plastic pollution. Despite the bad news about the state of the oceans, there are many positive examples which prove that it is possible to protect the seas and utilise marine resources sustainably. For example, the decision by the International Maritime Organisation (IMO) to introduce stricter emission limit values for shipping. Another success is the commercial whaling moratorium, which entered into force in 1986, ending the commercial hunting of the great whales. Although some countries continue to hunt whales, the number of whales killed has decreased dramatically. If the marine environment is to be protected more effectively, based on the sustainable management of its resources, there must be better coordination between its conservation and diverse uses.

A well-informed public with a good understanding of the marine environment can make use of the necessary pressure to effect policy changes. To that end however, it is often necessary to provide support in the form of aid projects so that people are able to take responsibility for the sustainable management of their environment. This capacity building is now a policy demand at the highest level and is in the heart of the United Nations' Sustainable Development Goals (SDGs).

By 2050 our seas will be more than a platform for tourism and recreation, but rather an ocean for solutions. Our sustainable energy solutions will be aided by marine algae-derived biofuel, while new medicines to treat modern diseases will be derived from sea creatures with novel chemical structures.

Scuba diving delivers a different perspective to the ocean's marine wildlife by personally touching everyone through its delicate yet fierce presence. Being at one with the ocean runs as deep as its waters and fills diver's hearts with the mystery to which the ocean presents itself. Diving and experiencing the rich beauty in untouched nature and respecting the ocean is a huge part of being a responsible diver. Forming friendly relationships with other divers in the community may give you the feeling of responsibility to protect our waters which is truly unique.

There is still so much we do not know. We need to keep learning about our water world, especially the deep sea and the immense role of the oceans in global climate change. All of us need to do our part. We are all stewards of the ocean and the planet. We must continue to explore. We must continue to study the things we do not yet understand, and protect the resources we have for future generations.

Shared oceans protected by all, holds the solutions for the planet's future.

Together, we can make a difference.

Ibrahin &1- Tu'bi

Dive Safe!

Ibrahim Al-Zu'hi

A VIRTUAL EDA MOVIE SCREENING ENTANGLED

Our exclusive screening and Q&A with Filmmaker, David Abel from Entangled on the 4^{th} of August was a thought provoking evening of food for thought.

SYNOPSIS

Entangled chronicles the efforts to protect North Atlantic right whales from extinction, the impacts of those efforts on the lobster industry, and how the National Marine Fisheries Service has struggled to balance the vying interests. There are now estimated to be about 350 right whales, making them among the planet's most endangered species. The main threat to their survival, scientists say: millions of lobster lines that stretch from New England up through Atlantic Canada, standard gear for North America's most valuable fishery. Exacerbating that threat is climate change, which has sparked a collapse in the whale's food supply in the warming waters of the Gulf of Maine, forcing them to search for food in areas where they had rarely been seen before. As a result, their population has been plummeting. In recent years, deaths of right whales have spiked while births have fallen sharply. In 2018, no calves were born - an unprecedented observation - while the previous year, a record 17 were found dead. In 2019, 10 right whales died, the second most ever recorded. NOAA officials say the population can't sustain more than a single premature death a year. At the current rate of decline, scientists say the whales could go extinct within 20 years. Now, 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, which could reduce lobster lines by half in much of the Gulf of Maine and harm the livelihoods of many lobstermen, has sparked a political backlash. The future of the iconic species hangs in the balance.

INTRODUCTION, SCREENING AND Q&A

To begin our event screening, we all got together through Zoom with Filmmaker, David Abel, who gave a short background introduction for the evenings film:

"When I'm not making films, I work as a reporter at the Boston Globe here in the States. I wrote about the United Nations and a lot about the issues we're having here along the east coast of the United States with the North Atlantic Right Whales. How their population was plummeting and that they were dying

mainly because of us, and how climate change was playing a significant role in that. I thought if we could tell the story of this one species, that might give people a greater appreciation for what's likely to come as we navigate into a world where conservation and commercial interests are increasingly competing. How we deal with those challenges is going to be a lot of our future."

THE Q&A

The Question: The film was based on entanglement, but besides trying to stop that, were any other measures being taken?

David: "There are some efforts to try to impose ships of 65 feet (20+m) to slow down in certain areas to less than 10 knots, then there are other voluntary areas where they should slow down. It's a report I wrote about, but apparently a lot of ships are routinely violating those requirements and voluntary limits so that is a significant problem. Just in the last few years, it's been an increasing part of the problem. One of the leading sources of deaths of the right whales in the last few years in Canadian waters has been ship strikes. In 2017 when the right whales first appeared there in significant numbers, there were no regulations and no expectation that they would be in those waters, so in some ways, they were like sitting ducks. And then of course there are other issues such as ocean noise which puts stress on the whales which in our waters here off the east coast of the United States, are highly trafficked with lots of commercial vessels so there's a lot of ocean noise and of course climate change is the other big threat and issue because their food source has declined in certain areas most likely because of warming waters. As a result of that, the whales have been changing where they were traditionally feeding and that has made it more difficult to track them and protect

The Question: Why hasn't rope free fishing been implemented yet?

David: "At the moment, this technology is really expensive. Most of the lobstermen in the States have 800 traps that they fish, and in Canada the numbers are a bit different, but to basically outfit their boats to fish with this new gear would be really expensive for any individual lobsterman. We subsidise all kinds of things in this country, especially in our agricultural industries. We spend billions of dollars every year to support certain crops and so forth, and the lobster industry is the

most valuable single fishery in North America – United States and Canada – bringing in 500 million dollars a year just in one State, in Maine. When you add the rest of the northeast, in New England, it's probably upwards of 2 billion dollars in economic impacts when you factor in the bait industry, the boat maintenance industry, and all the other things that support the lobster industry. So it's a huge component of our economy, therefore it's in the national interest to try to figure out how to sustain this industry whilst also protecting a species that is on the verge of extinction.

If ropeless technology is really the best way to do that - it seems it certainly is - then we need to have very real and serious conversations to support that transition. That conversation is well underway, it's complicated in some ways, firstly because the technology remains in somewhat of a formative state, so it's still improving, but it clearly works. This sort of acoustic modern technology that activates things from the bottom of the sea is a proving technology that is not as speculative, but making it work on a large scale has its challenges. There are also political hurdles and concerns about different fisheries being able to see where certain gear is and of course the lobstermen are secretive people who don't want to alert everyone about where they're putting their traps, so they're not excited to put on a GPS plotter where they fish. It seems this would require federal help to subsidise a transition, but it would also require changes in our laws and regulations. Currently licensed states and the federal governments cannot allow for ropeless fishing, mainly because the licenses you have to get only allow a certain kind of fishing. That is likely to change in the next year or two as we put more regulations out to protect right whales in the water."

The Question: How long did it take you to complete this film?

David: "This film caps a trilogy of films I've made about how climate change is affecting the waters off New England, and the first film I made was called Sacred Cod which was about the iconic cod fishery which is what brought settlers to North America and made the region where I live – New England – incredibly wealthy centuries ago and really helped to establish the United States in many ways. The warming waters led to the collapse of that iconic fishery here. It was called Sacred Cod because we'd hang a wooden replica of a cod from the rafters in our State House in Massachusetts, which was called the Sacred



Cod. A few years ago, the federal government imposed a moratorium on commercial cod fishing because of the collapse.

After that I made a film called Lobster War which is where I learnt a lot about these issues. That was about how the warming waters led to a collapse in the lobster fishery in south of Cape Cod in the waters off of New York, Connecticut, and Rhode Island. It led to a surge in the lobster population because in the waters down east of Maine which is further north where the water is typically very cold, they'd moved to an island between Canada and the United States. Both countries have claimed this island since the end of the revolutionary war, our war of independence in the 1770s when nobody cared about that little rock until suddenly the waters around that rock became completely flushed with lobster and there was a surge in catch. All of a sudden, the Canadians came along, and the Americans decided those are our waters too and we're going to fish in them, which led to all kinds of gear conflicts, and threats, and so forth. While I was making that film, I learnt a lot about the conflicts between vertical buoy lines – the ropes that go from the sea floor from the traps, to the surface to the buoys, and learnt about the danger to North Atlantic Right Whales which is what led me to Entangled. I started making that in the spring of 2019 and we completed it last year, but it was a very difficult film to put a book end to because it's still very much an unfolding story.

We thought we knew what the ending of the film would be as the regulations that the film discusses is possible, and the process that we see with the body called the Atlantic Large Whale Take Reduction Team, all came together. It seemed that they had all agreed about what to do which was to eliminate as much of the rope from the water column as possible. Then of course the lobster group started to pull out, and then they lobbied the Trump Administration to essentially block the

rules from taking effect. So despite the urgency that the federal regulator said they had to put these regulations on the water to protect the whales, the Trump Administration basically blocked them from coming to pass until a court order required them to release some kind of rules on the last day of last year. Earlier this year after the draft regulations were finally announced, we had to update the film a bit, which is the version you see to account for some of these changes. There were a number of other changes, one of which was when I first started making this film, the estimated population of right whales was roughly about 411, and then last fall, scientists changed that estimate and revised it to roughly about 356. The rules that the film touches on still have yet to be released and implemented. More than 2 years later, we have very few actual rules to help protect these whales on the water. We're supposed to have them released some time this summer, but that has still yet to happen.

To end it on a more hopeful note, one of the other things – even though I said this was a difficult story to put a book end on and how the story is still unfolding – one of the things we didn't cover was that this spring, there was some hopeful news for the right whales. I believe there were 18 calves born which were the most calves to be born in the last 5 years in one season, certainly better than in 2018 when in the first time, in anyone's memory, there were no calves born. But on a more gloomy note, 2 of those calves died. They were hit by ships and the fact of the matter is, we need twice as many as that to maintain a sustainable population."

*Our lucky EDA members who attended our oneoff online event received an exclusive invite by
Dreamscape at MOE to experience a whole new
world in VR through theBlu: Deep Rescue experience:
Climb into your divers suit, power up your AquaScooter,
and propel through the wonders of the underwater
trenches. Encounter diverse and astonishing marine life as
you search for the most magnificent, most gigantic living
creatures on Earth: blue whales. One of them is in trouble,
and it's up to you and your team to work together and
stage a daring rescue. You'll look right into their enormous
eyes — and they'll look right back at you. Check out page
40 for more info regarding EDA Member discounts.

WANT TO JOIN OUR EVENTS?

Our online EDA Movie Screenings are only accessible to current EDA members and their families. Our screenings have limited viewing access and registration to join them is necessary in order to receive the special link to view the films. In order to join our online screenings, you can register for EDA membership or renew it on our website:

www.emirates diving.com/membership-form

MISSED THE SCREENING?

If you missed our one-off special August screening of Entangled, you are able to rent and watch the film here:

https://vimeo.com/ondemand/entangledfilm

THE EPAA OF SHARJAH AND ZAYED UNIVERSITY RESPONDS TO STRANDED BRYDE'S WHALE IN JEBEL ALI, UAE

BY FADI YAGHMOUR - SCIENTIFIC RESEARCHER (EPAA)



A twelve metre Bryde's whale was found dead in Dubai waters on Friday the 28th of May. Thanks to cross entities and the Emirates cooperation, a full necropsy was successfully conducted, allowing the collection of valuable samples. These will help to better understand the status and ecology of this species in the region, and ultimately support the conservation of these majestic sea creatures.

The whale was found in the lebel Ali channel by the P&O Emergency team that towed the animal into the port. Thanks to the right cascade of contacts, the whale's body was successfully recovered and moved to an area where it was possible to safely conduct a full necropsy. P&O contacted the Natural Resources Protection Section, Environment Department, and Dubai Municipality, who in turn promptly contacted Dr Ada Natoli, assistant professor at Zayed University (ZU) and founder of the UAE Dolphin Project Initiative. She has actively been working with whales and dolphins in the UAE since 2012 and collaborates across the Emirates striving towards increasing the knowledge of these species and supporting their conservation. Dr Ada Natoli contacted the Environment and Protected Areas Authority of Sharjah (EPAA), who are experienced in whale stranding response and necropsy through their Sharjah Stranding Response Programme (SSRP). With the green light to proceed from both authorities, a team of experienced experts were dispatched by EPAA with the support from Dubai Municipality and Dr Ada to conduct the necropsy on the animal and gather morphological and biological samples to assess the species, the status of the animal, and investigate the possible cause

The whale was successfully identified as a 12.38 metre male Bryde's whale weighing 15 tons. The application of an "external human evaluation interaction protocol" did not reveal any clear evidence of marine debris entanglement or ship strike. No traces of recent meals were observed in the stomach, but a number of parasites were observed in several organs. The samples collected will be utilised to investigate the status of the different organs, toxicological parameters as well as the genetic profile of the animal.

Bryde's whales are rare but regular in the Arabian Gulf up to Kuwait, Iraq and in the Arabian Sea. Two species of Bryde's whales are currently recognised: B. brydei and B. edeni with the latter one possibly including two different subspecies, a larger pelagic form and a smaller more coastal form. They can reach a maximum of 15 metres and up to 40 tons. Historically, Bryde's whales in the Arabian

region were targeted by Soviet whalers, active up to the mid-1960s, that recorded the killing of up to 849 individuals. We do not have any estimates of the current status of this species or its population size in the region and in UAE waters, and each sample and sighting of these animals can make a drastic difference in supporting their conservation.

Professor Fares Howari, Dean of the College of Natural and Health Sciences at Zayed University said, in reference to the UAE Dolphin Project led by Dr Ada Natoli, that, "This is an exciting project. Whales and dolphins play a crucial role in the marine ecosystem. Being at the top of the marine food chain, together with other species such as sharks and top marine predators, they are "Ecological Indicators" of the status of the sea. The project began after the successful completion of the last phases of the ZU coral propagation project. Which was part of the Coral Conservation in the Arabian Gulf supported by the Environment Agency - Abu Dhabi and Nawah Energy". Prof Howari indicated that, "the current project will boost marine science and marine biology research lines at ZU. The project will provide accurate information on dolphin population and their distribution in the Gulf. We shared understanding with our partners on the importance of this project, and the innovative approach to achieve its objectives".











ABOUT EPAA:

In line with the vision of His Highness Sheikh Dr. Sultan bin Mohammed Al Qasimi, Supreme Council Member and Ruler of Sharjah, the Environment and Protected Areas Authority, under the leadership of Her Excellency Hana Saif Al Suwaidi, aims to protect Sharjah's natural environment and conserve its rich biodiversity. This is achieved through data driven policies and increased public awareness and participation in supporting the principle of sustainable development to preserve natural and environmental capital to the benefit of present and future generations.

WEBSITE: www.epaashj.ae/

SOCIAL MEDIA PLATFORMS:

www.twitter.com/epaa_shj www.facebook.com/epaashj www.instagram.com/epaa_shj/

WELCOMING THE WORLD:

DEEP DIVE DUBAI OPENS PUBLIC BOOKINGS AND ADDS NEW EXPERIENCES







After captivating the imagination of the world, Deep Dive Dubai, the home of the world's deepest swimming pool for diving is announcing that public bookings are now open online at deepdivedubai.com. It is the first time that members of the public can book to explore the world-record-breaking, 60-metre-deep pool, and its sunken city, since it was first unveiled to the world in early July. Along with scuba diving and freediving, a Discover Snorkelling experience has also been added to the list of awe-inspiring experiences available for adventure seekers.

"Deep Dive Dubai allows thrill-seekers of all ages and abilities to dive into another world of possibilities in a safe, controlled, and exceptional underwater environment," said Jarrod Jablonski, Director of Deep Dive Dubai. "Since unveiling Deep Dive Dubai to the world, we have been overwhelmed by the positive feedback from both our invited guests as well as beginner and experienced divers from all corners of the globe who are excited to visit. We're now thrilled to invite the world in to experience it for themselves."

Deep Dive Dubai's pool features a sunken city that divers of all levels can engage with and explore, complete with an abandoned streetscape and featuring a fully furnished apartment, garage, and arcade, amongst other surprises. All courses and experiences are delivered by a hand-picked team of international diving professionals supported by the latest equipment, technology, and facilities including what will be the region's most advanced hyperbaric chamber*.

Freediving, Snorkelling and Scuba Diving experiences and courses are now available to book online and start from AED400 per person. Designed for everyone of all ability levels, aged 10 and up, experiences and courses fall into three categories: Discover, Dive and Develop.

The Discover category of snorkelling, scuba diving and freediving experiences caters for those who want to try a single dive or snorkel or take their first steps towards certification as a diver. No diving certification is required. The newly added Discover Snorkelling experience is AED400 per person and includes fins, snorkel, mask, and special floatation vest for a one-hour guided snorkel, allowing guests to see first-hand the breathtaking depth and features of the sunken city.

Discover Freediving is a one-hour, guided, inwater experience that allows divers to dive up to 10 metres. Priced at AED1,000 per person, it includes fins, snorkel, mask, and wetsuit, along with a video of the experience. Discover Scuba Diving is a one-hour guided scuba dive, allowing beginner divers to dive up to 12 metres and interact with elements of the sunken city including car, telephone booth, library, bicycle, and chess game, among other features. Priced at AED1,500 per person, all scuba diving equipment & gases are included along with a video of the experience.

The Dive category of experiences starts at AED600 and allows everyone from newbies to experienced individuals to freedive or scuba dive within their certification limits. The Develop category of courses includes PADI Open Water Diving certification which, priced at AED3,600 per person and inclusive of all equipment rentals, is the ideal first step for beginners who want to progress in the sport. Other courses within the Develop category are priced upon request and include a full range of recreational, technical, and leadership freediving and scuba diving courses and programmes with an emphasis placed on programmes that Deep Dive Dubai is uniquely placed to deliver including nitrox, advanced, deep, rebreather, and photography.

All experiences have a low guide-to-guest ratio, and all bookings include high-end equipment

rental conveniently delivered poolside by Deep Dive Dubai's team. With complimentary lockers, robe and towel rental included, all guests need to bring is their swimsuit and flip flops. With each booking, one spectator can accompany the diver to Deep Dive Dubai with up to two additional spectators allowed at AED 100 per person.

Along with the sunken city, Deep Dive Dubai's 60m pool also features two underwater habitats with dry chambers at six and 21 metres, 56 underwater cameras covering all angles of the pool, as well as advanced sound and mood lighting systems. The pool's 14 million litres of water is filtered and re-circulated every six hours through siliceous volcanic rock, NASAdeveloped filter technology and UV radiation in one of the largest and fastest filter systems in the region. The pool water temperature is maintained at an optimal 30 degrees Celsius for diver comfort.

The 1,500sqm facility, which is shaped like a giant oyster in a nod to the UAE's pearl diving heritage, is also home to a dive shop, gift shop, an 80-seat restaurant as well as a variety of meeting, event, and conference spaces. Large viewing areas on the lower floors of the building allow diners at the restaurant and other rooms to peer into the underwater environment.

Located in Nad Al Sheba, Dubai, Deep Dive Dubai is open Wednesday to Sunday, from 12pm to 8pm. With ample free parking onsite, the facility is easily accessible from main Dubai tourist and residential neighbourhoods and is only a 15-minute drive from Downtown Dubai, and a 20-minute drive from Dubai International Airport. The Deep Dive Dubai team wishes to remind the public that access to the facility will only be granted with a prior online booking.

For more information and to book, visit: www.deepdivedubai.com

DUGONG AND SEAGRASS TOOLKIT SELECTED AMONG TOP 25 UAE GOVERNMENT INNOVATIONS





The Environment Agency – Abu Dhabi (EAD) announced that an online toolkit to support dugong and seagrass conservation has been selected as one of the 25 most noteworthy innovations in the UAE's Government sector by the Mohammed Bin Rashid Centre for Government Innovation, in collaboration with Sia Partners. The selection was determined after a rigorous screening and assessment process where several contenders showcased their projects over a period of one year.

The Dugong and Seagrass Research Toolkit is an initiative by EAD, the energy company Total and the Dugong Memorandum of Understanding of the United Nations' Convention on Migratory Species (CMS Dugong MoU) based in Abu Dhabi. It provides an easily accessible online decision-making tool to guide the selection of specific dugong and seagrass research recommendations which can be adopted in specific circumstances.

The toolkit is available worldwide to members of universities, research institutes. and governmental and non-governmental organisations with mandates for coastal and marine research and conservation. It supports researchers in the process of setting and refining their objectives, while considering overall conservation management goals and budgetary restraints. It also factors in elements such as time scale, spatial scale, technical capacity and specific challenges on the ground. In addition to collecting information on dugongs and seagrass, the toolkit provides tools and techniques to understand the threats and human community factors that affect dugong and seagrass conservation.

The interactive approach of the toolkit makes it extremely efficient in providing the right kind of guidance, saving researchers, conservation practitioners and marine management agencies time and resources. It is designed to be easily accessible to researchers and practitioners working in developing countries who have limited access to scientific expertise, thus serving as an efficient and cost-effective method to ensure consistent, comparable, and standardised data sets across the dugong range.

To use the toolkit, a user opens the designated website, presses 'Launch Toolkit' and follows a simple process tree that leads to practical recommendations. Since launching in March 2017, the toolkit was reached by 3,200 users from 119 different countries, with a total of over 10,000 page views. It has now also been incorporated into the Dugong and Seagrass Hub.

HE Dr. Shaikha Salem Al Dhaheri, EAD's Secretary General said, "In a country that is as innovative, progressive and creative as the UAE, it is an absolute honour for our Dugong and Seagrass Toolkit to have been chosen as one of the top 25 innovations in the UAE's Government Sector. It serves as a reminder that we are on the right track and will motivate us to continue ensuring that we are keeping up with worldwide trends, practices and benchmarks and using the most contemporary tools and technology while pursuing our environmental work. This success would not have been possible without the hard work and creativity of the EAD team as well as the cooperation of all our partners, who also played a pivotal role in the development of the toolkit."

HE Dr Al Dhaheri added, "The toolkit has made considerable progress towards improving global understanding of the overall status of dugongs and seagrass ecosystems across the Indo-Pacific region. It addressed inconsistencies in approaches to research, monitoring, data collection and reporting, which have resulted in the incompatibility of datasets across the range states, as well as raising awareness of the importance of dugong and seagrass research with decision makers."

