Inspiring People to Care About our Oceans Since 1995

DIVERS FOR THE ENVIRONMENT

WWW.EMIRATESDIVING.COM | MAGAZINE | MARCH 2022 | VOLUME 18 | ISSUE 1

ERADICATING AN INVASIVE SPECIES: THE LIONFISH HUNTERS

• THE DIVE MENA EXPO • **EATING UP EASTER** • REEF CHECK WITH EDA • **SAVE THE BUTTS CAMPAIGN** • THE DUBAI OYSTER PROJECT • **A WHOLE LOT OF WHALES** • DIGITAL ONLINE 2022

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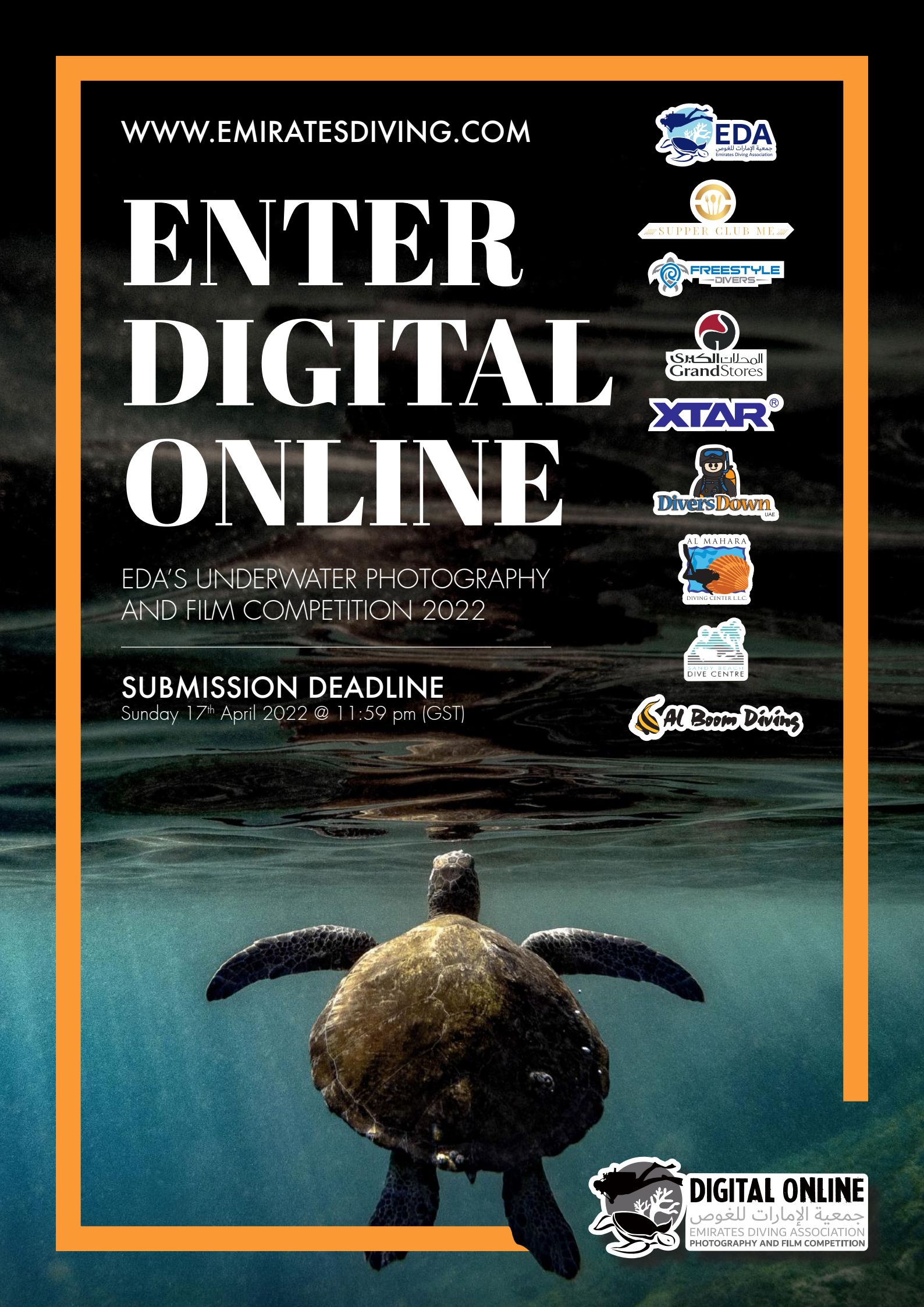
EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION 2022

SUBMISSION DEADLINE

Sunday 17th April 2022 @ 11:59 pm (GST)



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Emirates Diving Association

REGULARS

NEWS

KIDS CORNER

REEF CHECK

FEATURES

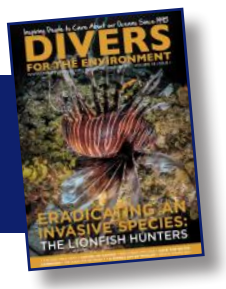
UW PHOTOGRAPHY

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 June 2022. Send all articles, feedback or comments to: magazine@emiratesdiving.com

COVER

PHOTO BY LORENZO MITTIGA
Eradicating an Invasive Species: The Lionfish Hunters
www.lorenzomittiga.com



REDUCE REUSE RECYCLE

DIVING DESTINATIONS

HEALTH

EDITOR & GRAPHIC DESIGNER

ALLY LANDES
Ally is EDA's Project Manager, Event Planner & Coordinator, Graphic Designer, Writer, Editor, Photographer & Videographer. She created and introduced 'Divers for the Environment' back in December 2004 as a free educational tool to share information by scientists, conservationists, underwater photographers, and other like-minded individuals from all over the world with a passion to conserve and protect our delicate marine life and underwater world.