Mr. Lyle Glowka, Executive Coordinator, CMS Office – Abu Dhabi, said, "The toolkit is one of

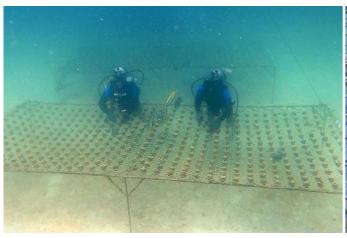
the key resources available to the 46 countries that have dugongs in their coastal waters and helps focus research into priority areas. CMS Office – Abu Dhabi is proud to have developed this innovative toolkit in partnership with EAD and TOTAL. It is an important tool for dugong range states to implement their obligations under the Dugong MoU in their waters."

Mr. Christophe Sassolas, President Total E&P UAE and Group Representative in the UAE added, "As we work toward a low carbon future globally, the preservation of coastal areas and oceans - of which Dugongs and Seagrasses are key and fragile components - is of paramount importance. We are proud of our historical partnership with EAD which focuses on Dugongs, seagrasses and mangroves, and are really thankful for this recognition. The toolkit, available globally to the members of universities, research institutes, and governmental and non-governmental organisations, is a good example of how wide-ranging cooperation contributes to marine biodiversity. It is perfectly in line with the actions of Total Foundation and an additional example of our ambition to be #NetZeeroBy2050

The Mohammed Bin Rashid Centre for Government Innovation provides a worldclass, multifunction space for testing, creating and spurring innovation locally, regionally, and internationally. With the aim of showcasing the region's public sector innovation power to a global audience and shining a light on best practices to promote knowledge sharing, researchers at the Mohammed Bin Rashid Centre for Government Innovation spent over a year to assess 500+ innovations from 100+ federal and local government entities across the seven emirates to determine the top 25 innovators. The innovations were scored on criteria including novelty, replicability, and impact.

The Dugong & Seagrass Toolkit can be accessed at: www.conservation.tools/launch/

HAMDAN BIN ZAYED LAUNCHES THE LARGEST CORAL REEF REHABILITATION PROJECT IN THE REGION





His Highness Sheikh Hamdan bin Zayed Al Nahyan, the Ruler's Representative in Al Dhafra Region and Chairman of the Board of Directors of the Environment Agency -Abu Dhabi (EAD), has launched the largest coral reef rehabilitation project in the region, including more than one million colonies of coral reef through a replanting programme, with the aim of increasing the emirate's total coral reef area.

The launch coincided with the World Oceans Day, which falls on June 8 of each year, and comes within the framework of a comprehensive plan developed by the Agency to preserve this important ecosystem and ensure its sustainability.

His Highness Sheikh Hamdan stressed the importance of this project in supporting efforts made by the Agency to preserve coral reefs, which are considered one of the most important and productive marine habitats. The reefs support biological diversity in the emirate of Abu Dhabi and provides a natural habitat for many types of fish and marine life, in addition to their role in protecting beaches from erosion, as well as supporting fisheries and many recreational and touristic activities in Abu Dhabi.

His Highness said, "Despite the harsh environmental conditions for coral reefs here in the Arabian Gulf, they are able to adapt and provide habitats for a variety of marine species in the region. They are highly resilient, which enabled them to adapt to the highest temperatures in the world in an unusual way, distinguishing them from other types of coral reefs."

His Excellency Mohamed Ahmed Al Bowardi, Minister of State for Defense Affairs and Vice Chairman of the Board of Directors of the Environment Agency added, "The emirate of Abu Dhabi contains 34 different types of hard corals spread in several locations, including Ras Ghanada, Butinah, Saadiyat and Alnouf. Through this programme, nurseries for coral will be developed to reduce the negative impact of the natural pressures to which coral reefs are subjected due to climate change and high temperatures on the sea floor. As a result, the project will also increase the total coral area and rehabilitate affected areas to preserve the great heritage, economic and scientific value of the coral reefs."

HE Razan Khalifa Al Mubarak, Managing Director of EAD said, "The most important challenge facing coral reefs is the increase in water temperatures, which compounds thermal stress and results in "coral bleaching". She also mentioned that in 2017, the emirate of Abu Dhabi lost more than 73% of its reefs due to mass coral bleaching. The world has lost a large percentage of coral reefs, including the Great Barrier Reef in Australia, which has lost 50% of its living coral area. Through surveys conducted by EAD, an improvement of 10% to 18% in coral reef conditions has been monitored over the past year, an indicator to the ability of coral reefs to recover if not exposed to climate change risks."

"Since 2005, EAD has implemented a programme to monitor and control the state of coral reefs through seasonal surveys, using data from 10 separate stations located across the emirate of Abu Dhabi. The Agency has also developed a plan for managing and preserving the emirate's coral reefs in coordination with all partners at the emirate level to understand and research coral reef ecosystems, reduce negative impacts and restore degraded reefs. In addition, EAD is cooperating with academic institutions on coral reef research; for example, with New York University Abu Dhabi on coral reef monitoring, Nawah Company and Zayed University on laboratory propagation and replanting of coral reefs," Her Excellency Shaikha Salem Al Dhaheri, Secretary General of FAD said.

"Through the implementation of the programme, nurseries for corals will be developed to increase the total area of coral reefs and rehabilitate affected areas. This will be achieved by harvesting small fragments of the various coral reef species in the emirate's waters, relocating them to the nursery and nurturing their growth until they can be retransferred back to the degraded reefs for establishment," Her Excellency explained.

"The project aims to reduce the negative impact of climate change on coral reefs, as well as increase the coral reef total area in the emirate's waters, help to rehabilitate areas affected by climate change and human activities, and conduct research and studies to find out the best and most adaptable coral species," Her Excellency added.

The first three-year phase of the project includes selecting nursery sites to ensure a protected environment for growth, evaluating coral source and nursery areas according to water quality standards, depths, and temperatures, and establishing a number of underwater nurseries in which to nurture and grow coral fragments. The total production capacity is estimated to exceed one million coral colonies.

The programme's second phase includes the harvesting of coral nursery stocks, their transportation to rehabilitation sites and the cultivation of affected sites to restore the integrated coral system. The third phase will include the completion of nursery stock harvesting and the restoration of degraded areas with new coral growth.

The Environment Agency - Abu Dhabi confirmed that it is in the process of developing a plan to manage and preserve coral reefs, in addition to submitting proposals for announcing the expansion and addition of some marine natural reserves in which these important habitats reside.

THE ENVIRONMENT AGENCY - ABU DHABI

IMPLEMENTS EXECUTIVE REGULATION TO IMPROVE MARINE WATER QUALITY





The Environment Agency - Abu Dhabi (EAD) has begun implementing an executive regulation regarding marine water quality in Abu Dhabi.

The regulation, which was recently approved by the Agency's Board of Directors, aims to preserve the quality of ambient marine water and sediments by regulating liquid discharges from land-based activities to the marine environment. In addition, the Agency aims to combat the deterioration of ambient marine water and sediments quality by applying measures to environmental impact assessment studies and environmental licensing applications. The regulation strengthens the enforcement measures taken by the Agency, including the environmental assessment, licensing and inspection procedures for development projects and industrial establishments to ensure compliance.

Her Excellency Dr Shaikha Salem Al Dhaheri, EAD's Secretary General said. "The executive regulation regarding marine water quality was developed to reinforce the regulatory and supervisory framework that EAD seeks to implement in coordination with all stakeholders in the Emirate. Through the application of environmental standards for ambient marine water and sediment in protected areas, as well as in public areas outside designated marine protected areas, these standards are now considered the first of their kind in the region".

Dr Al Dhaheri added, "The regulation also includes standards for liquid discharges from land-based activities to the marine environment – another first of its kind for Abu Dhabi. These standards have been developed based on international best practices for the protection of marine ecosystem and public health. In addition, the regulation includes measures to overcome the deterioration of marine water quality and to provide all available alternatives for sustainable management of liquid discharges before being disposed of to the marine environment".

She added, "The issuance of the regulation is among other efforts made by EAD, in cooperation with strategic partners in the Emirate. These efforts include protecting the marine environment in designated areas, contributing to preserving marine biodiversity and enhancing fish stocks to help achieve food security, which is also in line with the UAE's strategy plans. It also contributes to enhancing the role of the fishing communities and ensuring the sustainability of fishing activities, which are part of the Emirate's heritage. By improving marine water quality, the agency looks forward to enhancing recreational and tourist activities, marine sports and other uses, which in turn will raise the level of satisfaction of both residents and tourists through the services provided by the government."

Her Excellency Dr Al Dhaheri added that the EAD adopted a pioneering methodology in developing the regulation, the approach included extensive coordination stakeholders in the Emirate, as well as preparation of implementation plans at both stakeholders' level and the Agency level, taking into consideration roles and responsibilities of all governmental agencies. The implementation plans include actions and initiatives that will be implemented over the next two years, which will positively affect current procedures in force at the Agency and other Abu Dhabi authorities. The Agency has also prepared a plan to assess the impact of the regulation while ensuring that ongoing monitoring of the goals contained in the regulation are achieved.

Furthermore, the agency has developed plans for communication and raising awareness, regarding the requirements for the regulation's implementation, targeting multiple local community groups. The plans include specific messages that the agency seeks to convey to these groups to raise awareness about the importance of preserving the marine environment as well as the quality of marine water.

Eng. Sheikha Al Hosani, Executive Director of EAD's Environment Quality Sector, said, "For more than 15 years the Agency has implemented a comprehensive and integrated programme to monitor water quality and marine sediments. This includes studying and evaluating short-term and long-term changes in the quality of marine water and providing the necessary data to support decision-makers in taking the necessary measures to preserve and sustain the marine environment. In addition, EAD operates an automated network of buoys that act as online monitoring and an earlywarning system for red tides and algal growth cases. The Agency also carries out studies and research in various fields related to marine water quality. The results of these researches and studies are published in local, regional and international conferences and forums. Nearly 20 scientific papers have been published in the best international scientific journals".

The Emirate of Abu Dhabi has witnessed unprecedented growth during the past decades, and this development boom has been accompanied by increased growth in the industrial and commercial sectors. The population growth and change in lifestyle contributed as well in increasing demand on natural resources such as water and energy. In light of the major development in recreational, development and industrial activities, and in tourism and maritime transport sectors, dependence on coastal activities also increased. This had adverse impacts on the environment in general, and the marine environment in specific. The issuance of the regulation is part of the efforts made by EAD, the competent authority responsible for preserving and sustaining the environment to respond to these challenges, while improving environmental performance indicators in Abu Dhabi.

FAD USES SATELLITES TO TRACK THREE REHABILITATED TURTLES IN ABUIDHABI WATERS

AS PART OF ABU DHABI'S TURTLE RELEASE PROGRAMME







In celebration of World Sea Turtle Day which falls on June 16th, the Environment Agency - Abu Dhabi (EAD) launched a large and diverse group of previously rescued turtles back into Abu Dhabi's waters via the beach at Saadiyat Rotana Resort & Villas, to return them to their natural habitats.

The released group came from a batch of 150 turtles that the EAD is currently rehabilitating at the National Aquarium. From this diverse group, a loggerhead, a hawksbill and a green sea turtle were selected to be fitted with satellite tracking devices fixed to their shells, allowing the Agency to monitor their progress and collect data about their lifestyles and migration paths.

HE Major General Staff Pilot Faris Khalaf Al Mazrouei. Commander-in-Chief of the Abu Dhabi Police and member of the Agency's Board of Directors, and Her Excellency Dr. Sheikha Salem Al Dhaheri, Secretary General of EAD attended and participated in the launch event.

The turtles' release is the final step in their rescue and rehabilitation process, significantly increasing their chances of survival. The remaining turtles are currently being rehabilitated by the National Aquarium (TNA), following the signing of a Memorandum of Understanding (MoU) between the EAD and TNA in 2020. Since then, the collaboration has resulted in the successful rescue and release of over 250 turtles, with the remaining turtles being cared for by the National Aquarium for future release.

The turtles were initially discovered and rescued from the UAE's shores by the Wildlife Rescue Team, a rescue and rehabilitation programme developed by both parties, dedicated to preserving the health and welfare of the region's wildlife. The team supervised the monitoring and rescue of these turtles from the coasts of the Emirate. Once fully recovered, the sea turtles were transferred to the beach at Saadiyat Rotana Resort & Villas in preparation for their return to the wild.

A majority of the turtles that were rehabilitated had severe barnacle infestations on their shells, which caused slow movement, malnutrition and dehydration after entering a state of hibernation during the winter period, as turtles are cold-blooded reptiles and are therefore easily affected by a decrease in water temperature. In addition, some turtles were rescued after becoming entangled in fishing nets.

On this occasion, Her Excellency Dr Sheikha Salem Al Dhaheri, Secretary General of EAD said, "We in the Emirate of Abu Dhabi are proud of the efforts made to protect sea turtles and the continuation of the rescue and rehabilitation programmes since 2005. I am pleased to witness the success of this year's programme, which was a collaboration with our strategic partners - the National Aguarium, where we launched the largest rehabilitation centre for wildlife and marine life in the region. Since 2015, our tireless efforts with partners and the public have helped us rescue, rehabilitate and successfully release hundreds of turtles, and we are excited to now track their release back into their natural marine environment."

Her Excellency added, "We named one of the turtles that we are currently tracking "Amal" (Hope); it is a green turtle that lost one of its front fins after becoming entangled in an abandoned fishing net. It was called Amal because of the meaning of the name, which means optimism and an aspiration to live despite harsh circumstances."

Her Excellency also elaborated, "Our on-going research on critically endangered species is a top priority for us which, along with our ongoing efforts, allows us to better understand and protect our environment."

Fouad Mashal, CEO of The National Aquarium said, "We are immensely proud of our collaboration with EAD to help the Emirate of Abu Dhabi preserve its natural treasures. Sea turtles are an essential part of our ecosystem but are also an endangered species. As a result, successfully rehabilitating a large number of turtles is a critical component in our mission to sustain and conserve the species."

He also added, "Since signing the MoU last year, we have worked closely with EAD in the past year to save as many turtles as possible by rehabilitating and releasing them back into their natural habitats. Fishermen, residents, a number of government agencies, the private sector and public benefit associations have contributed to the great efforts of rescuing the turtles in collaboration with EAD's team, which ensures the turtles are rehabilitated and released as soon as possible so that they can easily re-adapt to being in their natural habitat again."

EAD has been researching, monitoring and protecting marine turtles in Abu Dhabi since 1999 and has succeeded in maintaining a stable population in our territorial waters across the emirate. Abu Dhabi waters are home to more than 5.000 sea turtles, both green and hawksbill turtles. The main threats faced by turtles are net entanglement and boat collisions. EAD has been rescuing and rehabilitating turtles since 2005 and has rescued more than 700 since this time.

EAD AND WETLANDS INTERNATIONAL LAUNCH A NEW ONLINE PORTAL

FOR THE WORLD'S WATERBIRD POPULATIONS







The Environment Agency - Abu Dhabi : Dhaheri, the Secretary General of EAD. (EAD) and Wetlands International launched the Waterbird Populations Portal (WPP), an online interactive platform containing the most recent data on the status and distribution of the world's waterbird populations.

The launch was held at a global webinar, organised by the Wetlands International in partnership with EAD. The Agency provided financial support for the development of the portal which was launched followed by a panel discussion.

The discussion featured a leading international panel including representatives from the Ramsar Convention on Wetlands, the Convention on Migratory Species (CMS), the Convention on Biological Diversity (CBD), African Eurasian Migratory Bird Agreement (AEWA), East Asian – Australasian Flyway (EAAF) Site Network, West/Central Asian Flyway Site Network, and Western Hemisphere Shorebird Reserve Network (WHSRN), who represent the major users of the new portal. Dr Salim Javed, Acting Director of the Terrestrial Biodiversity Division of EAD was also part of the panel.

With over 870 waterbird species, the newly launched Waterbird Populations Portal will provide the latest population size estimates and trends of over 2,500 populations. These range from the beautiful Greater Flamingos, which are regularly seen in the coastal and inland wetlands of the UAE, and the majestic Sarus Crane that stands at over 1.5m tall, making it the tallest flying bird inhabiting wetlands and rice fields in South East Asia and Australia. It also includes other waterbirds species from Sandpipers to Plovers, including the unique Crab Plover, which is currently breeding on two of Abu Dhabi's offshore islands. Conservation of all these species requires easily accessible information on their status and trends to help governments and people take action.

"The new portal makes access of key waterbird information much easier for management authorities, such as EAD, and will certainly help us to prioritise sites for consideration as new Ramsar Sites'' stated HE Dr Shaikha Salem Al

"I am pleased that the support we provided is going to be extremely useful for users, ranging from governments to scientists and conservationists in the UAE and across the globe. We are honoured to have contributed to such an important initiative led by the Wetlands International." added HE Dr Al Dhaheri.

While speaking as a panellist, Dr Salim Javed, Acting Director of Terrestrial Biodiversity Division at EAD said, "Access to the latest information on population size and trends is critically important for government agencies responsible for the management of wetlands and waterbirds."

He added, "Interactive maps and the latest 1% threshold of each population will allow us to identify and prioritise sites for local level planning and inclusion within protected area networks, as well as declaration of sites as wetlands of international importance under the Ramsar Convention."

"Our Agency has undertaken assessment and monitoring of breeding and migratory waterbirds in Abu Dhabi. Additionally, through extensive satellite telemetry studies on key migratory waterbirds, we have gained critical insights into migratory connectivity and use of wetlands along the flyways, which has helped us in protecting important sites," he added.

EAD also coordinates the International Waterbird Census (IWC) in the UAE, a longstanding citizen science initiative which allows volunteers to visit important wetlands across the UAE and collect data on waterbirds. Information from a dedicated group of volunteers allows collection of useful data on waterbirds, which feeds into the estimation of waterbird populations," elaborated Dr Javed.

Dr laved concluded, "As many wetlands across the globe are under threat from development, climate change and invasive species, we need to collectively work on their protection. As wetlands are among the most productive ecosystems in the world, we also need to restore some of the degraded wetlands which are in critical need of restoration." Dr laved

alluded to the fact that the UN has recently declared the decade as 'UN Decade on Ecosystem Restoration' to reverse and restore degraded ecosystems.

The WPP provides links to 160 threatened waterbird species as per the IUCN Red List of Threatened Species. The WPP will support the development and actions of the Ramsar Convention, on Migratory Species, and the Biological Diversity, as well as major regional/ flyway initiatives.

The new and improved open access, WPP, features an interactive interface, and easier access to key information on waterbird populations, trends and 1% thresholds. An added feature will also provide population level boundary maps for the world's waterbird species. This can be used by national or local wetland authorities or site managers, to access a shortlist of relevant population with their 1% population thresholds, to check against available information and identify potentially internationally or nationally important wetlands. This will help prioritisation of sites for legal designation or protection.

Increasing the number and area of these internationally important sites will also help governments meet their targets under the Convention on Biological Diversity, to enhance the coverage of protected areas. Besides formal designations, the portal offers opportunities to support the identification of important bird areas and key biodiversity areas worldwide.

The new portal replaces the Waterbird Population Estimates Portal that was launched at the Ramsar Conference in 2012 and was intensively used by governments, NGOs, researchers, and others from around the world over the last decade.

Waterbirds worldwide are trying to adapt to the ongoing changes in climate as well as transformations to landscapes and habitats driven by human development. To continue to support the data users, information on the Portal will need to be updated on a regular basis to reflect the latest knowledge on the status and trends of populations.

EAD TO CONTINUE MARINE SCIENTIFIC RESEARCH IN THE REGION

WITH A NEW STATE-OF-THE-ART MARINE CONSERVATION AND FISHERIES RESEARCH VESSEL



His Highness Sheikh Hamdan bin Zayed Al Nahyan, Ruler's Representative in Al Dhafra Region and Chairman of the Board of Directors of EAD, asserted EAD's ongoing commitment towards protecting the environment and the marine biodiversity in Abu Dhabi and the overall UAE marine ecosystem, and announced that the Agency is building the Middle East's most advanced research vessel. The state-ofthe-art, multipurpose marine conservation and fisheries vessel will use environment-friendly technologies in conducting specialised research.

"After the resounding success we have achieved with the dramatic improvement of fish stock numbers in Abu Dhabi waters due to new policies and legislation, we are proud to be continuing our research on fisheries and all marine biodiversity to maintain the momentum of the significant work we have done so far. The addition of a new cutting edge, scientific research vessel to lead our marine research is a momentous achievement that will enable us to monitor and conserve our fish stocks and marine biodiversity in addition to fostering the passion of our young Emirati marine scientists for years to come. I am excited about the addition of a new multi-purpose research vessel to pioneer our oceanographic and fisheries research in our deeper waters," His Highness said.

Operating in the UAE's waters of the Arabian Gulf. Arabian Sea, and further afield, the 50 m vessel enables EAD to complete new marine and fisheries scientific waters in the previously largely unstudied waters 10 m and

deeper. It will be designed and built for the conditions of the region – where the Arabian Gulf is characterised by being shallow and its high salinity.

The vessel will be manned by up to 30 personnel and in addition to state-of-theart research equipment, it includes five laboratories to process samples on the vessel, a remotely occupied vehicle and scuba diving functionality. It has the integrated functions to complete comprehensive marine and fisheries surveys including deepwater marine ecological baseline surveys; fisheries resources assessment surveys; deep-water habitat surveys of coral and seagrasses; marine water and sediment quality; and megafauna surveys of the likes of cetaceans, dugongs and turtles.

It will also enable EAD to respond to the threats facing the marine environment including marine debris; climate change and invasive marine species. It will also be able to assess marine sites and habitats and environmental rehabilitation perspective in addition to other marine studies.

His Excellency Mohammed Ahmed Al Bowardi. the UAE's Minister of State for Defence and EAD's Vice Chairman said, "At EAD we always strive to be a step ahead and be at the helm of progressive scientific research, using the most innovative tools and equipment. The development of this new and innovative research vessel will allow us to maintain our edge in marine research and in the sustainable management of fisheries – which is one of our main strategic priorities and one of our main success stories."

HE Razan Khalifa Al Mubarak, EAD's Managing Director said, "Using the latest technology and ensuring that all the equipment and protocols on the vessel are environmentally-friendly, we will continue to put Abu Dhabi on the scientific map as a leader in environmental affairs and sustainability. Moreover, the way in which we revived our fish stock can serve as a benchmark in the international community. Our future vision of continued improvement through this research vessel is an example of our commitment to the sustainability of our marine environment."

Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of EAD said, "At EAD we ensure that all of our policies and strategies are supported by science – the accumulation of knowledge, data and information. We live in an extremely rapid paced world and as an organisation, it is fundamental for us to keep up with the times. This new research vessel will be our flagship marine research initiative of fundamental importance to our research division – particularly our fisheries which we are always striving to stabilise and accentuate, while it plays a key role in qualifying and developing UAE talents in the field of marine ecosystems, as well as supporting research and studies conducted by universities and research centres in the country."

She added, "Despite how far we have come and after announcing the past two years that there was an evident improvement in our fish stocks, we will not stop now. We know that we can always do better, which is why we are working on the design and build of this contemporary vessel which will play a significant role in helping us to devise management strategies and plans to facilitate maintaining our positive fish stock figures. The vessel will also be completing comprehensive deep-water marine ecology baseline seasonal surveys to further our understanding of our critical habitats - coral and seagrass, and key indicator species – turtles, dugongs and cetaceans."

The vessel will be built by FRIERE Shipyard in Vigo, Spain with Abu Dhabi Shipbuilding managing the build in support of the EAD team. Design of the ship commenced in lanuary 2021 with it scheduled to arrive in Abu Dhabi in December 2022. As EAD's representative for the project, Abu Dhabi Ship Building will be responsible for management of the design and supervision of the build in Spain with the first steel to be cut on the vessel in June 2021. The initial sea trial will be carried out in Vigo in late 2022 with Gulf condition trials taking place after the voyage of the ship to Abu Dhabi.

PADI AND THE OCEAN CLEANUP JOIN FORCES TO TACKLE OCEAN PLASTIC POLLUTION



The Ocean Cleanup, PADI® (Professional Association of Diving Instructors®) and PADI AWARE Foundation announce a global partnership to tackle ocean plastic pollution. Together, the organisations will mobilise divers on a local level to take action for global impact through the implementation of citizen science research. The joint project pairs The Ocean Cleanup's advanced technologies with the passion of the global dive community to inform ocean-friendly waste management policies in countries worldwide through data collection.

"We're excited to be working together with the world's leading diving organisation," says Dan Leahy, Chief Development Officer of The Ocean Cleanup. "Their passion for clean oceans creates a natural fit between our organisations, and I'm delighted we can scale our data and research capability through their dedicated community of divers." In addition to its ocean cleanup efforts, the organisation is developing solutions to intercept plastic pollution in the top 1,000 most polluting rivers emitting waste into the ocean. Through the installation of Interceptors in these rivers, The Ocean Cleanup aims to stop 80 percent of riverine plastic pollution from entering the ocean.

"By combining the ingenuity of The Ocean

Cleanup's Interceptors, which remove floating plastic, with the passion and perspective of the global dive community working to save the ocean below the surface through citizen science, this monumental partnership is poised to inform waste management solutions that will significantly reduce marine debris from the surface to the sea floor," says Drew Richardson, President and CEO of PADI. "The success of preventative and lasting solutions on a global scale will only be possible through local community engagement."

PADI's vast network of dive centres, dive professionals, divers and other ocean advocates will drive the joint citizen science effort through regular debris surveys both at the surface and underwater in areas near The Ocean Cleanup's Interceptors and the surrounding oceanic dive sites. The data collected, including the amount and type of waterborne plastic pollution found, will be invaluable in providing insights to governments around the world as they establish and evolve policy regarding solid waste management.

The joint citizen science campaign will be trialled in Malaysia this year, working closely with PADI dive shops in the vicinity of the Klang River where an Interceptor will be placed. Working together with local partners and the government, the PADI dive community in the region will collect data in local waters through regular river surveys, ocean surface surveys and Dive Against Debris® surveys on the sea floor. The PADI AWARE Foundation's Community Grant programme will help provide critical resource support to PADI Dive Centres and Resorts during the implementation of the project.

This project in Malaysia will set the precedent for future efforts worldwide in one of the most ambitious citizen science projects ever taken on by the dive community. Following a successful pilot project, PADI and The Ocean Cleanup will establish future efforts near heavily polluting waterways around the world, including areas of Indonesia, Dominican Republic, Vietnam, the United States, Jamaica, and Thailand, and ultimately in the 186 countries around the world where PADI operates.

To stay informed about how you can get involved in this global citizen science project above and below the surface, join the community of PADI Torchbearers united in the effort to explore and protect the ocean at www.padi.com/conservation.

PADI POSITIONS MEMBERSHIP AS MISSION HUBS AND ANNOUNCES THE PADI AWARE FOUNDATION









In celebration of World Oceans Day on ! June 8, PADI (Professional Association of Diving Instructors®) announced the creation of PADI AWARE Foundation. The nonprofit public charity is dedicated to driving local action for global ocean conservation. The new PADI AWARE Foundation shares PADI's mission to expand advocacy and achieve critical ocean conservation goals in the years ahead. Leveraging PADI's vast membership network of Mission Hubs across the world, the PADI AWARE Foundation will operate as an independent non-profit organisation supported by the PADI® brand and organisation.

In support of PADI's mission to create one billion PADI Torchbearers to explore and protect the ocean, the new foundation will build citizen-led conservation and activism programmes, as well as expand current ones, to address key ocean threats, such as marine debris, climate change, marine habitat loss and vulnerable species protection across the planet.

"Saving the ocean requires all of us around the world acting together in thousands of ways on local and international levels, united by our passion to provide balance between humanity and the ocean across the planet," said Drew Richardson, president and CEO of PADI Worldwide. "As we enlist PADI Torchbearers and encourage them to become global ambassadors in the movement to save the ocean, it is critical that we provide a clear pathway to action."

As one of its first projects, PADI AWARE Foundation will launch a Community Grant Programme in 2021, providing much-needed financial resources to enable local ocean protection initiatives hosted by PADI Dive Centres and Resorts – "PADI Mission Hubs." To facilitate and enable localised efforts, on Tuesday, June 8, PADI will launch a PADI Conservation Activities Locator on PADI. com, empowering divers and non-divers alike to search, discover and engage in ocean conservation activities, events and courses – in and out of the water - with PADI Members across the planet.

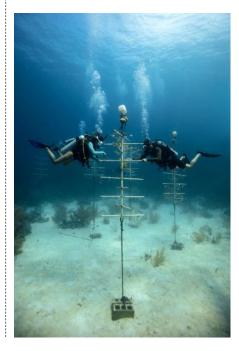
Through their joint Blueprint for Ocean Action, PADI and PADI AWARE Foundation will work to:

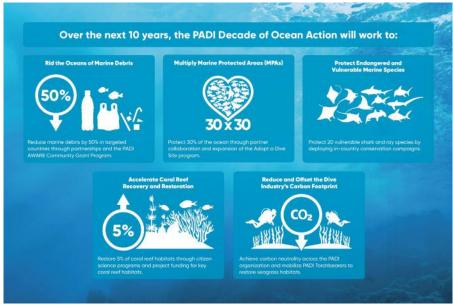
- Rid the oceans of marine debris: Reduce marine debris by 50% in targeted countries through strategic partnerships and the PADI AWARE Community Grant Programme.
- Multiply the number of Marine Protected Areas (MPAs): Protect 30% of the ocean through partner collaboration and expansion of the Adopt a Dive® Site programme.
- Protect endangered and vulnerable marine species: Protect 20 vulnerable shark and ray species by deploying in-country conservation campaigns.
- Accelerate coral reef recovery and restoration: Restore 5% of coral reef habitats through citizen science programmes and project funding for key coral reef habitats.
- Reduce and offset the carbon footprint of the diving industry: Achieve carbon neutrality across the PADI organisation's supply chain and mobilise PADI Torchbearers to restore, protect and fund seagrass habitats to offset carbon.

"To achieve these goals, we will unite the largest network of dive centres and resorts, dive professionals, and citizen divers the world has ever seen in order to take action as PADI Torchbearers in their communities, linking local action to global impact," adds Richardson. "The vision for the Conservation Activities

Locator tool is to enable divers and other ocean enthusiasts to turn their passions into purpose and bring forward a new era of ocean stewardship and sustainability."

For more information about the PADI AWARE Foundation, PADI Mission Hubs, or the PADI Torchbearers community and how to get involved, visit padi.com/conservation.





PADI LAUNCHES NEW JOB BOARD

TO MEET GROWING DEMAND FOR PADI PROFESSIONALS



As pockets around the world are reopening, there is a growing demand for PADI® Professionals in many key markets worldwide. To support its membership, PADI has launched a full revamp of the PADI Job Board to help dive centres and resorts build winning teams and connect dive professionals with exciting job opportunities. The new platform makes it easier than ever to search, find and connect the world's best dive professionals with scuba jobs available at PADI Dive Centres and Resorts around the globe.

"For the first time since the pandemic began, new postings of job opportunities for PADI Pros on the PADI Job Board are coming in faster than they are being filled," says Kristin Valette Wirth, Chief Brand and Membership Officer of PADI Worldwide. "This is a great sign of the industry bouncing back strong in several parts of the globe. Incredible dream job opportunities around the world for PADI Pros will continue to increase as customers flood back, requiring dive operators and resorts to increase recruitment and hiring in order to keep up. With this in mind, we've prioritised updating the job board platform to enhance the efficiency and effectiveness of connecting PADI Pros with PADI Resorts and Dive Centres to succeed."

Accessible via the PADI Pros' Site, the new job board offers a host of features to help PADI Dive Centres and Resorts manage job postings and candidates, and help PADI Professionals search and apply for jobs. The job board is also supported by in-app translations, so PADI Members can choose from more than 20 languages to view and post within the application.

The PADI Job Board has long served as one of the most visited pages on the Pros' Site, with the launch of the new job board exceeding more than 31,000 unique views during the first two weeks of launch. Some of the new technologies and features aimed at further empowering PADI Pros, Resorts and Dive Centres are:

- Manageability PADI Retail and Resort members can more readily and flexibly post, edit, update and otherwise administer their job listings.
- Resume posting PADI Pros can post full resumes, making it easier for individual members and operators to find the best skill set matches that create winning teams.
- Searchability The job board is no longer simply a list. Pros and shops can search based on criteria without wading through

- irrelevant entries that don't line up with what's wanted or needed.
- Direct connection The job board allows direct connection so that operators can contact prospective hires for initial follow
- Multilingual Automated translation technology allows users to post and view listings in their language preference, reducing language barriers.
- Notifications Employers and candidates can enable notifications to be alerted of new applicants, job posts, invitations to apply for a job or interview, among others, so they never miss an opportunity.

"The PADI Job Board is a powerful gateway for employment opportunity throughout our membership infrastructure and provides the most global employment opportunities in the dive industry," says Valette Wirth. "We expect the increase in job opportunities to continue to grow as travel rebounds. We will continue to prioritise supporting our PADI Members with the challenges they face during their recovery."

For full access to the new job board, PADI Members can log in to the PADI Pros' Site and click on the lob Board link on the dashboard.

OCEAN DIVING CENTER'S UNDERWATER & BEACH CLEAN-UP

















ODC EMIRATES PALACE MARINA/ BEACH CLEAN-UP IN ABU DHABI

| MOST LIKELY TO FIND ITEMS | TOTAL |
|------------------------------|-------|
| Food Wrappers | 16 |
| Plastic Take-out Containers | 4 |
| Foam Take-out Containers | 2 |
| Plastic Bottle Caps | 5 |
| Metal Bottle Caps | I |
| Forks/Knives/Spoons | I |
| Plastic Beverage Bottles | 4 |
| Glass Beverage Bottles | 5 |
| Beverage Cans | 6 |
| Plastic Grocery Bags | 9 |
| Other Plastic Bags | 19 |
| Paper Bags | 5 |
| Paper Cups & Plates | 6 |
| Plastic Cups & Plates | 3 |
| Foam Cups & Plates | I |
| FISHING GEAR | |
| Line (metres) | 5 |
| Rope (metres) | 6 |
| OTHER TRASH | |
| Appliances | I |
| Construction Materials | 3 |
| Balloons | I |
| PACKAGING MATERIALS | |
| Other Plastic/Foam Packaging | 2 |
| Other Plastic Bottles | I |
| PERSONAL HYGIENE | |
| Diapers | I |
| TINYTRASH (< 2.5 cm) | |
| Foam Pieces | 2 |
| Glass Pieces | 2 |
| Plastic Pieces | П |
| TOTAL NO. OF ITEMS: | 122 |
| TOTAL NO. OF BAGS: | 25 |
| TOTAL WEIGHT (KGS): | 60 |

MY DIVING EXPERIENCE

BY VICTOR JAVIER STACEY GARCIA

When I was about 7 years old, I heard so many tales about the aquatic world and unique marine animals and I wanted so badly to immerse myself in the adventure of discovering this unexplored region of the planet.

With good luck, I had the chance to take the first step and learn all the techniques to be a professional open water diver by the hand of my amazing instructor, Francis.

My first diving experience was at the Dubai Aquarium where I had the chance to dive with many spectacular animals like sharks, manta rays (one of them was on top of my head most of the time), sting rays, sand tiger sharks and giant groupers (etc.)

This was a small taste of what was waiting for me in the real world. My curiosity grew at a very fast rate and I suddenly wanted to know the secrets of the aquatic realm.

I cannot describe enough in words the feeling I had during my adventure at Dibba with Francis and the other buddies. I couldn't believe that I was diving in the open sea and I was so surprised that a whole new world had been under my nose the entire time! We saw turtles, cuttlefish, sea cucumbers, sea urchins, flounders, and coral – did you know that some species only grow 2cm a year?

At the beginning of the dive we carried our equipment to the boat and assembled it to descend. As I went deeper, I inflated my BCD to compensate for the pressure differences, and I as ascended, I deflated it. I spotted many marine animals and overall, I enjoyed my trip to Dibba

The best part of my experience was not only to see those species, but also to share it with my buddies, family members and close friends, and share my passion for this new world.

I am so excited to discover more about the deep sea when I grow up!

I want to protect and conserve the ocean so that future generations also get to experience this spectacular world and all the alien-like creatures that come with it.

Being a diver is not only about exploring the ocean, we need to use our skills to preserve the life and do everything we can to educate people about the importance of clean beaches and try our best to use less plastic.

I can't wait to start my journey to make a change to marine life!





DUBAI 92 CORAL REEF CONSERVATION

BY STUDENTS FROM THE STAR INTERNATIONAL SCHOOL MIRDIF







During the last half term of the academic ! year 2020-2021, Dubai 92 launched a coral reef project for children to register with. The children at Star International are keen ocean enthusiasts and ambassadors who are always looking for ways to educate and empower our Mirdif community regarding saving our planet, inclusive of our oceans.

Working with Mohamed Helmy, a PADI Course Director at Al Boom Dive Centre, Ms Gill Roberts, the former Principal of the school (also an IDC Staff Instructor) decided to create a competition for the children which highlighted the top ten pollutants of the ocean. Rather than just mentioning the top ten pollutants, the children had to identify how these pollutants injure marine life.

As you can see from the images, the children fully researched this topic; their entries to the competition enabling their audience to understand why these pollutants are harmful and why we must educate people not to throw their debris into the ocean, or even on the beach.

Our Year 6 also looked at the irony of the mask. The mask being worn by all to protect us against COVID-19.

Why the irony? As you can see, our children found out that the main pollutant of our oceans at present, are these masks. They were made to protect our human species, however their lack of correct disposal is killing our



AISHAM (6 years old)

"One time we were washing my mommy's car and we found a plastic bottle on the floor. Then I told my mom, can we take a video please? My mom said yes, then I got the plastic bottle up, then she took a video when I was saying things and throwing the plastic bottle in the bin."



ADAM (6.5 years old)

"People are saying stop trashing our oceans. And other people are saying the oceans are very important because a lot of animals are living there and it's full of plants which produce oxygen that helps us breathe. Oceans provide humans and animals with food."



LYAN (7 years old)

"My poster is about the ocean. A mask might get stuck in reefs and fish might eat them. Plastic bags look like jellyfish and turtles might eat them by mistake. Bottles and straws can get stuck in fish and shark gills, and rubber bands can get stuck in coral reefs or around fish."



JAKE (10 years old)

"I wrote the poem as if I was a mask and I've fallen into the ocean. And to my surprise, everywhere I look it's just plastic and pollution. I don't think it's right. If we kill sealife, we're also killing ourselves. It's not right because it's all part of our life cycle.'



YASMINA (10 years old)

"I sometimes do beach clean-ups where I've found masks and plastic bottles...and bags."

THE DANGEROUS HELPFUL MASK

Hey, I'm a mask, you can call me Bob! I always try protecting humans, but they don't care! They always throw me in the sky blue beautiful ocean but never understand that THE OCEAN ISN'T MY HOME!!! I try to swim, but instead I sink.

Sea turtles and many sea creatures come and eat me. Sea creatures choke on me and die. So please take my advice, and NEVER throw masks or plastic stuff in the ocean.



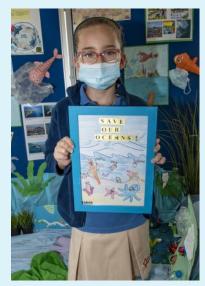
ALESSIA (6 years old)

"My project is about ocean awareness. My fish has a stomach full of plastic straws, plastic bags, clingfilm, and masks."



OMAR (7 years old)

"Don't throw plastic bags inside the ocean, the fish will die. Don't throw things inside because the fish will eat it."



HAYA (7 years old)

"My drawing is about saving the oceans. Never put plastic anywhere or the fish and sea animals could die...it's bad."



MAYAR (6 years old)

"My drawing is about these animals saying help me. The rubbish is stuck to them and the coral, and I say to keep them safe. There's a plastic bag coral, a bottle and a mask, and a straw in there."



AIDAN (10 years old)

"My project is about the coral reef and how I want it to be. I don't want it to die because it affects our oceans and we need the fish."



Year 2 have been reading about the Mirdif staff's 'Dive for Debris'. They decided to re-create the ocean and the conditions of the dive, to enable our younger school pupils to visualise what it might be like under the sea and to show them all the beautiful creatures that you can find. Join Ms Gill and Mr Kyle in their underwater adventure.



Year I have been looking at the different sorts of coral that are found in our coral reefs on the East Coast. They then decided to design some corals of their own using their knowledge of the corals they had seen.



EVENA (7 years old)

"My project was about a plastic bag in the ocean and sea creatures coming to eat it. The prize I won was a certificate and voucher to dive in October. Yes, I'm looking forward to it."



SAIF (7 years old)

"My poster is about the stuff you should't throw in the sea. You shouldn't throw straws, plastic bottles, cans or masks, or plastic bags, or cans with plastic...and elastic bands."



YOUSEF (6 years old)

"My poster is about Hazourdous waste. I added toy sea animals, and I added some blue glitter. The turtle is close to the face mask and it might die. Dolphins also might die from these things."









JESSE (10 years old)

"My project is about how we should not throw shoes or slippers into the ocean."



HANNAH (10 years old)

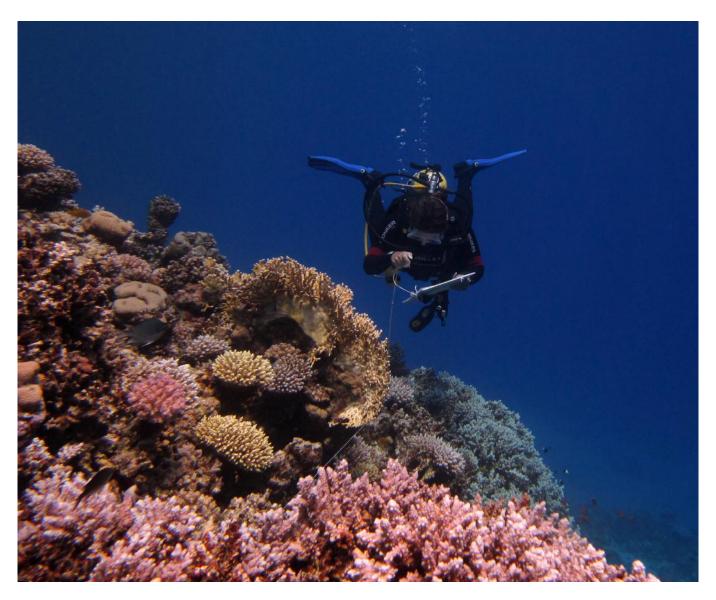
"My project is about a picture down deep in the ocean showing the coral reefs and fish."



NURAN (12 years old)

"I wrote that we shouldn't be throwing plastic in the oceans because it's been damaging it for a really long time."

GLOBAL STUDY USES REEF CHECK DATA TO SHOW REEF CORALS SURVIVE BLEACHING WHEN LESS ALGAE ARE PRESENT



A new study published today in the journal Science, suggests that reducing the amount of algae growing on coral reefs could help them survive bleaching events caused by global warming. Coral reef scientists and resource managers have grown increasingly alarmed as reefs around the world have been repeatedly hit by periods of hotter-than-normal seawater that have caused corals to "bleach" and die.

For example, in the last five years alone, three major bleaching events have killed some 50% of the corals on the 1,400-mile long Great Barrier Reef in Australia. Annual maximum seawater temperatures have increased globally due to climate change, and reefs in few countries have been spared.

The new study analysed Reef Check data collected at over 200 reefs throughout the tropical world between 1998 and 2017 by inputs to reefs and maintaining sufficient

volunteer citizen scientists. The study analysed the relationships among physical and biological variables such as heat stress, water depth, and the numbers of certain fish, sea urchins or algae with the amount of living coral left on reefs one year after a coral bleaching event. Not surprisingly, the greater the heat stress, the less coral survived in the year following bleaching, consistent with previous studies.

A key finding was that on reefs with a low percentage of the seabed covered by types of algae called macro-algae, more coral survived a year after a bleaching event than on reefs with a high percentage of the reef occupied by macro-algae. According to the lead author, Mary Donovan, from Arizona State University, "This result is important because it suggests that by keeping macro-algae abundance low from actions such as reducing high nutrient

populations of fish that eat algae, it should be possible to reduce damage from moderate heat-stress events."

While it has long been known that macro-algae compete for space with corals on reefs and can kill corals directly by overgrowing them or by being toxic to corals, this study is the first to demonstrate on a global scale that lowering the amount of macro-algae on reefs could be a tool that can be used by local reef managers to help corals survive bleaching events. "This is great news for coral reef managers because they can act on the local level to help corals survive," stated Jan Freiwald, Executive Director of Reef Check Foundation. "We are really pleased that our 20-year dataset on coral reefs from over 100 countries has been the basis for this collaborative study involving coral reef scientists from US NOAA and four universities."

REEF CHECK KELP FOREST PROGRAMME EXPANDS INTO OREGON

BY DAN ABBOTT - REEF CHECK CALIFORNIA CENTRAL COAST MANAGER AND LAURA TESLER - REEF CHECK VOLUNTEER











In April, after several weeks of studying i Check to come up to Oregon and start i boat and oyster catchers were surrounding us protocols, practicing identification with flashcards, and weekly Zoom classes, seven intrepid divers slid into the cold Oregon water off Port Orford to practice conducting surveys and to become the first ever Reef Check citizen scientists in Oregon. These divers came from all over the state to take part in the training and do their part in protecting Oregon's unique marine environment.

This class was the first step in launching the Reef Check Oregon programme, which has the goal of monitoring the health of Oregon's kelp forests. Reef Check is partnering with the Oregon Department of Fish and Wildlife to help monitor their impressive system of marine reserves which strive to protect habitats and conserve biodiversity in Oregon's nearshore environments. In addition, Reef Check is working with the Oregon Kelp Alliance in their efforts to restore kelp forest environments at five sites along the coast where kelp forest ecosystems have succumbed to the perfect storm and have become urchin barrens. Reef Check has hired Diana Hollingshead as the Reef Check Oregon Volunteer Coordinator to manage surveys and future trainings. A new training in Port Orford has just been added for this August.

Below is a first hand report from one of our new Oregon Reef Checkers, Laura Tesler:

a Reef Check team. This year in April that dream finally came true when Reef Check announced that they would start training the first habitat assessment team in Oregon. Within a week, seven people were signed up and the online class began where we learned about the scientific method, statistics, fish and invertebrate identification, laying transects, and how all the pieces would fit together.

Finally, after four weeks of classes and guizzes which made us all experts on identification and technique, the big weekend arrived that we all were looking forward to the open water checkout weekend in Port Orford. We had to reschedule once already due to unfavourable wind conditions, so everyone was pretty determined to make these dates work.

The first day we did topside training on the Port Orford jetty, which really was helpful to understand the UPC part of the transect survey. At first this seemed strange but after we started rolling, it began to make sense. Then it was at last time to load up our boat, The Black Pearl, and start our first transect.

In Oregon, most people dive with dry suits, but since we do have some hardy wetsuit divers, those folks were paired up together and we proceeded to the site in Nellie's Cove. As we were getting instructions from Data Captain "For years we have been hoping to get Reef ! Dan, gray whales started to surface around our

from the rocks close by. First Dan and I went in and laid the transect underwater at 30 feet (10m), in about 10-foot (3m) visibility, and Dan did his reference survey for us to compare against later. Then the respective teams went in to start their surveys along the line. We did this for three dives and then returned to the harbour.

Then each team compared their results against Dan's reference survey as far as numbers of urchins counted, UPC points, and invertebrates to see if we were correct in our identification and numbers. We were happy to note that most of us were within 10 numbers off! All that online training definitely came in handy.

The next day we returned to the boat and tried to survey one of the few remaining places in Redfish Rocks that had a kelp patch, however the visibility here was absolutely zero and we knew this would be a futile effort. We returned back to another location close by Nellie's Cove and set out another transect line. Viz was now down to about 5 feet (1.5m), however all of us on the team are seasoned coastal divers and we were used to this type of visibility. More practice was good as at this time when we checked in with Dan, we all either matched or were within 5 individuals. We all felt we were ready for the next survey transect weekend and there are many more to do in Oregon!"

REEF CHECK MALAYSIA TALKS REEF RESILIENCE

BY REEF CHECK MALAYSIA

Reef Check Malaysia is currently operating long-term marine resource conservation programmes in three locations: Tioman island, Mantanani island and the Johor islands. We also have on-going programmes - such as our annual coral reef monitoring survey programme - that take us to other islands in both Peninsular and East Malaysia. As we work increasingly closely with local stakeholders (islanders, tourism operators, etc.) and develop a deeper understanding of some of the challenges facing communities and managers alike, several inter-linked themes are starting to emerge that need more attention: resilience, livelihoods and co-management.

Everyone is talking about conservation, protecting the environment, ecosystems, sustainability...lots of words, lots of jargon... but what does it all mean to you, the coastal communities, the divers - the people? More importantly - and assuming these things are important - how can we engage with these various stakeholders to get their input into achieving agreed, necessary conservation goals? How can we ensure that everyone benefits equally?

Let me start by defining the conservation argument. One definition of an ecosystem is "a community of living organisms in conjunction with the non-living components of their environment, interacting as a system". Ecosystems provide a number of what are called "ecosystem services" to society - things that we need (such as food and oxygen), without which we could not survive. So we need to "conserve" these ecosystems in order to continue to receive those services and benefits. Simple.

But to go back to an old argument, I would contend that you can't actually "do" conservation; conservation is something that happens when certain activities are undertaken to reduce impacts to ecosystems, thereby ensuring they remain in the same



condition over medium to long time frames.

So what is it we can actually "do" to support reefs and achieve those conservation goals?

Ecosystems such as coral reefs have a natural property called resilience. In the context of coral reefs, resilience has been defined as "the capacity of a reef to resist or recover from degradation and maintain provision of ecosystem goods and services".

But coral reefs are losing their resilience because of pressure from human activities (such as tourism and fishing) combined with increasing climate impacts (such as ocean warming that leads to bleaching). Resilience is a characteristic that can be both readily assessed and actively supported. Many scientists believe that supporting resilience needs to be a management priority and that local actions can influence the future resilience of reefs.

Essentially, we are looking for ways to reduce negative impacts to ecosystems - coral reefs, seagrass, etc. It's not rocket science: imagine you are on a small island on holiday; think about what you might do during the day... and then think about what impacts on coral reefs those activities might cause. Snorkelling trip? Standing on coral, anchor damage, feeding fish; lunch in a restaurant? Trash, grease from kitchens, grey water; beach-side chalet? Sewage pollution, trash, beach erosion.

In essence, pretty much everything we do has an impact on ecosystems. So how do we "do" conservation? How do we support resilience? By taking action to reduce our impacts:

- Training for snorkelling guides so that they know not to use anchors, they dissuade you from feeding bread to fish, they teach you to snorkel correctly and not to stand on corals.
- Programmes for resorts to help them identify changes that can reduce their impacts - better sewage treatment systems, eco-friendly cleaning products, reducing energy and water consumption.
- Managing fishing activity through engagement, consultation and awareness backed-up with patrols and enforcement, to ensure populations of reef fish are
- Controlling development so that physical damage to reefs is avoided and release of siltation and other pollutants is managed.
- Awareness programmes for tourists help them understand how they can contribute to reducing the impacts of their visit.

Management must be based on resilience principles, and management plans need to incorporate activities to reduce impacts so that we can build the resilience of reefs over the long term. One of the great things about resilience is that it is very democratic everyone has a role to play. Resort operators, tour guides, local islanders - even tourists; so it's not just left up to the government to do everything.

So now we know what we have to do: support resilience. Are we doing it? Data from our annual coral reef survey suggests the answer is "some of it...in some places".

Which raises the question: who is responsible? Government? Management agencies? Tour operators? Local communities? And just what is it they should be doing? These will be discussed in the next article of this series.







THE VALUE OF A 20-YEAR CORAL REEF DATASET:

LOCAL CONSERVATION CAN HELP PROTECT REEFS FROM CLIMATE CHANGE





In 1997, the first global survey of coral reefs was carried out by teams of volunteer scientists using an innovative standard method to measure coral reef health (Hodgson, 1999). Reef Check was the name given to the onetime survey timed to coincide with the first International Year of the Reef. The Reef Check training and surveys proved so popular that scientists in many countries asked if they could form teams and participate in 1998. By chance, the first global coral bleaching event occurred during 1998-99, wiping out corals in dozens of countries. So, with Reef Check teams already in place and new teams joining, they were able to document the damage (Wilkinson and Hodgson, 1999), and many more scientists and coral reef managers began to appreciate the value of the annual surveys. As a result, the Reef Check organisation was born and has monitored reefs worldwide for 25 years now.

Sadly, coral reefs have been damaged by an increasing list of impacts since 1997, including increasingly frequent bleaching events and cyclones/hurricanes, overfishing, new diseases, and pollution. In most cases, scientists trying to determine the cause of reef declines in an area such as Florida or the Great Barrier Reef, are faced with interpreting several of these impacts at the same time. How is it possible to pinpoint which impacts are the most important? A standardised method of studying reefs globally helps answer these questions. This is the advantage of the Reef Check tropical database; it contains over 20 years of data using one standard method and participants, globally, are trained and certified in this one method.

Why is a standard method important? Scientists have studied the results of surveys using different types of measurements and found that they can differ a great deal. For example, counting crown-of-thorns starfish from the surface in water 10 m (~30 ft) deep will produce much lower numbers than by searching for them at depth. The Reef Check ! dataset allows researchers to avoid incorrect conclusions due to differences in how the data were collected by different teams or because protocols have changed over time. The twodecade long dataset allows researchers to track trends over this unusually long time period during which so many changes have occurred on reefs. So, it is no surprise that since 1999, dozens of peer-reviewed scientific publications have used Reef Check's tropical dataset to answer questions at a local reef scale, at regional and even a global scale.

The most recent paper published on May 27th in the top scientific journal "Science" is getting a lot of attention because it provides a clear answer to an important question. Lead author, Mary K. Donovan, wanted to know what variables might be affecting survival of corals following bleaching. An expert in statistics, she and co-authors used a technique called "Bayesian hierarchical modelling" to determine which of 19 variables were associated with coral survival or death one year after bleaching. The variables included purely physical ones such as water depth, water temperature and wave exposure as well as biological factors such as the numbers of parrot fish, sea urchins and macro-algae. Not surprisingly, the strongest association with corals dying was a measure of hot water exposure called Degree Heating Weeks that includes a temperature and duration component. This had been shown by other studies, but the global nature as well as the long time series of the data led to some other interesting and important discoveries.

The key discovery is that as the amount of macro-algae increases on a reef above about 5%, coral mortality following bleaching increases. By macro-algae we mean any species of fleshy algae that has grown taller than 3 cm (about I inch). When the macroalgae occupies more than 25% of the reef surface, the mortality of corals increases

much more. This finding is important because it is possible to control the amount of algae on a reef by careful fisheries management of herbivores and even direct removal of algae. But as overfishing has become an increasing problem, more reefs have become dominated by algae due to a lack of herbivory, especially in the Caribbean where a typical reef now has about 20-30% of its surface covered by macroalgae. Prior to 1980, there is little quantitative data on macroalgal cover on reefs, but those reefs surveyed had less than about 5% cover. Increased mortality of corals following bleaching was also associated with more long-spined black sea urchins. Sea urchins are helpful herbivores at low densities but at high densities they can damage corals by scraping so much that they can destabilise coral heads.

The results of this study will be immediately useful to coral reef managers who have been saddened as they have watched their favourite reefs bleach and die. The primary solution for stopping coral bleaching is reversing climate change by reducing greenhouse gas emissions at the global level. But this study highlights some other ways in which local managers and communities can act. Any intervention that helps corals survive bleaching, such as increasing herbivorous fish populations by reducing fishing, will be extremely useful in allowing corals to survive the onslaught of hot water.

We look forward to seeing more excellent publications from the expert team of scientists that Mary brought together.

Donovan, MK , DE Burkepile, C Kratochwill, T Shlesinger, S Sully, TA.Oliver, G Hodgson, J Freiwald, RV Woesik. 2021. Local conditions magnify coral loss following marine heatwaves. Science. Vol. 372, Issue 6545, pp. 977-980.

Hodgson, G. 1999. A global assessment of human effects on coral reefs. Marine Pollution Bulletin. 38 (5) 345-355.

Jackson, JBC, MK Donovan, KL Cramer, VV Lam (editors). 2014. Status and Trends of Caribbean Coral Reefs: 1970-2012. Global Coral Reef Monitoring Network, IUCN, Switzerland, 306 p.
Wilkinson, C. and G. Hodgson. 1999. Coral reefs and the 1997-1998
mass bleaching and mortality. Nature and Resources. 35(2):17-25.

FEATURE CREATURE

INDO-PACIFIC FINLESS PORPOISE (NEOPHOCAENA PHOCAENOIDES)

FEATURE IUCN RED LIST 2017 PHOTOGRAPHY ADA NATOLI - UAE DOLPHIN PROIECT



RED LIST CATEGORY & CRITERIA: VULNERABLE

Scientific Name: Neophocaena phocaenoides Synonym(s): Delphinus phocaenoides (G. Cuvier,

Common Name: Indo-Pacific Finless Porpoise

TAXONOMIC

The recognition of two externally distinct morphological forms of Finless Porpoises as separate biological species, the Indo-Pacific Finless Porpoise (Neophocaena phocaenoides) and the Narrow-ridged Finless Porpoise (N. asiaeorientalis), was accepted only recently when it was demonstrated that the two forms are reproductively isolated (and likely have been separated since the last glacial maximum) even though they occur sympatrically in a fairly large area of eastern Asia (Wang et al. 2008, Jefferson and Wang 2011).[Much of the literature published before ca 2010 refers to all Finless Porpoises (both species) as N. phocaenoides.] Differences in the external morphology of the dorsal aspect of the two species are distinguishable even amongst free-ranging animals (as opposed to only specimens in-hand) (Wang et al. 2010). Intermediates between the two main forms have never been reported even though several hundreds to thousands of carcasses have been examined. The two species also clearly differ in craniometry (Amano et al. 1992, Jefferson 2002).

There is evidence to suggest subpopulation structure within Indo-Pacific Finless Porpoises in some areas (Jefferson 2002, Yang et al. 2008, Chen et al. 2010, Xu et al. 2010, Li et al. 2011, lu et al. 2012, L. Li et al. 2013, S. Li et al. 2013, lia et al. 2014, Lin et al. 2014) and this may apply throughout much of the species' distribution.

JUSTIFICATION

With some of the largest concentrations of Humans in the world living along the shores of, and harvesting the resources from, the warm coastal waters inhabited by Indo-Pacific Finless Porpoises, the impacts of human activities on this species must be considerable. Partly because of their small size, which limits their strength to break free once entangled, phocoenids are exceptionally vulnerable to incidental mortality in gillnets (e.g., Jefferson and Curry 1994), and incidental mortality in fishing gear has been documented throughout the range of Indo-Pacific Finless Porpoises. Fishing effort with gear documented to catch Finless Porpoises accidentally (including gillnets, trawls, stow nets, and seines) is intense in many areas where the species occurs or occurred. Although not quantified as rigorously as for some N. asiaeorientalis populations, regional

declines (and possible local extirpations) of N. phocaenoides have been reported, presumably due to a combination of fishing pressure, coastal development and industrialisation, pollution, and heavy vessel traffic (Reeves et al. 1997, Collins et al. 2005, Braulik et al. 2010).

The data are insufficient to make a rigorous quantitative assessment of population trend for this species in any part of its range, but the scale of threats is large enough over enough of the range to suspect and infer a decline of at least 30% over the last three generations (about 45 years, assuming 15 years/generation as estimated for N. asiaeorientalis by Moore 2015) (A2), over three generations into the future (A3), and over a three-generation period that includes both the past and the future (A4). The factor most responsible for such a decline would be incidental mortality in fisheries (subcriterion d, "exploitation"), but the loss and degradation of habitat (subcriterion c) and pollution (chemical and acoustic; subcriterion e) are likely contributing factors as well. None of the threats has been seriously addressed in any part of the species' range, even though threat levels are presumably increasing.

Therefore, the Indo-Pacific Finless Porpoise qualifies for Vulnerable under Red List criteria



A2cde, A3cde, and A4cde, considering that the causes of the suspected/inferred decline in population size – by-catch, decline in habitat quality, and possibly pollution - have not ceased, may not be well understood, and may not all be reversible.

GEOGRAPHIC RANGE NATIVE: Extant (resident):

Bahrain; Bangladesh; Brunei Darussalam; Cambodia; India; Indonesia; Iran, Islamic Republic of; Iraq; Kuwait; Malaysia; Myanmar; Pakistan; Qatar; Saudi Arabia; Singapore; Thailand; United Arab Emirates; Viet Nam

Extant (seasonality uncertain)

China; Hong Kong; Sri Lanka; Taiwan, Province of China

Presence Uncertain

Macao: Oman

The type specimen was supposed to have come from the Cape of Good Hope, but this location is believed to be erroneous; it is now generally accepted that the type locality is the Malabar coast of India (Rice 1998, Jefferson and Hung 2004).

In general, Indo-Pacific Finless Porpoises occur in a narrow strip of shallow (usually <50 m deep) coastal marine waters (as well as some river mouths and estuaries) around the northern rim of the Indian and western Pacific Oceans from the Persian/Arabian Gulf (Preen 2004, Collins et al. 2005) eastwards around the rim of the Indian Ocean to the Indo-Malay region (Ponnampalam 2012) and

to lava, Indonesia (but apparently not the Philippines) and northwards to the Taiwan Strait and central Chinese waters (Gao 1991, Gao and Zhou 1995). This is the more tropical and wide-ranging of the two species of Finless Porpoises. Records of this species from northern Chinese waters (e.g., Wang 1992) probably represent rare or extralimital events. Finless Porpoises are seen regularly (when sea conditions are favourable) in Sarawak, East Malaysia (Minton et al. 2011), in at least parts of Peninsular Malaysia (e.g., they are the most frequently seen cetaceans around the Langkawi Archipelago according to Louisa Ponnampalam (pers. comm. 2017, J.Y. Wang unpublished data)), year-round (but with seasonal influxes) in Hong Kong (Jefferson et al. 2002a), and in parts of the western Taiwan Strait (J.Y. Wang unpub. data). They are also present along the East Kalimantan coastline of Borneo (D. Kreb pers. comm. 2011). In India, they are found in shallow waters along virtually the entire length of both the east and the west coasts, with sightings and strandings more commonly reported on the west coast (Sule et al. 2017). One possible explanation for the difference is that the east coast has only pockets of preferred habitat, while more continuous or contiguous porpoise habitat is available along the west coast (Sule et al.

Given the paucity of dedicated cetacean survey effort in much of the species' suspected range, the map includes the possible or projected range where oceanic features are consistent with the species' known preferred habitat. As such, the species has not been recorded for all the states within the hypothetical range as shown on the map. States for which confirmed records of the species exist are marked as 'Resident' in the list of countries of occurrence. States within the hypothetical range, but for which no confirmed records exist, are included in the list as 'Seasonal Occurrence Uncertain'.

POPULATION

Finless Porpoises are small and cryptic and therefore difficult to survey. Estimates of abundance have been made for only a few areas (Jefferson and Hung 2004, IWC 2006), mostly in regions where the Narrow-ridged species (N. asiaeorientalis) dominates, if not exists solely. Numbers of Indo-Pacific Finless Porpoises in Hong Kong and adjacent waters were estimated to be at least 217 (coefficient of variation (CV) 21-150%) (Jefferson et al. 2002a).

A vessel line-transect estimate of Finless Porpoises in Kuching Bay, Sarawak, Malaysia was 135 individuals (CV 31%, 95% confidence interval 74-246) (Minton et al. 2013). This represents a relatively small part of the species' overall range (known or predicted) in western Borneo; there are no published abundance estimates for nearby areas (IWC 2017). A preliminary estimate of >1,000 from vessel line-transect surveys is available from the Langkawi Archipelago, Peninsular Malaysia (L. Ponnampalam, pers. comm., August 2017).

An estimate for a large area in the coastal waters of Bangladesh was 1,382 (CV 55%) but



the density was very low compared to some of the reported densities of Narrow-ridged Finless Porpoises in Japanese waters (Smith et al. 2008).

HABITAT AND ECOLOGY

Indo-Pacific Finless Porpoises are found mainly in coastal waters, including shallow bays, mangrove swamps, and estuaries. They occur in waters < 200 m deep and can be sighted up to 240 km from shore in some areas. It is uncertain which of the two currently recognised species of Finless Porpoises (possibly both) occurs farther offshore, especially in areas of sympatry.

Indo-Pacific Finless Porpoises appear to have a strong preference for waters with a sandy or soft bottom (Jefferson and Hung 2004).

Small fish, cephalopods, and crustaceans (mainly demersal species) form the diet of Finless Porpoises (Jefferson and Hung 2004).

Higher numbers of Finless Porpoises are present in Hong Kong waters in winter and spring than in other seasons (Jefferson et al. 2002). Seasonal differences in density and distribution, with higher densities in the winter months of November to January, have been observed along the coast of southern Maharashtra, India, and acoustic monitoring data from there have been interpreted to suggest both seasonal and diurnal patterns of occurrence in near-shore waters (Sule et al. 2017). Minton et al. (2013) also observed a seasonal signal in their vessel surveys in Kuching Bay, with higher densities of Finless Porpoises observed in March, April, and May, which coincided with the occurrence of larger groups containing very small calves. Observations of porpoise behaviour in the bay were interpreted as suggesting that it is an important feeding and calving area (Zulkifli Poh 2013). Two stranded individuals had large shrimp in their stomachs (G. Minton, pers. comm., cited in IWC 2017).

THREATS

Finless Porpoises, like other phocoenids (Jefferson and Curry 1994), are extremely susceptible to entanglement in gillnets, and large numbers have been, and continue to be, killed in many parts of their range (lefferson et al. 2002b). Finless Porpoises are caught in nets in Iranian, Indian, Pakistani and Malaysian coastal waters, although there are no good estimates of the magnitude of such catches (e.g., see Collins et al. 2005, Jaaman et al. 2009, Braulik et al. 2010). In East Malaysia, Finless Porpoises are caught as by-catch in 'fish stakes' in Sabah (Jaaman et al. 2009) and one individual was found entangled in the line of a crab trap in Sarawak (G. Minton pers. comm. 2011), where cetacean by-catch is prevalent (Peter et al. 2016, IWC 2017). Yang et al. (1999) reported that Finless Porpoises were the most frequently captured cetaceans in fishing gear along the Chinese coast and estimated that more than 2,000 were taken in 1994, mainly in trawl, gill, and stow nets. In the Taiwan Strait (where the two species of Finless Porpoises are sympatric), a considerable number of both species are taken in trammel nets, trawl nets, stow nets, and other gear (). Y. Wang unpublished data). In Hong Kong waters, porpoises are caught regularly by trawl nets and gillnets, but there are no estimates of by-catch levels (Parsons and Jefferson 2000, Jefferson et al. 2002b). Given the numbers and types of net fisheries in Chinese coastal waters, the apparently high by-catch of Finless Porpoises (Zhou and Wang 1994, Yang et al. 1999) is a serious concern. In Maharashtra, India, during 2014-2016, at least twenty Finless Porpoise carcasses washed ashore, a few of them known to have drowned in shore seine nets and gillnets (M. Sule, pers. comm.).

As a coastal species, the Indo-Pacific Finless Porpoise is also affected by habitat loss and degradation, boat traffic, and pollution. The extensive modification of coastlines for shrimp farming, causeways, and harbour (and other) development throughout Asia (including the Persian/Arabian Gulf) means that there is less habitat for Finless Porpoises (Reeves et al. 2003, Braulik et al. 2010). Although pathology related to contaminant exposure has not been reported in Finless Porpoises, pollution is considered a potentially serious threat (Kasuya 1999, Iwata et al. 1994, Parsons and Chan 1998, Minh et al. 1999, Parsons 1999, Jefferson et al. 2002b, Ramu et al. 2005). The number of reported Finless Porpoise strandings in Hong Kong has increased in recent years, partly due to increasing public awareness and reporting of local cetaceans, but also possibly due to escalating levels of human impacts (T.A. lefferson pers. comm. 2017). In the Persian/Arabian Gulf, chemicals from recent wars exacerbate total pollution loads in coastal waters from the usual sources such as industry, agriculture and households (Braulik et al. 2010). Vessel collisions, especially involving high-speed ferries, may be a particular problem for porpoises in Hong Kong (Parsons and Jefferson 2000).



The following summary of examples illustrates the problems faced by this species: In Chinese waters (excluding the considerable fisheries operating in Taiwanese waters), more than 3.5 million gillnets were estimated to be in use in the early 1990s (Zhou and Wang 1994).

In India, the use of gillnets reportedly had increased from about 18,000 in 1950 to more than 216,000 by 1980 and gillnets were also being used extensively in Sri Lanka, Bangladesh, and Myanmar (Mohan 1994). Since the time of those reports, gillnetting effort certainly would have increased considerably in these and other regions because there are few (if any) restrictions on this kind of fishing gear anywhere in the range of the species. Porpoise habitat in Myanmar is heavily fished with gillnets and other types of gear capable of taking small cetaceans incidentally (Smith and Than Tun 2008). A drift gillnet fishery for elasmobranchs is of concern in the Bangladesh Sundarbans (Smith et al. 2008).

In East Malaysia, Finless Porpoise numbers are thought to have 'greatly declined' due to by-catch in fisheries (Jaaman et al. 2009), and commercial fishing (gillnetting, trawling, purse-seining) is intensive off Peninsular Malaysia where by-catch of Finless Porpoises is known to occur even though it is not monitored regularly (L. Ponnampalam pers. comm. August 2017). Surveys in the coastal waters of Vietnam have resulted in very few sightings of cetaceans. In a study by Smith et al. (1997), no sightings were made of Finless Porpoises yet local whale temples contained many skulls of them as well as other cetacean species. A survey around Phu Quoc Island, Vietnam, in 2015 found evidence of Finless Porpoises being bycaught in trawl nets (L. Ponnampalam, pers. comm., August 2017). The impacts of war in the 1960s and 1970s, compounded by intense fishing (especially the use of gillnets) in recent years and ongoing, are likely at least partly responsible for the near absence of cetaceans from these waters. In Iran (Persian/Arabian Gulf and Gulf of Oman/ Sea of Oman), by-catch in fisheries appears to be the greatest threat to marine mammals and removals from apparently small, localised populations of Finless Porpoises may be unsustainable (Braulik et al. 2010). Two major marine mammal die-offs occurred in the Persian/Arabian Gulf in the 1980s and 1990s. possibly related to major oil spills (Collins et al. 2005). Finless Porpoise sightings in Pakistan's Indus Delta region were apparently decreasing in the 1970s (Pilleri and Gihr 1972, Pilleri and Pilleri 1979) and by the 1990s the species had nearly disappeared from this badly degraded area (see Reeves et al. 1997).

The Indo-Pacific Finless Porpoise is one of several cetacean species that have greatly declined or disappeared from large parts of their range in Thailand, largely as a result of coastal habitat degradation and fishery bycatch (IWC 1994).

No large-scale direct hunting of this species is known to occur. In some parts of their range, people apparently are averse to eating Finless Porpoises (Kasuya 1999, J.Y. Wang unpublished data) but in other areas they are consumed. Direct killing or capture of Finless Porpoises appears to be relatively rare (Reeves et al. 1997) but development of intentional

fisheries for marine mammals from incidental captures (and economic benefits from subsequent consumption and marketing) may have increased in parts of Southeast Asia as preferred marine resources have been overfished (see Perrin 2002).

USE AND TRADE

There is no known trade in the taxon.

CONSERVATION ACTIONS

This species (which is presently listed as a single species with N. asiaeorientalis) is included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and in Appendix II of the Convention on Migratory Species (CMS). Management measures are needed to address threats, especially by-catch in fisheries.

At its annual meeting in May 2017 the IWC Scientific Committee's sub-committee on small cetaceans reviewed the status of Finless Porpoises in India and parts of Malaysia and recommended that populations be surveyed for distribution, abundance, and habitat use with emphasis on areas where the least is known about the species (e.g., India, the Indo-Malay Archipelago, Arabian/Persian Gulf) (IWC 2017). The sub-committee also recommended that by-catch monitoring be improved in all areas of known overlap between Finless Porpoise occurrence and fishing activity, especially gillnetting.

CITATION

Wang, I.Y. & Reeves, R. 2017. Neophocaena phocaenoides. The IUCN Red List of Threatened Species 2017. www.iucnredlist.org













ABOVE L-R: The oyster shell-shaped exterior is a nod to the UAE's pearl diving heritage. The design of the interiors are reminiscent of a spaceship from a 70s science-fiction movie; The multinational team of hand-picked instructors speak more than 20 different languages; Visitors can participate in the diving activities through the large windows throughout the facility. OPPOSITE PAGE: Deep Dive Dubai offers something for everyone from novices to fully qualified technical divers on open or closed circuit systems.

Deep pools are not a new idea. There are a few of them in Europe and they offer divers an opportunity to train or to enjoy deeper dives in a controlled and safe environment. Exciting as these spots are, they are still essentially swimming pools with chlorinated water and white square tiles. The recent launch of Deep Dive Dubai completely changes the landscape. Never has an indoor diving facility provided so many compelling reasons to visit.

Dubai has a tradition for creating attractions and facilities that result from out-of-the-box thinking. As an example, the desert-bound Emirate obviously does not have any alpine skiing opportunities. So, Ski Dubai - an indoor ski slope - was developed. There were no safe road cycling opportunities, so over 200 kilometres of dedicated cycling tracks were built. Dubai also boasts an ! opera house and a Ferris-wheel larger than London Eye, not to mention the world's tallest building, the Burj Khalifa. Dubai also has one of the most impressive and popular skydiving facilities globally and the world's longest urban zip line. The examples of these "only in Dubai" wonders are endless, and they keep coming.

The Persian Gulf is a sandy and shallow basin and does not offer the most exciting diving, so in order to provide divers with reliable training opportunities, a 60 metre pool was proposed as a new addition to the list of Dubai wonders. But, true to the Emirates' inclination for extraordinary endeavours, the creators of Deep Dive Dubai decided to develop the idea a little further and give this project a unique Dubai spin.

METROPOLIS

A 60 metre pool could have quickly become a somewhat dull and sterile environment unless a more creative approach were adopted. Numerous international design teams and professional theme companies explored ideas for something that would be unique and marvellous. The development team was expanded to include world-record-setting explorer and aquatic pioneer, Jarrod Jablonski. The design team wanted something that could engage a sense of fun, intrigue, and fantasy while recognising the important role diving has played in the history of the UAE. Recalling the importance of pearl diving in the development of both the region and international trade, Deep Dive Dubai was designed in the shape of an oyster. The pearl diving profession was once an essential trade for Dubai until Japan introduced industrial













OPPOSITE PAGE: Only a select few have the skills and training to go all the way. Here two rebreather divers exploring the bottom of Deep Dive Dubai at 60 metres. ABOVE L-R: At 30 metres divers can explore a fully furnished apartment; The brick walls are decorated with graffiti; Park benches, lampposts, and parking metres add to the realism of the post-apocalyptic sunken city theme.

pearls some hundred years ago and strangled the pearling industry. Many Emirati families can trace their ancestry to a time when they were involved in the pearl trade.

The design team finally landed on the idea of a sunken city, providing a surreal diving environment and nearly endless opportunities to develop unique and interactive spaces with the ability to change parts of the facility to keep the environment fresh and engaging.

Deep Dive Dubai is themed as a submerged metropolis intact with iconic city furniture such as lampposts, shopping carts, bicycles, billboards, ATMs, trash cans, phone booths, fire escape ladders, among other everyday objects from a modern metropolis. You get the picture. But you will not only be diving amongst urban artefacts. After an unknown post-apocalyptic incident eroded the city's walls, you can explore a fully furnished apartment. The different rooms in the apartment are decorated with iconic artwork on the walls, furniture, and toys. There is also a workshop with cars, motorbikes, arcade games, and much more.

It is anybody's guess what happened here. Did the entire city sink? Did a natural disaster cause it to be flooded? An earthquake, perhaps? Or is it possibly a model of a human city in a parallel universe? An enormous tree with roots that stretch deep down almost from the surface adds to the mystery and implies a nature take-over.

MIXED METAPHORS

The outside of the building - inspired by a

giant oyster shell – and the diving environment resembling a sunken city are linked together by the décor inside the impressive three-story facility surrounding the 60 metre shaft.

The interior design of the dry areas is reminiscent of a spaceship from a 1970s science-fiction movie with flowing organic lines forged in the 3D printed walls, clean white interiors, and open spaces. Imagine a flying saucer shaped like a giant oyster shell landed on top of a block in Manhattan after a natural disaster flooded the neighbourhood. Oyster shell. Spaceship. Metropolis. The metaphors are mixed, but the mystery will definitely spark your imagination. Divers exploring the underwater environment in Deep Dive Dubai will marvel at the enigma, and it is impossible not to speculate what really happened here.



ABOVE L-R: Deep Dive Dubai offers lots of opportunities to interact with the realistic props; The library shaft leads out of the apartment and up onto the streel level at 18 metres;

Adding to the mood and atmosphere, the diving facility's curtains can cover the gigantic window panels and the skylights in the roof, insulating the complex from the sunlight. This will allow the advanced light system to create different settings or even simulate a night dive experience in broad daylight. Multiple hydrophones connected to an advanced sound system allow for playback of music, soundscapes, or verbal diver recall in an emergency. The possibilities for creating underwater sensory experiences with light and sound are endless.

SPECTATOR SPORT

Divers who always wished they could share their diving experience with a non-diving friend or loved one have a once-in-a-lifetime chance to do just that. From the surface down to 12 metres, viewers can watch divers traverse the first two floors of their adventure below the dive deck. Visiting divers friends and family can also enjoy a delicious meal or fine refreshments in the spacious restaurant while they relax and enjoy the view inside the pool through vast glass windows. Deep Dive Dubai will have managed to turn diving into a spectator sport. The pool is also covered by 56 cameras serving a threefold purpose: the video feed can be shared on large monitors that are situated throughout. This feed is also projected to the dive control station where the dive supervisor monitors all areas inside the pool for safety. A video capturing the visitor experience can be edited and shared with the guests after their visit.

RESEARCH

While on the subject of safety, conservative

ratios between guides/instructors and guests/ students and the cameras covering all angles of the huge body of water ensure a safe experience. Deep Dive Dubai also provides ideal diving gases to optimise safety: nitrox for shallow dives and trimix for deeper dives. A multinational team of handpicked dive professionals, including instructor trainers from PADI and GUE as well as record-holding freedivers and technical divers, are on staff. The controlled and predictable environment delivers the optimal setting for people of all experience levels - from first-time scuba and freedivers to those seeking one of the world's most unique diving experiences. Even highend technical divers and freediving athletes will find the experience rewarding. From fun-filled dives to focused training, there is something here for everyone.

Divers can even enter underwater habitats at 21 and six metres while talking to one another and looking out large windows into the pool. They can use the habitats for fun, training, or decompression. These habitats resemble commercial diving bells and can be supplied with different gases from the surface as needed. Display monitors and surface communication devices enhance the unique experience, offering diving support or to provide even greater safety.

Deep Dive Dubai also houses the largest hyperbaric chamber in the MENA region. Most decompression chambers are small and uncomfortable tubes that only allow for one or two patients and a tender to be inside during the recompression therapy. The centrepiece in the hyperbaric facility in Deep Dive Dubai is a modern, fully automated 10-person multistation chamber with comfortable chairs, an entertainment system, and even a full-sized bathroom cabin.

Having easy access to a modern and advanced hyperbaric facility provides another level of safety and opens interesting scientific research possibilities. The unique combination of a hyperbaric chamber and a 60-metre dive facility under the same roof will provide the perfect platform for medical research in diving physiology and related areas of interest. Deep Dive Dubai will liaise with international universities, diving physiologists, and Divers Alert Network while exploring unique research projects in diving medicine.

There are classrooms for teaching dive courses with windows facing the pool, meeting rooms, and a comfortable 50-seat conference area with a large screen for presentations, seminars, and product launch events. Deep Dive Dubai will offer many exciting possibilities for movie production as one of the largest underwater studios in the world.

CLASSIC LITERATURE

We walk down the slope leading into the pool and don our fins on the ramp while clarifying the last details of the dive plan. We are diving open circuit trimix, and we carry 50% nitrox to accelerate our deco. The view when we glide out in the middle and look down is breathtaking. I do not have any fear of heights, but I can't help but feel a slight tinge of vertigo when I look all the way down to the bottom of the shaft. Sixty metres is gloriously deep! We descend all the way down while enjoying





It takes several dives to explore all of the details of the facility.

surreal experience to see all these convincing objects of everyday life in an underwater environment. We arrive at the bottom, and when we look up, we are met with another Deep Dive Dubai signature sight – the circular shaft towering above us with the super bright light in the ceiling of the facility resembling the sun catching our bubbles.

We leave the bottom and enjoy the view of the brick walls in the shaft decorated with strange graffiti - the artists were obviously narked when they created the weird creatures covering the sides. Arriving at 40 metres, we swim into the circular donut-shaped garage, where cars, motorbikes, and arcade games are scattered. There is even a full-sized Star Wars storm trooper and a pool table. We complete the 62-metre circuit and ascend the monumental staircase leading to another donut at 30 metres, where we arrive at the apartment. The occupants apparently had to abandon their living space in a hurry, leaving magazines and a box of popcorn at the coffee table. The TV is still on, and the living room is decorated with posters of iconic movie stars. In the apartment donut, we also pass the music room with the grand piano, the kitchen, the dining room, the bedroom, and the art room. There are so many details to take in, and I realise that it will take many dives to fully explore everything.

The variety of wayfinding lights illuminate many areas while further mood enhancements allow softly lit areas or even areas one can enjoy in total darkness. An entirely new kind of cave diving!

the view of the cityscape surrounding us. It is a ! We ascend from the apartment through a library shaft with walls covered by bookshelves filled with timeless literature. We do our gas switch at 21 metres inside the shaft and begin the decompression portion of the dive while studying the book titles. Shakespeare, James Joyce, Jules Verne – all the classics are there.

> We complete our decompression while exploring the shallower part of the pool and we wave at the passing spectators outside the windows. Never have 45 minutes of deco stops been less boring!

GUINNESS WORLD RECORDS

Deep Dive Dubai is, without a doubt, the most impressive diving facility in the world. After your first visit, you will probably struggle to decide the most remarkable part of the experience. Is it the friendly and professional staff? The luxurious surroundings? Or maybe the cutting-edge technology? Perhaps it is the never-ending row of wonderful surprises and details in the theme.

When you get the chance to improve your diving skills in a controlled and exciting environment with tips and tricks offered by world class diving instructors, you will probably find that even if Deep Dive Dubai is the deepest pool in the world, the record depth officially verified by Guinness World Records - is probably the least interesting feature.

VISIT OUR PLATFORMS FOR MORE INFO www.deepdivedubai.com

Facebook: @DeepDiveDubai Instagram: @DeepDiveDubai

FACT FILE DEEP DIVE DUBAI FILTER SYSTEM

The water in the pool is treated in one of the largest and fastest filter systems in the region, with a capacity to circulate all 14 million litres of water every six hours.

First, it is passed through a perlite filter which consists of a naturally occurring siliceous volcanic rock. Here larger particles such as dust, debris, and organic matter are removed. Perlite is a naturally occurring volcanic glass that is superefficient – it only produces 10% of the amount of backwash compared to a sand filter.

The second step is ozone ionization to control bacteria. NASA developed this process for drinking water production in the Apollo spaceships in the 1960s. The ozone treatment significantly reduces chlorine usage by 80%, and chemical by-products such as bromide are greatly eliminated.

The third step involves two huge UV reactors that disinfect the water terminating all the bacteria. UV is commonly used in hospitals to sterilise operating room instruments.

After that treatment, the temperature is adjusted, and the water is pumped back into the pool. It is unnecessary to replenish with water from the outside except to compensate for a slight loss of volume due to evaporation.



FEATURE MAJID AL FUTTAIM

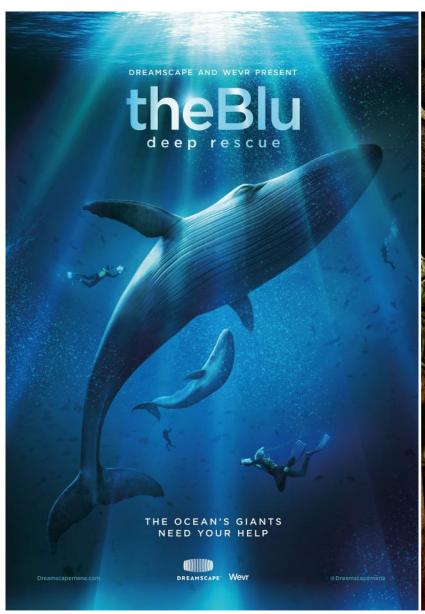
Virtual reality experience offers travellers an epic descent into the ocean to explore a dazzling underwater world as they undergo a rescue mission to locate and save a giant 80-foot whale at sea.

DREAMSGAPE

NOW BOARDING









theBlu: Deep Rescue is a breathtaking, immersive entertainment experience that transports friends and families to the depths of the ocean, placing them in the driver's seat on an interactive journey that comes face-toface with blue whales.

Climb into your diver's suit, power up your AguaScooter and propel through the wonders of the underwater trenches. Encounter diverse and astonishing marine life as you search for the most magnificent, most gigantic living creatures on Earth: blue whales. One of them is in trouble, and it's up to you and your team to work together and stage a daring rescue.

eight-minute experience groups of six visitors simultaneously on an underwater journey to find Sylvia, a favourite blue whale that has unexpectedly stopped her regular migration pattern. During the expedition, which involves piloting seafaring rovers, participants find themselves immersed in a meticulously detailed marine world filled with true-to-scale sea turtles, seals and hammerhead sharks. After navigating their way through luminescent mysterious caverns the explorers emerge into the open ocean to discover... a blue whale in need of rescue.

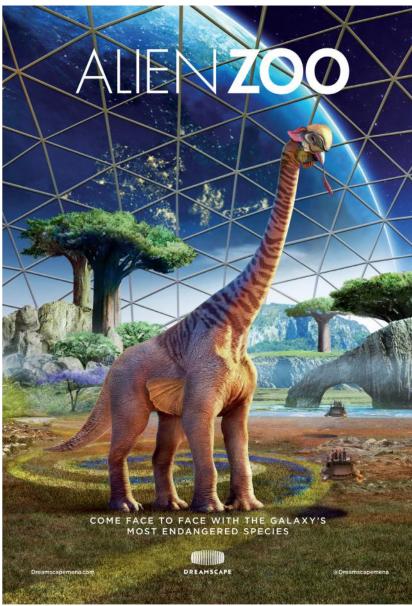
Powered by Dreamscape's immersive VR platform with full body avatars, theBlu: Deep Rescue gives participants a sense of freedom and feeling of group presence unmatched by any VR experience. Once participants don their headsets, they are able to roam freely seeing themselves and their fellow travellers in dive suits with the ability to splash water, interact with schooling fish, and ride underwater scooters with friends. An original score by Hans Zimmer's music company, Bleeding Fingers helps create an ambiance that is at once exhilarating and tranquil, fitting the majesty of the gentle giants.

Directed by lake Rowell (Call of Duty, Final Fantasy, Superman Returns), and executive produced by Neville Spiteri (CEO, Wevr), theBlu: Deep Rescue is an experience designed to unleash the power of VR as a medium to instill a lasting appreciation for the planet's treasured and endangered oceans.

Majid Al Futtaim, the leading shopping mall, communities, retail and leisure pioneer across the Middle East, Africa and Asia, and Dreamscape Immersive, the locationbased VR entertainment company opened Dreamscape's first international location at Mall of the Emirates in December 2019. Guests can choose from three original and critically acclaimed free-roaming and epic immersive adventures including theBlu: Deep Rescue, Alien Zoo and Curse of the Lost Pearl: A Magic Projector Adventure. Dreamscape combines the emotional power of cinematic storytelling with the thrill of theme-park rides, creating the ultimate destination for virtual reality entertainment. Share the wonder of Dreamscape with your family and friends, and together you'll be transported to fantastic worlds beyond imagination.

Dreamscape is exceeding recommended guidelines and Majid Al Futtaim has put in place an all-encompassing sanitisation and physical distancing plan to ensure that guests can have an exceptional experience with added peace of mind.









DREAMSCAPE"

CUSTOMER TESTIMONIALS

"The Dreamscape Dubai virtual reality experience was mind-blowing! I didn't realise the experience was so immersive. I thought it was just a case of putting on some VR goggles and watching the show, but it's so much more than that. They've created a full-on FX studio, making it a fully 4D experience rather than just 3D VR. You interact with your surroundings, and the creatures and characters in the adventure actually react to your presence and look at you! I would highly recommend it to anyone, this is the future of digital entertainment."

Tony Sidgwick

"The graphics were better than expected. I've done a few VR experiences, but this is the first time I did a walkthrough. We loved the storyline, the voice of the narrator was excellent, the characters were cool, and there's a great message at the end to protect our planet."

Carla

"VR has come a very long way from when I was first introduced to it. This is such an immersive experience that will blow you away. I've been back 3 times now and did one twice just to be able to see all the things I missed the first time round. I couldn't recommend it more."

Ally Landes

"I actually took up diving because of the Blu after years of being too scared to swim in deep water. Now, even after getting my AOW here in the UAE, I still itch to go and see my virtual turtles as much as I do the real versions over in Dibba!"

Mikie Davey (VR Tech Lead)

LOCATION

theBlu: Deep Rescue is available exclusively at Dreamscape, which is located on Level 2 (next to the Apple store) at Mall of the Emirates, Dubai. All travellers must be at least 48 inches tall and 10+ years old. For more information, visit: www.dreamscapemena.com

EDA MEMBER DISCOUNTS

EDA Members can avail of an exclusive discount to Dreamscape. Go to the link for more information:

www.emiratesdiving.com/membershipdiscounts/

ARTIFICIAL REEFS PROVIDE FOUNDATIONS TO RESTORE AND REHABILITATE NATURAL REEFS

FEATURE JAMES CAMPBELL - FREESTYLE DIVERS PHOTOGRAPHY BASE FILMS

In just 30 years' time, we will look back upon the current present and wish we had started to make more of an effort to save the oceans. Let's not make the mistake of not planning ahead. If we don't, the coral reefs and the marine life which call them home will be gone, and it will be no one's fault but our own.







Artificial reefs commence with something most things start with - an idea, which becomes a plan, which gets implemented and is then amended for future projects. It's when you get halfway through that you wish you had done it differently. If all goes to plan, within 10 years, the artificial reef will be gone and all that will be left is a thriving coral reef where before there was sand. I'm a marine biologist and my name is James Campbell. I've been making artificial reefs, teaching and working with marine conservation for over a decade. This is the story of the implementation of Freestyle Divers' new artificial reef site near Dibba Rock, Fujairah and I'll keep you updated as the months go on as to its progress, hopefully in a successful trajectory.

Continuing the narrative, I'll start at the beginning. 13.8 billion years ago there was a big bang - the biggest of bangs in fact. Lots has happened since then, but for the sake of keeping on topic I'll fast forward to around 250 million years ago, to the Triassic period and the evolution of Scleractinian corals. These are the ecosystem architects, known as the hard or stony corals. With the rise of these Scleractinian corals, we saw the true rise of coral reef ecosystems in tropical shallow coastal waters of the world's oceans. Emerging from the expanses of the ocean floor like an ancient civilization discovering agriculture, marine life now had its primal villages, which in turn evolved into the cities of the modern world.

As I stated in my previous article published in the June issue, 'Green Fingered Divers', 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 Scleractinian 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 provides 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. An ecosystem relies on its carrying capacity which is the maximum population size that can be sustained by that specific environment. This considers food, space, competition, predation, reproduction (biotic and abiotic factors) forming a population dynamic, an equilibrium of a community of organisms interacting with its environment.

One hundred years ago, Dubai had a population of 15,000, today a population of 3.5 million. Same place, same area, same climate. So what changed? What turned a sandy port on the fringe of the Arabian Gulf into the metropolis of today? Carrying capacity. Imagine Dubai without food, would the population be what it is today? Without apartment blocks? Without jobs? The simple answer is no. If I were to build an apartment building in the middle of the desert, what would happen? I'd be bankrupt. Go back 30 years and buy up land on the outskirts of Jumeirah, people would have thought you'd lost your marbles, but fast forward to the present day, and you would chuckle at them from your super yacht. Just like Dubai, you must start somewhere. The oceans' natural reefs are the cities, and by creating artificial reefs we lay the foundations for expansion, providing a future for our oceans. "Our" oceans, a very arrogant turn of phrase at first glance, it's the oceans of the world! If we refer to the oceans as "our" oceans, then hopefully we will start to take responsibility for them rather than continue our destructive practices which threaten these spectacular ecosystems.

The shallow coastal waters we have here are perfect conditions for coral to grow and form a beautiful coral reef, however the substrate is in the sand. Planula coral larvae can't settle and grow on sand. Our coral reefs like Dibba Rock have reached their carrying capacity, to expand beyond this and encourage the reefs to grow, they need our help. Like the deserts of the UAE, there is space and habitable conditions, but there is no food, accommodation or jobs



- this means no carrying capacity - but we all know what can happen to the deserts of the UAE when development begins. The construction of coral nurseries and artificial coral reefs provides hard substrates on to which coral can be grown as permanent fixtures. We are providing the foundations, allowing coral to grow in areas which would otherwise just be sand. Coral provides the surface area and rugosity, the apartment buildings in this analogy, it also provides the primary production which is the food and jobs. By providing a stable space for coral to grow we allow coral to create a habitat, carry capacity and the beginnings of an underwater metropolis. From humble beginnings, stirrings beneath the waves, we can help create a thriving ecosystem attracting a biodiverse spectrum of animals, like whispers from a corn field of dreams, "If you build it, they will come". So how do we go about building it?

An artificial reef site was something I always planned on doing when taking the job here in the UAE. The reasons for this are multi-faceted. not only are we creating a new marine habitat, but it is a fantastic project enabling research, development, hands-on practical in-water activities and a brilliant tool to educate and spread awareness on marine conservation. Case in point, here I am writing an article in the UAE's national diving magazine doing just that, but also advertising the work we are doing here to let people know that they can get involved. Artificial reefs also allow us to bring

out our creative sides. We recently ran a school competition with Dubai 92 where hundreds of school children had the opportunity to design an artificial reef. The design aspect was great, it gave children a platform to learn more about marine conservation, be it through me and the online class I taught, or through their teachers in class using it as a curricular subject. My point is, it's not just me bending bits of metal for a laugh and lobbing them into the ocean hoping for the best, it's the foundation of a community based local conservation initiative. Local initiatives contribute towards a global effort to help save our oceans; they are just a drop in the ocean, but an ocean is nothing but a multitude of drops.

Our initial site pictured in the previous EDA magazine's 'Green Fingered Divers' article unfortunately had someone drop an anchor onto it. Being a marine protected area, it is illegal to drop anchors here. There will be more on marine protected areas and paper parks in future articles. I think you can all join me in raising a certain green finger in the general direction of whoever dropped said anchor. We now have a new and much larger site, initially 1,000 square metres with scope to expand well away from the traffic and anchors of Dibba Rock. This will be an ongoing project. The more funding and people we can get involved, will decide on how expansive we can

Through the trial and error in design and

construction of artificial reefs, I know what works and what doesn't. There is a right way to create an artificial reef site, and there is a wrong way. Cost, weight, stability, materials, logistics and the artificial reef site itself all has to be taken into account before anything else. All sorts of materials have been dumped into the ocean on the premise that it will form an artificial reef, which is wrong. Tyres for example have commonly been sunk which are toxic as they break down. Corals can't grow on rubber - you haven't formed an artificial reef, you have created a dumping ground. Concrete can be used so long as it's a particular type of concrete, but concrete is very heavy so it is a logistical nightmare. Metal rebar however is relatively lightweight, strong, cheap and can be used to create complex structures. Iron in the ocean? Surely it will rust away. Yes, eventually it will, that is the point. Initially the metal rebar becomes encrusted by barnacles which protects the metal preserving it for some time, normally ten or more years, by which time the reef will, hopefully, be established and self-sufficient.

Once the materials are decided upon, that decides the price. The number of materials is driven by the design which is limited by the site and logistics etc. From this we get guidelines on the design which we can implement into the construction of anything you can imagine. Going out and building 50 domes, all carbon copies of each other, would be fast, guick and efficient, but it doesn't add









aesthetics or diversity which are nice things to have - not 100% necessary, but nice. If a large corporate sponsor wanted to fund a far more expansive reef, then please do get in touch. Large scale constructions such as this would need to be outsourced and then the logistics of the sinking would need means beyond our own. This is not to say small scale reefs don't do anything, these are the first houses in a village which can in turn evolve into a city.

We run a 'Sponsor a Reef Programme' for individuals and corporates where we can add a company logo or design into a physical structure which we will place in the ocean. Most of the reefs we have sunk on the 7th of August arose through this route, the corporate social responsibility route which allows corporates to contribute to social and environmental issues. The funding we receive goes towards construction, placement, coral transplantation and ongoing maintenance of the artificial reef site. An artificial reef site without initial maintenance will most likely fail, in the now nutrient rich waters through pollution and sedimentation, the reefs will just get covered in algae preventing the reef architects of coral from doing what they do best.

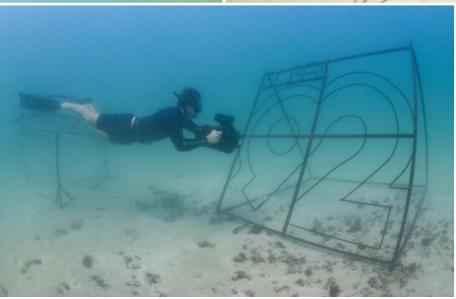
Freestyle Divers has joined up with Azraq, the UAE's non-profit marine conservation agency to spread the word to the corporate divisions here in the UAE. They co-funded the shark sculpture with us allowing me to build it. Dubai 92 and the competition allowed us to fund the Dubai 92 structure, the winning stingray sculpture and the turtle. There are 4 more structures under construction and more in the pipeline. Individual reefs are fantastic and personalised providing ownership and a sense of responsibility in the field of marine conservation. The more people we can get involved, the larger this artificial reef site can become. If you or your company wish to sponsor a reef, please contact us.

I am by no means a sculptor or a welder. My designs and production come from an organic source (not arc eye or skin burns), of anatomical diagrams from my studies. The shaping and proportions of marine life are natural and I've found that so long as I follow the correct proportions and flows or lines of the animal, then the rest comes naturally. The finished article will look correct with a sprinkling of artistic license. Forming a skeleton for example, based off the real skeleton out of stronger rebar, will provide a framework for which I can add appendages and the like to make the structure sound. The structures built for the recent sinking are, if I say so myself, very good. It however doesn't always go to plan.

I had an intern when I lived in Thailand whose name was "Swan". I was making artificial reefs and decided to make a swan structure with upturned ceramic tiles for feathers on the wings knowing coral can settle on the ceramic side of tiles. It was a wonderful thought, and a very aesthetically pleasing structure. The problem came when moving it. Tiles aren't light and there were lots of them. I hadn't taken this into account and was left with the dilemma of getting the sculpture into the ocean with little else but manpower. The present day, I am creating a 10 m life-size whale shark, now this added a new quandary. How do you make something so big and transport it? The answer was of course making it in manageable pieces which









could fit on the back of a lorry to enable it to be moved to the dive centre. Now it's here, we have the future dilemma of sinking it. It can't fit on our boats, and I'm sure it will turn into an exercise involving lift bags and more manpower, but what is life without challenges?

The main thing I have learnt is you must plan for the future. If I don't do a certain something at the beginning of the construction, then further down the line I'll wish I had. In just 30 years' time, we will look back upon the current present and wish we had started to make more of an effort to save the oceans. Let's not make the mistake of not planning ahead. If we don't, the coral reefs and the marine life which call them home will be gone, and it will be no one's fault but our own.

Artificial reefs and coral nurseries do work and have proven to be successful throughout the tropical seas. They increase the breeding populations of healthy coral, expand the reef systems, increasing the carrying capacity and reducing pressure from predation, both man and fish. They support the replenishment of marine life and subsequent fish stocks by increasing the

nursery areas for juvenile fish, increasing it either to a healthy level seen in the past or providing a supplement to natural areas. Artificial reefs and nurseries are perfect examples of restoration and rehabilitation conservation methodology. Rehabilitation enhances and supports the native natural habitat, this is what the artificial reefs do. Restoration is the practice of restoring native natural ecosystems, re-planting the corals from the nursery tables onto degraded areas. The third component of environmental repair or conservation is mitigation whereby we reduce, and hopefully stop detrimental impacts upon the environments to reduce damage in the future.

The initial placement of 6 nursery tables and 7 artificial reefs is complete! I, along with my colleague Jessica Helliwell and our dedicated ECO Team (shout out to Jos, Nat, Matt and Miko) will start to collect fragments which have naturally broken off the reefs around Dibba Rock and plant them on the nursery tables. This allows them to grow over the forthcoming months until they are substantial enough to be planted back on a degraded area of Dibba Rock, or onto our new artificial reefs.

WE NEED YOUR HELP

Limited time and manpower restrict the progress we can make, of course many hands make light work which is again why we need your help. We plant trees to save the rainforests, lets plant corals to save the seas. Come and get trained up to work on the nursery tables and with coral propagation here at Freestyle Divers and become part of a team working to conserve the future of our oceans. Even better, sponsor a reef as well, contribute towards an initiative with positive environmental impacts.

If you wish to learn more about marine biology and conservation, we also have a full curriculum covering a range of topics which I would be more than happy to teach you all about.

For enquiries and to get involved, please contact:

Email: Info@freestyledivers.me WhatsApp: +971508918207



THE EYES ARE THE WINDOW TO THE SOUL

FEATURE ALEXANDRIA BRERETON PHOTOGRAPHY DAVID SERRADELL

It's time we all adopt a notion of universal respect and appreciation for all the numerous ways that other forms of life on earth support us in our day to day. We should start to view wildlife as integral cogs in the system, rather than dollar signs or inconveniences.





COVER PAGE: A curious blue shark swims close to the surface in the waters of the middle eastern Pacific Ocean. ABOVE: Discarded make and silky shark heads lay at the bottom of the ocean somewhere in Baja.

When you look into the eyes of another animal, you see a being just trying to do its best to succeed in its little corner of the world. When you really boil it down, we all want the same things, to live and thrive; to grow and connect, and to leave our personal mark that lasts into the future. Take it another step further and you realise that we need each other to accomplish anything at all.

We are nothing on our own. Without the tiny floating plants we call phytoplankton there would be no breathing for you or I. Without scavengers and decomposers, the world would be covered in rotting waste. Without sharks, the oceans would be sick. And without the ocean, we would cease to exist entirely.

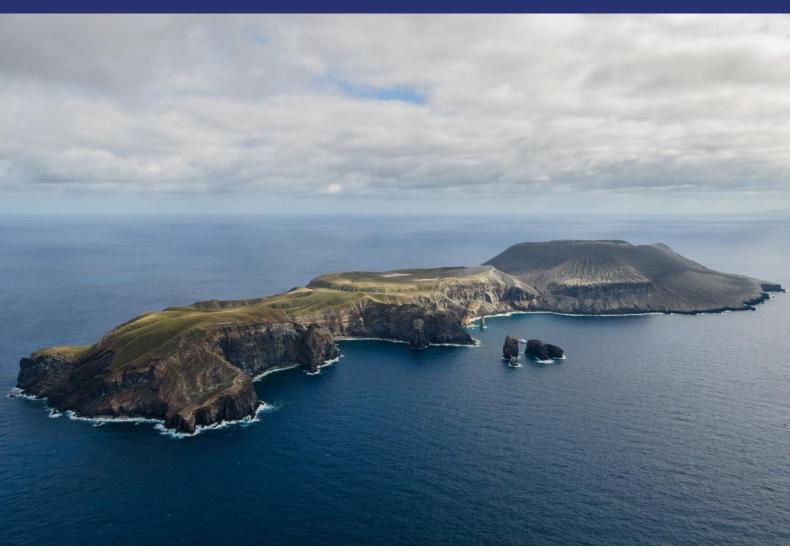
Life on earth is a library to be learned from. In a thriving ecosystem, each species has a role and a place. There is a delicate balance between producers and consumers, and simple changes can have complex effects. Like a game of lenga, when you remove a link, the whole system is a little less balanced; the more the ecosystem is altered, the more likely it is to crumble and fall, taking everything with it. We are seeing examples of this imbalance in the ocean, removing top predators at a faster rate than they can naturally be replaced. Sharks are incredibly important in maintaining the balance of marine ecosystems, keeping populations of their prey in check, picking off the weak and the sick, reinforcing the health and wellbeing of the ones that do make it. The more we fish these top predators to the brink of extinction, the closer we bring ourselves to our own demise; given that the ocean regulates global climate and weather patterns, temperatures, access to reliable food and medicine, and much more. We need a healthy ocean to sustain our own wellbeing. Without sharks and other essential top predators, this imbalance grows and the foundation of a healthy ocean which we all rely on becomes less stable.

The eyes are the window to the soul. Eyes remind me that there is more than just my immediate world... There are plants out there competing with other species for sunlight, forming vital relationships with fungi to thrive. There is a humpback calf following its mother in the big blue, learning vital skills on how to feed and survive. There are trillions of larval fish trying to avoid being preyed on. And there are billions of other humans trying to make it through the day.

Our closest relatives, the bonobos are being driven to the brink of extinction, losing their habitat at the hands of the greedy man. 60% of terrestrial life has been lost within the past

50 years and 90% of large fish including sharks have been killed off within the last century. More than half of the world's coral reefs are already gone, putting hundreds of species including humans in coastal habitats at risk. Sea levels are rising everyday. Food crops are becoming less and less reliable... But in some places life still thrives. In protected waters and remote areas we see ecosystems teeming with life. It's been proven by example that protecting an area from overexploitation pays off by increasing populations of fish and other life forms, as well as all of the benefits that result from a healthy. balanced ecosystem. Sustainable practices and healthy oceans are good for recreation, economy, providing basic sustenance for coastal communities, and allowing the natural world to sustain itself as it should.

Mother earth has so generously provided life and vital resources to every species for millennia. When the system is balanced, everyone does better. The world is one big ecosystem made of many smaller ecosystems, complex and intricate, relying on many players in the process to function properly. The ancient Greek roots for the word ecosystem means "family" and "house", meaning that when an ecosystem is functioning properly all members of the family are taken care of. The natural world at its finest is a full circle



ABOVE: San Benedicto Island, one of the most beautiful islands of the Revillagigedo Archipelago, was declared with the rest of the archipelago a biosphere reserve in 1994 and a world heritage site by UNESCO in 2016.

economy, completely sustaining itself and the life that it supports, nourishing everything in the process.

We are nothing on our own. It's a good thing, we are never on our own. We are surrounded by life at all times, from the tiniest of microscopic organisms to entire coral reefs. Your body also has thousands of species living within the human microbiome, contributing to your functional health and well-being.

It's time we all adopt a notion of universal respect and appreciation for all the numerous ways that other forms of life on earth support us in our day to day. We should start to view wildlife as integral cogs in the system, rather than dollar signs or inconveniences. Humans are young residents on this earth, only present over the past 200,000 years; while other species who have been here for 400 million shouldn't be so easily disregarded. We are merely residents on this blue planet, not its owners and not nearly its first or most worthy inhabitants. A healthy, thriving, and balanced natural world is in everyone's best interest, regardless of race, class, gender, location, or even species.

Evolution has perfectly sculpted every life form over billions of years to be as it is today.

Even through the harshest of mass extinctions, some forms of life will always persist, further shaping the world we inhabit today into what it will be tomorrow.

The eyes are the window to the soul. So look into the eyes of another being and for just a moment, contemplate the countless invisible links between yourself and them. Realise that they are just another life, trying to do as well as they can, just like the rest of us. And remember that for humans to be at our best, the natural world must also thrive. Recognise your place. Remember who you rely on. And decide who you want to be in this big, beautiful blue world.



ABOVE: A juvenile male whale shark feeding in the shallow waters of La Paz, Baja California Sur, a marine protected area where these gentle giants visit every year from November to April.

MY BUDDY THE HAND-FIN DIVER





FEATURES





Diving with my buddy today means that I must step out of my comfort zone. And no, I am not talking about my dive capabilities. Although I cannot imagine how the dive will look, I am confident that the underwater activities will be well within my diving skills. The challenge stands on an emotional level. Outside diving, I rarely come into contact with people with physical disabilities. If the situation does arise, I do not know how to behave. Do I need to help them overcome their difficulties? Does that not emphasise on being 'different'? How do I best help? Or should I pretend to be with someone without a disability?

As a diver, I am not accustomed to enjoying my sport with a buddy with disabilities. For a long time, I was convinced that you had to be in an almost perfect physical and mental condition to practice our underwater sport safely. When I first read about diving with a disability, I was struck with amazement followed by incredible admiration. During my time as a youth dive school manager, we often dived at the same place as the Antwerp Wet Wheels, a dive school for divers with disabilities. We had a verbal agreement on the coordination of the use of the stairs as easy access to the water. As a result, youth and Wet Wheel-divers could enjoy their sport with mutual respect and understanding. An extra, not unimportant lesson for my youthful underwater enthusiasts.

I myself however, had not yet logged a dive with a buddy with a disability. Today that will change. Frankly, I do not feel comfortable.

The dive site is not unknown to me, but I have to familiarise myself around the grounds to find the Dive+ dive school members from Ostend. Maybe my discomfort with the impending confrontation has something to do with this? After a short telephone conversation, I walk over to the place of rendezvous. I immediately see that I am in the correct spot: a wheelchair not far from the waterfront undoubtedly indicates that this is the place to be. Jan Decrock, the general dive manager, comes towards me and introduces the entire team. After the introduction, we go to find my dive buddy of the day, Frank Devriese.

Frank has paraplegia due to a motorbike accident. When I shake his hand, he is sat on the floor next to his wheelchair. He is already preparing for our dive, while I still have to unload my equipment. He reassures me not to rush as he needs hours to prepare for a 45 minute dive. Jan and Frank make it immediately clear that I do not need to help him. He knows what to do by himself. With over 21 years of experience in this sport, he has developed a routine for getting ready to dive without help. While he methodically works his way through his mental checklist, the other divers and supporters have a good time. I do notice, however, that they keep an eye on Frank and involve him in the conversations.

Before the dive, I go over to talk to my buddy. I do not find any fins amongst his dive equipment. Of course not, he cannot do anything with those. Frank notices that I am looking for something and hands me his dive gloves. I immediately see that these are no ordinary gloves. There are membranes between the fingers. These gloves are his fins. This is how he manoeuvres underwater. I have always learnt to not use my hands to swim while diving. This rule does not apply to him. Subconsciously, I wonder how he will operate his equipment when he needs his hands for propulsion. How will he manipulate a lamp, compass, BCD... and dive at the same time? Am I supposed to be the dive leader?

We also talk about his paraplegia. After the accident, he went through a dark period. Diving gave him a hobby, which allowed him to be active again and to get in touch with others. He was no longer confined to his wheelchair which gradually led to his mental recovery.

It is time to unload my equipment and prepare for our dive. It is a hot day and my body temperature is rising from putting my wetsuit on. Frank must feel a lot warmer. He has been in his wetsuit since I arrived. Fully equipped, I walk over to ask lan if there is anything important I must know about diving with Frank, or if anything is expected of me. He answers that there is nothing special. It will be a normal dive. I am not convinced.

I tell my buddy to take it easy. I have time. He asks me who of us will be the dive leader. I'm not sure I hid my surprise from hearing his question. From the perspective of this article he is the preferred dive leader, but it is no





problem if he wants me to take the lead. Frank : is happy to take the lead.

With the luxury of full mobility, I tell my buddy that I will wait for him in the cool water. I feel a little guilty for taking advantage of my agility and try to ease my mind by telling myself that a frog perspective will give me a better view of what is happening.

When Frank says that he is ready, the other members of the dive school take action. Some of them are kitted to dive too. Others have come here to help and to enjoy the sun. Three of them pick Frank up, while others carry his material over. They carefully put Frank in the water and help him to strap everything on. Once fully equipped, Frank gives his dive briefing while sitting on a rock. To my surprise, this is a quasi-standard dive briefing. Nothing special for me as a buddy and last diver of our small group. Just to make sure, I ask if there is anything special I need to do. Do I indicate the direction? Take care of the light during the dive? No, none of that is necessary.

The other divers put Frank on his back in the water. He just floats while he checks his equipment. When everything is working properly, he gives me the OK sign. I reply with my OK. He turns and starts the dive, and I follow.

Underwater, I see another Frank. His paraplegia does not bother him at all anymore. I admire his skill to swim with his hands; to manipulate a compass; to regulate his buoyancy; to use his dive light; to communicate with me, his buddy, while in the meantime enjoying the dive and the underwater environment. All of this, as if it is the most normal thing in the world. As time goes by, I feel more comfortable. I become convinced that this is indeed a 'normal' dive.

After forty minutes, Frank indicates that the dive is over. We ascend together. On the surface, he turns onto his back. His club members help him to remove his equipment and carry him to the side. Frank starts his long return to the wheelchair. While he is doing that, we debrief from this surprising dive and log our experience.

Satisfied, I say goodbye to this jolly gang. To dive with only the use of your hands? Frank is certainly an expert at it. Despite his efforts and patience, he cannot dive without the help of a well-oiled team on the waterfront. This dive with 'my buddy' made a deep impression on me. Thank you, Frank.

I leave the dive site with great admiration for any diver with a disability and the many helping hands that make it possible. Moments like these give a sweet taste to the efforts of going on the road to meet people for this series. I'm so glad I could paint a picture of this little-known dive speciality and allow people like Frank to share their experience and love for diving.

If you know of a diver who should also appear in this series, please send an email over to patrick.vanhoeserlande@nelos.be.



ABOUT MY BUDDY

Diver: Frank Devriese

Year Started to Dive: January 1997

Number of Dives: 879

Dive Club: Dive+, Ostend, Belgium.

Certification: A rating (for the layman among us, this certification means he has the skills of an efficient dive buddy).

Other Certifications: Advanced Open Water, Nitrox, Deep Dive Speciality. Special Equipment: Dive gloves with

fins between the fingers.

Favourite Local Dive Site: Put van Ekeren.

Favourite Dive Abroad: Difficult choice between Egypt, Asia, and the Caribbean. Preferred Type of Dive: Cave and wreck diving because of the diversity of fauna.

Most Spectacular Dive: A night dive on the Thistlegorm wreck, Egypt.



SINAPSITHEFUTURE OF EXPLORATION

FEATURE AHMED NABIL PHOTOGRAPHY SUEX

No matter what your objective underwater is: cave diving, search and rescue, underwater archaeology, science/research, environmental surveys, or just free navigation, digital navigation is the ultimate exploration experience.



EQUIPMENT REVIEW



DPV's are fast and reliable vehicles capable of covering long distances. Have you ever wanted to navigate a long and complex route underwater without losing orientation? The next question is then, how to return back to base? Can we just use GPS? Unfortunately, GPS signals do not work underwater.

Navigating underwater means moving in a 3-dimensional environment and SUEX developed a complex and innovative system just for this! Introducing you to: SINAPSI.

We had access to one of these futuristic devices and we've put it to the test.

We had it installed to a VRX scooter, and connected it to the ERON D-I dashboard. For divers unfamiliar with SUEX products, VRX is the lithium battery scooter (your smart motor/propeller underwater) while ERON D-I is your dashboard. Together, all 3 parts: VRX, Eron D-I and SINAPSI - compose the complete exploration vehicle.

all-purpose bracket to the vehicle where we could install our underwater camera and lights. There are extra mounting spots on the bracket for more torches, GoPros or other devices.

At first glance, the system looked bulky and it looked fragile. The total weight of the system came to 22 kg which is a much heavier load to which a regular diver can lift out of water. We had to disassemble the system (camera, the all purpose bracket, and the dash board from the scooter) in order to easily carry it over to the boat. We reassembled it all just before the dive. In all, it took 7 minutes to get back on track.

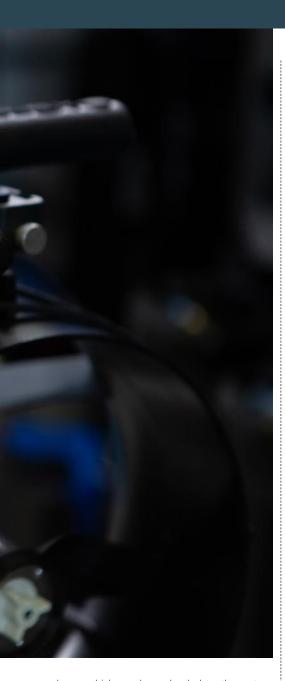
After the pre-dive safety checks, we jumped into the water. The system was handed to me from the boat while I waited at the surface. It felt weightless. Credit goes to properly weighting and adjusting the neutral buoyancy of the system before the trip.

We started with the system pre-dive check list: switching on the SINAPSI, calibrating the On top of that, we had the chance to install an | compass and internal sensors, and then finally

recording our starting point at the surface to GNSS. The procedure took exactly 4 minutes which we had prepared ourselves for with a swimming pool orientation and training session to get to know the system beforehand. The SINAPSI has a pre-dive wet note card which makes it easy to follow while calibrating the system.

We started our descent following a free navigation route. After roving for a couple of minutes, we found an interesting spot where rocks and some neighbourhood fish were gathering. It was superb to record that site into the system memory. Now with the help of the system, we can return back to that exact site location whenever we want, and continue to record new routes.

It was interesting to free navigate as the system recorded our route and then programmed to return us straight back to base afterwards. That course remains recorded in the system which you can then download to your computer and export it to Google Earth. The system becomes an archive for covered underwater



loops which can be re-loaded to the system when you need them.

It was truly amazing to return back to the boat with an accuracy of 0.5 metres! This is not a small breakthrough; it is a revolution for underwater navigation.

No matter what your objective underwater is: cave diving, search and rescue, underwater archaeology, science/research, environmental surveys, or just free navigation, digital navigation is the ultimate exploration experience.



SINAPSI NOSE

This sophisticated, yet intuitive tool makes it possible to expand exploration capabilities thanks to the following unique features:

ROUTE PLANNING VIA SMARTPHONE AND PC APPLICATION

- Navigation planning for routes connecting up to 3 waypoints + home position.
- PC software and phone app with cartography.
- Data analysis of numerical dive logs: graph and cartography.
- Dive log post-processing and export in the most used formats (CSV and KML).

DEAD RECKONING

Dead Reckoning is navigation by estimated position, unlike navigation by compass angle (heading), provides the estimated position in real time and consequently the correct angle for reaching the next waypoint.

GNSS POSITIONING - HOME POSITION

Acquisition and use of the GNSS position for:

- Establishing the starting point of the planned route.
- Memorizing the departure and return point (HOME).
- Recalculating the route for subsequent waypoints when the GNSS signal is re-acquired during navigation.

NAV FILTER

Option to set the "reactivity" of the compass on three levels.

PLANNING OF "ON THE FLY" ROUTES

Option to set infinite routes before and during navigation.

HEADING QUALITY INDEX

This Index provides the accuracy of the heading angle in real time and adjusts/degrades in conjunction with environmental changes. Indicates confidence in the accuracy of the compass and the need for calibration.

COMPASS CALIBRATION

The two-step calibration system is able to compensate for hardiron and soft-iron distortions to obtain optimal heading accuracy in every situation.

QUALITY OF THE COMPASS CALIBRATION

At the end of each Calibration step, the quality of the calibration is displayed and stored.

CALIBRATION OF THE ODOMETER

Automatic in-water odometer calibration system.

PRECISE COURSE ANGLE IN ALL POSITIONS

Heading is not negatively affected by pitch and roll movements.

THE SUEX DPV MOTOR DOES NOT AFFECT THE HEADING

Heading is not affected by the DPV motor magnetism.

DISTANCE AND SPEED MEASUREMENT

Speed measurement system by means of a robust, efficient user-adjustable odometer incorporated into the DPV which is not influenced by the DPV propeller suction and independent of the speed of the DPV.

RECEIVING DATA

The system, in addition to navigation data, provides diving data (time / depth / temperature) and DPV data such as State of charge of the battery and residual runtime in minutes.

WIRELESS SYSTEM

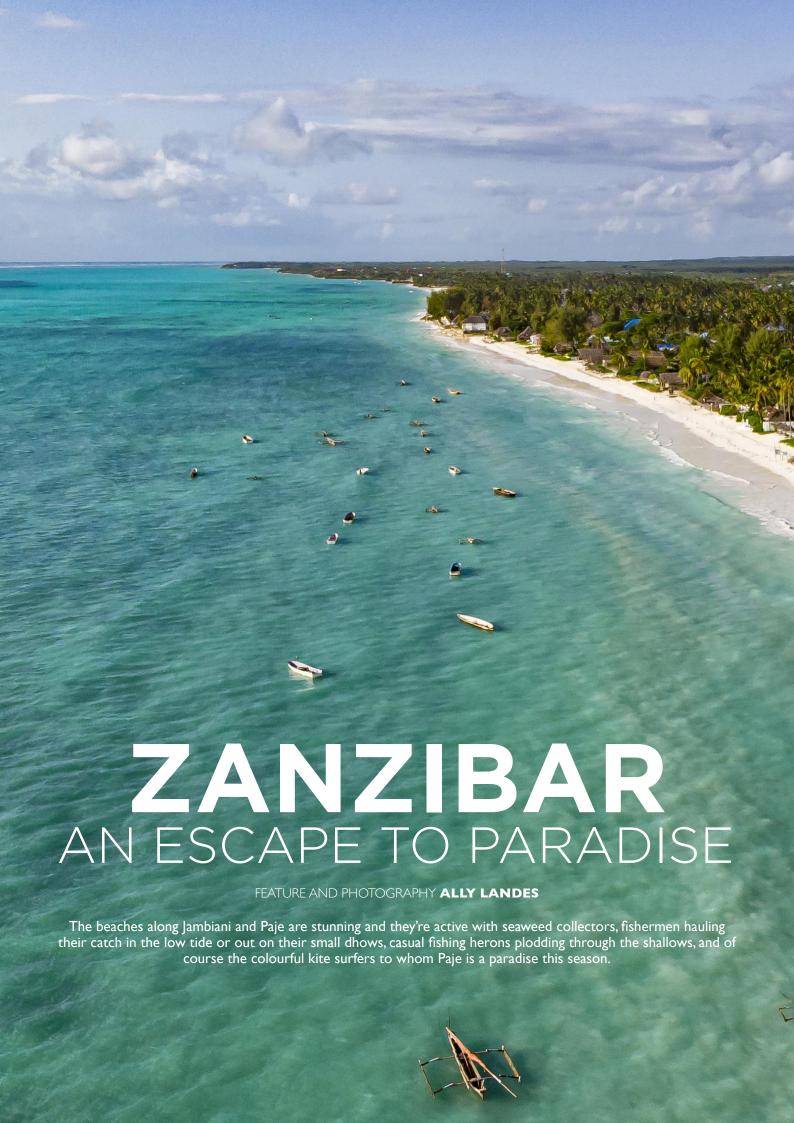
All connections of the navigation system are wireless. This guarantees reliability due to the absence of cables and connectors.

IOS, ANDROID AND PC APP

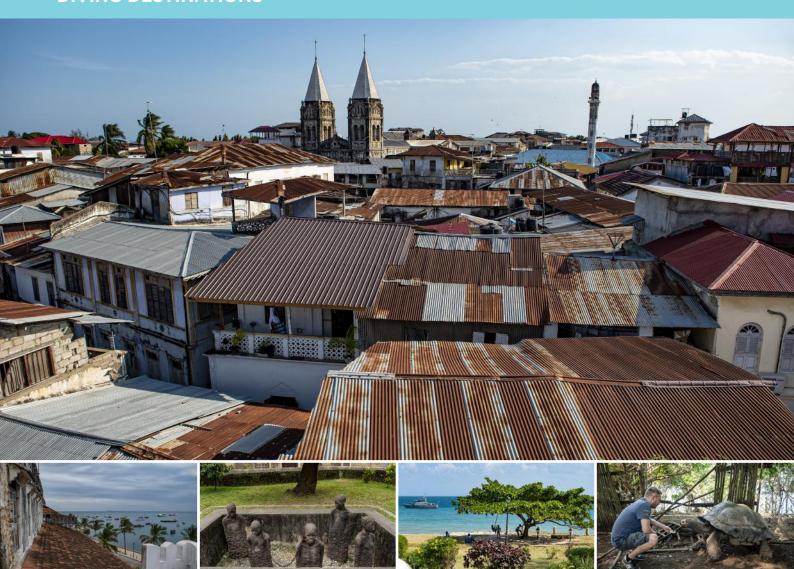
App for Route planning, Log download and storage.

BATTERY

User replaceable and easily available, standard batteries that provide about 40 hours of navigation use (refer to the manual for more details).







ABOVE L-R: A rooftop view of Stone Town with the St Joseph's Cathedral in sight; looking out from the People's Palace Museum; a monument in the Old Slave Market; the oldest tortoise at Changuu Island standing tall for snacks.

When the whole world has been in lockdown for close to 2 years and you're finally vaccinated and ready to break out, deciding on where to go can be challenging. The plan is always to go home to reunite with family, but unfortunately in our case, quarantine restrictions in Europe didn't make it feasible with only 10 days to get away. We didn't feel it was the right time to explore a bucket list destination as we didn't know if there would be changes/restrictions, and so we looked at the places close by least affected by COVID for a somewhat safe escape option as we eased our way back into travel. Zanzibar won us over by offering both land and water adventures.

Zanzibar Island is the main island in the Tanzanian archipelago of Zanzibar and with some research we decided to base ourselves on the southeast coast in Jambiani (known for its seaweed farming) after exploring the west coast city of Stone Town with 2.5 days on our arrival and exit. July is part of the cooler dry season, and it is said to be one of the best times to dive. But as clarified to us by the dive centres, it is actually the windy season, which means rougher seas, but with glorious outdoor temperatures between 26-28°C. We had several bouts of heavy rain, mostly in the early morning hours which did not affect us, but these are not at all common this time of year, which is perhaps just further evidence of climate change.

STONE TOWN

I booked a beautiful spacious Airbnb for our 2 nights in Stone Town, and it couldn't have been in a more central location if I'd tried. The St Joseph's Cathedral (1 of the only 2 churches in Stone Town) is directly opposite and can be seen from the balcony (take note: the bells sound off in the very early morning hours in very random intervals). It remained closed the 2 days we were there, so we never got to take a look inside.

We had everything in walking distance, and we did a lot of exploring. We highly recommend packing a comfortable pair of trainers, as flipflops are only good for short distances and then you spend most of your time barefoot on beaches anyway. Our first stop was to find breakfast and we were directed to the renowned Lukmaan Restaurant for typical local cuisine which is compulsory in any new country we visit. You'll find a recommendation of the best places we experienced at the end in the info section.

THINGS TO DO

You must go and visit the People's Palace Museum, which was unfortunately under renovation during our visit, so we didn't get to see any of the rooms furnished, but we got to admire the architecture which was worth seeing and understand the history in more depth. Our guide was fantastic. The Sultan's Palace is one of the main historical buildings of Stone Town which was built in the 19th Century after the original building was destroyed in the Anglo Zanzibar War in 1896.

The Anglican Cathedral and Old Slave Market is also worth a visit. The church is a landmark historical building which took 7 years to build (from 1873-1879) and it is one of the most prominent examples of early Christian architecture in East Africa. It was built to mark the end of slavery – being located in the area where the largest slave market in Zanzibar used to be. It's an incredibly sombre tour, but a compelling one at that. Again, our guide here was also full of knowledge. Their history is an important one and they retell it with such passion.



ABOVE L-R: Fishermen out on the water in their traditional dhows make for some great photos with their sails up; our view from our terrace at Villa Juliana of the pool and ocean; seaweed pickers going about with their daily forage; one of the many pretty stretches of Jambiani beach.

Our guide from the People's Palace Museum booked us a taxi boat (it's quite competitive trying to sort it out oneself) for the next morning to travel to Changuu Island aka Prison Island for its use as a prison hold for rebellious slaves in the 1860s. Today it stands as a tourist resort (alas, also under renovation on our visit - you'll notice this is a trend for us!) but we ventured over to see the endangered Aldabra Giant Tortoises which originally came from the Seychelles when they were gifted from the British Governor. They love a good neck rub and are most definitely the highlight. The oldest tortoise was said to be 290 years old - despite this, he was not the biggest! The island lies 5.6km northwest of Stone Town and is a picture sque outing worth taking the time for.

JAMBIANI

Our Airbnb host allowed us a late checkout and organised a driver to take us over to Jambiani in time for our 2pm check-in to Villa Juliana. It's a 1-1.5 hour drive from Stone Town and was \$30 for the trip. Coming back to Stone Town however, from Jambiani it was a flat rate of \$50 without room to negotiate for a supposedly safer car and driver. We can attest

that there was no difference in the slightest to either car or quality of drive so don't leave it till the last minute and you can shop around. You can of course rent a car for about \$50/ day with an international license, but we were being picked up and dropped off from our 3 days of planned dives, and the rest of the time we had left, we mapped out on foot.

We hit the jackpot with this beautiful ecofriendly resort. Our room overlooked the pool, garden and ocean, and breakfasts were served on our terrace each morning come rain or shine. The lovely thing about this resort is it remains private to its guests only. We're pretty sure this is a bonus, especially in the peak season as your dining area is reserved outside your private rooms. Other resorts are open to the public to dine in their restaurants and bars. Some do require you make reservations and select your meal of choice in advance.

The beaches along Jambiani and Paje are stunning and they're active with seaweed collectors, fishermen hauling their catch in the low tide or out on their small dhows, casual fishing herons plodding through the shallows, and of course the colourful kite surfers to whom Paje is a paradise this season. The beaches are lined with all sorts of picturesque and rustic resorts, bars and restaurants. One thing we were surprised about for July was the lack of tourists, which in hindsight made this the perfect destination at this time. It is a little sad to see empty establishments without the buzz, but we had the space and choice to be anywhere we wanted to go.

One thing you need to be aware of are the ins and outs of the tides. In Jambiani, there is no room between high tide and your resort, which means you will have no access to walk over to other places for dinner. These timings change slightly every day, so we've linked a timetable for you in the info section. You have a bit more margin on the Paje beaches, but if you're walking back to Jambiani, you'll need to know the timings. You can of course walk along the roadside if you are on foot, it's just not as nice an option. The walk from Jambiani to Paje is 6.4km and takes about 1 hr 20 mins if you're walking at a constant pace, but if you're casually exploring your surroundings, you can take up to 3 hours to get there.

DIVING DESTINATIONS













ABOVE L-R: Our dive at Powoni dotted with orange and purple anthias which are the little jewels that bring reefs to life in their numbers; Nosestripe Anemonefish (Amphiprion akallopisos); Leaf Scorpionfish (Taenianotus triacanthus); Blackspotted Pufferfish (Arothron nigropunctatus)

THE DIVING

We organised 3 days of diving and spread it out to get a good cover of as much of the island as we could in the east, northeast and the south. I asked for transportation when I booked our dives which is inclusive of the dive rates and they all happily obliged. Water temperatures in July were between 25°C and 27°C and the dive centres all recommended wearing a 5mm wetsuit. They also all use DIN in Zanzibar so just make sure to tell them if you use YOLK so they can have your tanks prepped for you.

Because we each had 40kg of luggage allowance with our flight, we decided to bring all our own dive gear with us. The only time the extra weight was a burden to haul was in Stone Town as you can't park outside your residence. Make sure your dive bag has wheels (this only counts in Stone Town mind you) as you need to walk through narrow winding streets, and in our case, climbed lots of awkward stairs to get to our apartment. Once you get over this, it's a cinch. In the end, it was all worth it.

THE EAST

Our first two dives were on the east coast in Jambiani with Buccaneer Diving Jambiani. They have 2 dive centres, the other one is based in Paje. We dived Woo South which is a wall dive that drops down to 75m. This dive site is known for pelagic fish in the early morning hours on a good day and was a comfortable 25°C in a 5mm wetsuit. We were lucky to spot 3 Whitetips and 4 Blacktip sharks down below in the depths and one massive Blotched Fantail Ray (Taeniura meyeni). Not having the



ABOVE L-R: Our group exploring all areas of Powoni's dive site; Copper Sweepers (Pempheris oualensis); a scorpionfish I was not able to ID the exact species of; anthias and copper sweepers hanging around this area of colourful green reef.

strongest of eye sights anymore, I wasn't able to make out any of the species from 30m, but I could at least make out they were sharks and a ray. Sadly, there was no opportunity for photos at this distance armed with GoPros, and this was the only time where we got to see the big stuff. There was nothing else to see of interest on this drift dive, but it was a good start to being underwater again.

Our second dive was at Powoni, a 13m dive which was the healthiest and most colourful

coral reef we got to see during our trip, and the first of our 5 tidal surge dives to follow. Taking underwater photos from this moment was left to pure luck with the constant toing and froing from side to side, forwards and backwards. Concentrating on not crashing into corals or marine life was now the focus. The highlight on this dive for me was the gorgeous Leaf Scorpionfish (*Taenianotus triacanthus*) which was the first time I had seen one in bright pink. This dive site was dotted with orange and purple anthias which are the little

jewels that bring reefs to life in their numbers. Copper Sweepers (*Pempheris oualensis*) were also present which I'm accustomed to normally seeing in caves or overhangs.

Remember I mentioned the drastic change between high and low tides? Well, when you get back from your second dive, you'll understand just how low, low tide actually is. If you wear open toe fins, bring booties with you as you are going to have about a tenminute walk back to the dive centre and you'll

DIVING DESTINATIONS





OPPOSITE PAGE: Diving with Buccaneer Diving Zanzibar from their Paje dive centre to the beach in Mnemba to dive Kichwani and Watabomi. Yellowfin Soldierfish (*Myripristis berndti*); Longnosed Butterflyfish (*Forcipiger longirostris*); Undulated Moray (*Gymnothorax undulatus*); Nosestripe Anemonefish (*Amphiprion akallopisos*). ABOVE: Bluestripe Snappers (*Lutjanus kasmira*).

just want to have your feet protected from walking over rocks and seaweed. It's quite a phenomenon to see.

Tip: Dry bags are a must on the local boats as they do take in water and also in case it gets choppy. Someone will thank you to hold their mobile phone safe and dry for them.

THE NORTHEAST

Our second day of diving was with Buccaneer Diving Zanzibar which is based in Paje. From their dive centre we drove to Mnemba which takes about an hour to get to. Lunch is provided on this trip with a choice of chicken or vegetarian and there is always fresh fruit on board.

What no one tells you is that there is no dive centre, changing rooms or toilets in Mnemba. You stop along the side of the road to a very busy beach which is where the dolphin tours take off from (please do not take this tour as it is extremely unethical) and you go directly onto your boat. Luckily, we were ready and had no need for either, but if you're not organised for a direct setup, you're not going to be comfortable. You're getting back into the car wet, salty and sandy for a long hour's

journey back so think about what you want to have with you.

The shallower waters in Mnemba are a beautiful turquoise blue that make amazing photo opportunities with their stunning clear skies and fluffy clouds. Something we obsess over coming from the UAE. The coral reef here though is barren, a lot of it destroyed presumed from all the boats anchoring and quite possibly also from storms. Despite this there are a lot of fish, but it's just not as colourful as in lambiani. We saw quite a few moray eels, including a Turkey Moray (Gymnothorax meleagris), Geometric Moray (Gymnothorax griseus), and a free-swimming Undulated Moray (Gymnothorax undulatus), and a Crocodile Fish - I couldn't ID the species. We dived Kichwani on our first dive which reaches 22m and Watabomi on our second dive at 18m.

Our 4 dives with Buccaneer Diving came to a total of AED2,030 for 2 divers with own equipment and transportation. The Mnemba dives include lunch.

THE SOUTH

Our last day of dives was done with DiveTime Zanzibar based from the small fishing village

of Kizimkazi. We dived within the Menai Bay Conservation Area at Camera Drop (32.5m) and Barracuda (19m). We saw a school of barracudas on our descent at Camera Drop, but the visibility was poor and there wasn't much of anything to see on this first dive. It may be the first dive I've not taken any photos. Barracuda was a much better dive, still with a very strong tidal surge, but plenty more to see and better-quality corals which made it a nice finale.

We spotted loads of Chinese Trumpetfish (Aulostomus chinensis) in all the three colours, the uniformly yellow being the most striking. We spotted two very shy octopuses wedged up tight in their dens, unidentifiable in this situation. Clownfish are a guarantee in Zanzibar, they were everywhere on each dive site and the most common are the Nosestripe Anemonefish (Amphiprion akallopisos) and the Allard's Anemonefish (Amphiprion allardi). We finished with seeing a Giant Moray (Gymnothorax javanicus) before ascending to our safety stop.

Our 2 dives with Dive Time Zanzibar came to a total of AED795 for 2 divers with own equipment and transportation.

DIVING DESTINATIONS





PAIE

We left our final day free to walk over barefoot to Paje and enjoy the sights and sounds along the white sandy stretch of beach and parked ourselves for lunch at Oxygen - seafood restaurant and bar with vegetarian options with a view on all the kite surfers out on the water. The beaches become much larger and more beautiful in Paje. It is the kitesurfing capital of Zanzibar, but is also known as the party destination so it attracts a much younger and louder crowd of travellers.

We timed it right to be back in Jambiani before 6pm where the beach then disappeared beneath the waves at the foot of our small resort bridge. As this was our last night, we made sure to have our last meal in Villa Juliana with the most superb lobster thermidor and the biggest jumbo prawns we've ever seen.

BACK TO STONE TOWN

Luckily our room was not reserved the next morning so we were able to have a late check out before heading back to Stone Town for the 2pm check in at the Maru Maru Hotel for our last night.

We cannot advise against staying at the Maru Maru more. The bonus of this hotel is their rooftop terrace, it really does have the best sunset view in Stone Town and we planned for this. What we didn't plan for was coming back to the hotel at the end of the night after being out for dinner and drinks to find the rooftop has a late band that come on to play which resounds throughout the entire hotel, including inside your room. They failed to mention this at check in after giving us a very long briefing on how the hotel operates. It wouldn't have been so bad if it had at least been a good band. To save everyone the aggro, do go over for the sunset, but find another hotel to spend the night. It will make all the difference.



FLIGHTS FROM DUBAI

Fly Dubai allows 40kg/passenger which means you can take your own dive gear with you.

TRAVEL INSURANCE

Highly recommend travel insurance which covers for COVID. AXA covers for COVID, RSA did not, so make sure to ask.

COVID TESTS

Best to check what the updates are as requirements change all the time. From Dubai, a 48-72 hour test must be done prior to flight. Same must be done from Zanzibar for the departure (\$80 each) and then another test is done for free in Dubai on arrival (free).

NEAREST COVID TEST CENTRE

Makunduchi COVID-19 Centre - https://zanzibarcovidtesting.co.tz/app/availability

RESTAURANT RECOMMENDATIONS

We tried so many different places, some we were recommended and some we researched, but these are our personal recommendations.

STONE TOWN:

Emerson on Hurumzi – Highly recommended for the cultural dinner experience set on the rooftop at their Tea House Restaurant celebrating Zanzibar cuisine fused with oriental Persian and Omani influences, as well as traditional Taarab performances by accomplished musicians from the Dhow Countries Music Academy. \$40/person: includes a 3-course menu. By reservations only. They also offer cocktails at the sunset hour www.emersononhurumzi.com

Instagram: https://www.instagram.com/emersonzanzibar/

Upendo House: The Fifth – Fusion cuisine, with delicious dishes made by mixing Indian, Swahili and Mediterranean gastronomy. Leave room for dessert here, they make the most exquisite Panna Cotta I've ever had with tender coconut, caramelised pineapple and Thai chili. www.upendozanzibar.com/thefifth Instagram: https://www.instagram.com/upendohouse/

JAMBIANI:

Villa Juliana – Only for resort guests, but this was the best food we experienced in Jambiani! https://www. instagram.com/villa_juliana_zanzibar/

Beach Bar/Restaurant at **Savera Beach Houses** – Very good local food. Instagram: https://www.instagram.com/saverabeachhouses/

Casa Paradis Nobis – If you are on a budget, this one is not for you. Reservation and choice of meal must be made in advance over WhatsApp.

Instagram: https://www.instagram.com/casaparadisznz/

Oxygen – Stylish seafood restaurant and lounge (with vegetarian options) with a gorgeous view of the sea

Instagram: https://www.instagram.com/oxygenpaje/

ACCOMMODATION

STONE TOWN:

Airbnb - https://bit.ly/37OyfDT

This beautiful South African-owned 2 bedroom fully kitted apartment (sleeps 4) is incredibly spacious and located right in the centre of all the highlights, and opposite the pretty St Joseph's Cathedral. The kitchen has all the amenities and is stocked with fresh fruits, breakfast yoghurts, cereal and biscuits, bottled water, juice, milk, tea and coffee. The bathroom also has all amenities, plus extra towels. The owner has compiled a booklet with house rules and recommendations to help you out and is on WhatsApp if you need her

Eco-Friendly Resort - Villa Juliana - www.villa-juliana.ch

This beautiful resort was built with an environmental conscience. Water and electricity is run on solar power (there's no guarantee you'll get a hot shower - you just have to suck it up) and windows are glassless in order to guarantee cross ventilation which can be aided with the ceiling fans. The best part? You get to hear the sea at high tide. Local craftsmanship and locally recycled materials were used in the construction and the furniture making it such a unique place with its tropical fruit trees in the garden. The chef prepared our favourite meals by far in Jambiani! We had the best breakfasts each morning served on our terrace outside our room overlooking the sea. Perfection!

Resorts accept credit cards with an added 4-7% fee, but you will need cash for the visa at the airport, shops, and taxis. It is best to take American Dollars in cash and that can be exchanged to Tanzanian Shillings.

JAMBIANI:

Buccaneer Diving Jambiani – www.buccaneerdiving.com Instagram: https://www.instagram.com/buccaneerdivingjambiani_/

Buccaneer Diving Zanzibar - www.buccaneerdiving.com Instagram: https://www.instagram.com/buccaneerznzdive/

Dive Time Zanzibar - www.divetimezanzibar.com Instagram: https://www.instagram.com/divetimezanzibar/

TIDE TIMETABLE

https://www.tidetime.org/africa/tanzania/zanzibar.htm

FINDING WELLBEING IN DIVING VIA IMPROVED REGULATION



Referral rates for mental health support are rocketing around the world due to the pandemic.

You finish dealing with a problem and notice that your breathing rate is faster than usual. You pause for a few moments and it settles again. You start thinking about other things that could go wrong and fear shows up. Then you quietly tell your mind that these thoughts are not useful to you. You move your attention to the present and focus on the dive.

Underwater we are vulnerable to the hazards of the environment. This can generate all kinds of tricky human experiences: physiological reactions to stress, unwanted emotions, and unhelpful mental experiences.

Dealing with actual problems taxes our cognitive capacity and can sometimes lead to excessive task load. This can have a direct impact on performance and, if left unchecked, can turn an inconvenience into a major incident! Even when everything is fine, our minds can generate mental chatter that catches our attention and can alter physical processes such as breathing, or heart rate. Among other things, this can have very undesired effects on our buoyancy control or SAC rate.

If we want to be able to dive safely, achieve longer dives and execute skills competently, then we need to be able to regulate. Regulate to manage reactive emotions like fear or frustration. Regulate responses to pain and other sensations. Regulate to move our attention flexibly to maintain situational awareness. Effective regulation of emotion and attention is fundamental to diving. So what is it?

Think about your scuba diving regulator. What do you want it to do? Presumably, you'd like to be provided with an appropriate gas for the depth, at a pressure that you are able to breath comfortably. If that is what you are getting, then the equipment is functioning effectively to regulate the supply. Regulation of gas supply is an adaptive process, changing according to depth and other variables. Human behaviour is also regulated. The mechanics are rather more

complex, but the central aim is the same: for the human to do things that are adaptive to the situation. One useful concept of emotional regulation is Paul Gilbert's Three Circle model for affective state.

Paul Gilbert describes three core areas of psychophysiological regulation that adjusts according to context:

- 1. Threat/Safety the sympathetic activation that builds to fight/flight survival states;
- Soothing the parasympathetic activation that calms us and allows rest/regeneration
- 3. Drive/Motivation the activation of our reward systems to drive purposeful action and creativity.

All three of these are continually changing to meet the demands of the situation. They can become dysregulated by physical or psychological stresses which can be problematic and a barrier to effective behaviour, for example, being stuck in active fight/flight can lead into panic.

Regulation of emotion and attention is at the core of our wellbeing and success in life. Flexible adaptation to context allows us to respond effectively and thrive. During times of difficulty our regulatory systems can become overwhelmed: nerves frayed by worry or lack of sleep, endocrine processes tormented by trauma and cardiac rhythms erratic from stress. Our psychological processes are entwined with this physiological hardware in such a way that they influence each other.

For example, rumination and overthinking sparked by anxiety about global events can set up a cycle that can lead into illness. Direct contact with traumatic events can influence body and mind in such a way that the regulation is damaged long after the event has passed, potentially creating an ongoing process of harm to social and psychological function.

Rest, connection, and the relevant forms of therapy work because they restore regulatory function. Psychological therapies target cognitive (thinking) processes, memories, and actions. Physical therapy and movement releases tension, improves fitness, and assists in processing thoughts. Feeling supported and belonging to a community can go a long way to allowing a person to reset. Removal of, or escape from, environmental stressors can sometimes be achieved and plays a part in emotional regulation: for example, if the stressor is a 14-hour workday, then take a break from the office. Or go diving!

One study demonstrated that scuba diving was superior to other recreational activities in the reduction of stress. Researchers followed 67 members of the same sports club through a one-week training course, assessing their perceived levels of stress and wellbeing. Approximately 90 percent of all participants were stressed at baseline; scoring above the clinical threshold. Roughly half of the participants spent the week scuba diving and the rest engaged in multi-sports including kayaking, climbing and hiking. At the end of the programme and for a month afterwards, the divers showed a persistent reduction on the perceived stress score (p<0.01).

In contrast, for the multi-sport group, there was no statistically significant change in stress. Furthermore, 13.51% of the diving group decreased their perceived stress scores to below the clinical threshold, compared to 6.67% of the multi-sport group. Like the multisport group, the divers also showed improved mood following the week. This was a small study and there are methodological issues to consider however the findings match with anecdotal reports that divers feel better due to scuba diving.

The therapeutic effect of diving can be applied to rehabilitate people who have suffered extreme trauma and injury. More investigation of the specific therapeutic effects is needed, however, it is clear that the effect is multifactorial. Ingredients likely include: escaping the mundane, disconnecting from communication technology, the Blue Mind effect, various effects associated with hyperbaric pressure, improved breathing, connection to community, a sense of purpose, the need to respond to challenges...

Studies of programmes that offer scuba diving as part of rehabilitation for injured military veterans are demonstrating significant qualitative and quantitative effects.

It is also possible that diving improves our core ability to regulate in a way that we can bring the changes back to the surface. The diving environment provides natural feedback to our regulation systems. If we get stressed, our breathing changes. On open circuits, that stress response can be seen in the bubbles. In fact, scientists have previously counted divers' bubbles as a way to quantify their stress levels: for example in a study to assess the merits of mental skills training, the researchers measured respiration rates by

observing the number of times bubbles were exhaled per minute.

Divers learn to notice changes in buoyancy control or breathing as indicators of emotional and attentional state. Essentially it provides natural "bio-feedback" that allows divers to learn ways to control mental and bodily processes to improve performance or psychological state. In addition, as technology develops with wearable devices able to provide real-time analysis of heart rate and breathing, there is potential for enhanced awareness of the connection between diver behaviour and physiological states. Acting on such feedback, divers are motivated towards improved emotion regulation with the incentive of longer, more relaxed dives. Going deeper, effective regulation helps us to stay focused and calm under pressure.

In conclusion, understanding and improving regulation not only has a direct effect on each dive, but also there is an emerging awareness that there may be more profound effects that benefit the wider wellbeing of divers.

ABOUT THE AUTHOR

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

www.fittodive.org

NOTE FROM THE DAN EUROPE MEDICAL TEAM:

During a dive, the occurrence of symptoms that could be attributed to an anxiety-like state, such as chest palpitations, increased respiratory rate or oppressive thoughts about the dive (the feeling of not being able to make it, the fear of not being able to complete the dive as initially planned, feeling the water pressure and its blue colour as overwhelming or difficult to bear, to name a few), should be brought to the attention of a dive instructor or directly, if not through his or her help, to a mental health professional such as a psychologist, psychotherapist or analyst.

Such sensations or symptoms could in fact be indicators of an important experience rooted in our personal history, which has its origins in a more distant time. The resolution of the mentioned discomfort experienced while diving could be found in an action of rationalisation of the incident, trying to break it down into its parts and dealing with its components, for example starting from the equipment used, or the gas mixture chosen, or a greater knowledge of our respiratory physiology. This approach, however, may not be sufficient to resolve a condition with much deeper and unacknowledged roots, which would require a closer analysis. In this case, it might be necessary to open up some gaps in time and connect with a past that may have unexpectedly actualised again in the presence of similar conditions to the initial imprinting. In conclusion, never underestimate the manifestations of the body, especially when they occur while diving.

MORE INFO

- Reference to the Deptherapy study: https://pubmed.ncbi.nlm.nih.gov/29958006/
- Stress reduction study: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5741699/
- What is biofeedback:
 - https://www.mayoclinic.org/tests-procedures/biofeedback/about/pac-20384664 Counting of bubbles:
 - https://www.researchgate.net/publication/235925561_Effectiveness_of_a_mental_ training_program_for_novice_scuba_divers

DAN EUROPE'S ANSWERS TO YOUR MEDICAL QUESTIONS

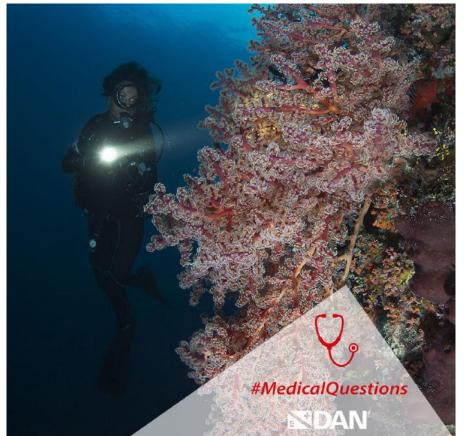
I have hearing loss and tinnitus in both ears the condition is most likely hereditary. I want to try scuba diving, but with these ear issues I am not sure I should. Can I dive? Should I see a specialist first?

Whether someone with hearing loss and/or other hearing problems should dive is debated among professionals with relevant expertise.

Some experts suggest that a person with preexisting hearing problems should not dive. This opinion is based on the idea that all divers place their hearing at risk of various injuries. Most of these injuries are preventable, but risk still exists. People with hearing loss are not necessarily at greater risk of injury than others, but the outcome of an injury might have much greater repercussions (e.g., total deafness). Other experts believe that if a potential diver fully understands and accepts the risks, he or she can consider diving. The risk involved is not quantifiable.

Call the DAN medical information line to learn more about the various ways ears can be injured in the dive environment. Speak with a knowledgeable local dive instructor who can help you make an objective risk-versus-benefit analysis and tell you the injury-mitigation





strategies you would learn in dive training.

Finally, raise your concerns with your doctor or an ear, nose and throat (ENT) specialist. Please feel free to encourage the doctor to call DAN to discuss your situation.

This morning I did an MRI scan with contrast and tomorrow I would like to dive; I would like to know if there are any contraindications.

Since approximately 24 hours will have passed from the MRI, you should have eliminated the contrast medium by then. Just to be sure, ask your radiologist specialist. In the event that their answer should leave you with further doubts, or if you have a major on-going pathological condition, a new medical visit will be necessary in order for you to be able to dive in complete safety.

Join DAN to get a number of benefits, including answers to all of your divingrelated medical questions: www.daneurope.org

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 MOVIE SCREENING

THE STORY OF PLASTIC

November 2021 | I hr 35 mins | Dates TBA



THE STORY OF PLASTIC takes a sweeping look at the man-made crisis of plastic pollution and the worldwide effect it has on the health of our planet and the people who inhabit it. Spanning three continents, the film illustrates the ongoing catastrophe: fields full of garbage, veritable mountains of trash, rivers and seas clogged with waste, and skies choked with the poisonous emissions from plastic production and processing. With engaging original animation, archival industry footage beginning in the 1930s, and first-person accounts of the unfolding emergency, the film distills a complex problem that is increasingly affecting the planet's and its residents' well-being.

DID YOU KNOW?

THE TIDE | FOUNDED BY SEA LEGACY

Join 7,400 supporters like you, giving what they can each month to help rebuild ocean life, for people and the planet.



SHAPE OUR SHARED FUTURE

There has never been a more critical, or more hopeful, time to act. This decade, we have an extraordinary opportunity to transform the ocean and world as we know it. It's going to take all of us.

INVEST IN PEOPLE AND PLANET

The Tide supports vital ocean projects, innovators, and impact organisations that put equity and the environment first, as well as ground-breaking media and advocacy campaigns.

SEE YOUR IMPACT BROUGHT TO LIFE

Receive monthly updates on the impact of your donation, meet the people behind the solutions you're supporting, and get insights and field reports from ocean projects you're funding.

JOIN A GLOBAL COMMUNITY

The Tide is made up of people like you, who share hopes and fears, and most importantly, a long-term commitment to this vital work that affects every one of us – some of us more than others.

FIND IT HERE: www.only.one/tide



Chairman | Essa Abdulla Al Ghurair Vice Chairman | Marwan Faraj Al Mehairbi Secretary General | Jamal Bu Hannad Financial Director | Khalfan Al Muhairi Head of Fujairah Committee | Abdulla Salem Al Ruwaihy Head of Sharjah Committee | Talib Al Dhuhoori Head of Abu Dhabi Committee | Saleh Al Hammadi Head of the Scientific Committee | Mohamad Al Salfa Head of the Technical Committee | Omar Al Huraiz Technical Advisor | Ahmed Bin Byat Head of EDA Women's Committee | Maitha Al Qader

EXECUTIVE TEAM

Co-Founder | Ibrahim Al Zu'bi Email: projects@emiratesdiving.com

Project Manager | Ally Landes Email: magazine@emiratesdiving.com, photo@emiratesdiving.com

Administration Assistant

Email: projects@emiratesdiving.com

Heritage Department Manager | Mr Juma'a Bin Thaleth Email: heritage@emiratesdiving.com

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 nondiving communities through EDA activities.

PUBLISHED BY

Emirates Diving Association P.O. Box 33220 Dubai, UAE

Office Location: Jumeirah I, Al Hudaiba Awards Buildings, Block B. 2nd Floor, Office #214

Tel: +971 4 393 9390 Fax: +971 4 393 9391 Email: projects@emiratesdiving.com

Website: www.emiratesdiving.com

Facebook: Emirates Diving Association Instagram: eda_uae (Digital Online Gallery)
Instagram: emiratesdivingassociation (EDA News) Twitter: @EDA_UAE YouTube: Emirates Diving Association

Issuu: www.issuu.com/allylande

While every effort and care has been made to ensure the accuracy of the information contained in this publication, the publisher cannot accept any responsibility for errors or omissions it may contain.

No part of this publication may be reproduced in any form or by any means without the prior written consent of the publisher.

Copyright © Emirates Diving Association 2021

PRINTED BY

Al Ghurair Printing & Publishing LLC





INSPIRING CHANGE TO MAKE A DIFFERENCE TOGETHER



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

Tel: +971 4 393 9390 | Email: projects@emiratesdiving.com | Website: www.emiratesdiving.com EDA is a non-profit voluntary federal organisation and is accredited by UNEP as an International Environmental Organisation.