COVER STORY

LORENZO MITTIGA
Lorenzo Mittiga is an Italian marine conservation visual story-teller, Marine Biologist and an Aqua Lung Ocean Ambassador. Based on Bonaire, Netherland Antilles, he works as a full time photographer specialising in underwater photography. **www.lorenzomittiga.com**

THE QUARTERLY CONTRIBUTORS

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

REBEKKA PENTTI
Rebekka is a marine scientist and training manager at Nautica Environmental Associates LLC. She has recently led the development of the Arabian Marine Species Observer (AMSO) course alongside regional experts. The AMSO course is increasingly acknowledged as the industry standard for maritime professionals working in sensitive offshore areas and the first fully regionally specialised marine species observer programme in the Arabian Peninsula!
www.amso.ae

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

EDA'S NEW REEF CHECK TRAINER

EDA is bringing Reef Check back to its members. We will be hosting trainings and surveys. If you would like to sign-up for more info on the EcoDiver programme prices and surveys, get in touch!
Email: **reefcheck@emiratesdiving.com**

RANIA SHAWKI MOSTAFA
Rania is an avid diving instructor and People & Culture leader with a passion for marine conservation and underwater photography. Having lived, dived and worked in different parts of the world, Rania, who is originally from Egypt, recently relocated back to Dubai and is excited to restart the Reef Check programme with EDA.

26 YEARS & STILL GOING STRONG

IBRAHIM AL-ZU'BI
Co-Founder & Executive Director

I would like to welcome you all to the March issue of 'Divers for the Environment'. We are turning 26 years old this year, and we're still going strong to promote safe and good diving practices in the UAE while conserving the marine environment. Last year, we got registered and recognised as a federal official NGO by the Ministry of Community Development in the UAE. Earlier this year, the Community Development Authority of Dubai recognised and registered us as an official NGO in Dubai as well. This is a great recognition of EDA's efforts in the UAE and the importance of the work we do. Congratulations to all of us for this acknowledgement.

I would also like to take this opportunity to thank our sponsors and partners, we are grateful for the support they have given EDA to enable us to continue our mission of conserving and protecting the UAE marine resources. We salute them for being environmentally responsible organisations, and we hope that our partnership will last for a long time.

Dive MENA Expo 2022 – The Leading Diving Exhibition in the region is back this March where the diving community of the UAE and the region meets alongside the Dubai International Boat Show to discuss diving updates and share the latest gear in diving equipment. We're looking forward to seeing you all there.

I am looking forward to this year's Digital Online – EDA's Underwater Photography and Film Competition and seeing all our member's images of all the varied marine life they have seen in all the places they have dived. I want to thank the judges and wish them luck in their tough job coming up to review all the amazing underwater photos and videos that will be submitted, and I am especially looking forward to the awards ceremony this year.

We are very excited to announce that EDA is relaunching the Reef Check EcoDiver programme as an official Reef Check training facility in the UAE. Watch this space!

I also want to take this opportunity to thank our EDA members who continuously share their insightful diving experiences and underwater pictures with us. Your experiences are imperative in recommending when and where to go diving, as well as what to look out for on your trips.

We hope your passion and enthusiasm continues and you will send us news about your next diving adventures. We always look forward to seeing your next batch of underwater world snaps!

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

Happy reading and dive safe!

Ibrahim Al-Zu'bi

Ibrahim N. Al-Zu'bi

THE DIVE MENA EXPO

CO-LOCATED AT THE DUBAI INTERNATIONAL BOAT SHOW

The Dive MENA Expo being held on the 9-13 March 2022, is co-located at the Dubai International Boat Show offering everything that a scuba diver can imagine – from the most advanced equipment on the market, to product showcases, demos and speaker presentations.

DIVE TRACKS

Scuba Diving is a strange and reverential experience – meet with our fabulous line up of speakers about all things diving – from marine life, underwater photography, local dive spots to marine conservation, adventure and more!

THE DIVE TRACKS SPEAKERS

JARROD JABLONSKI

Jarrod Jablonski is an avid explorer, researcher, author, and instructor, teaching and diving in oceans and caves around the world. Trained as a geologist, Jarrod is the founder and president of Global Underwater Explorers (GUE). GUE is an international non-profit organisation dedicated to the conservation and discovery of the aquatic realm. Jarrod is also the CEO of Halcyon Manufacturing and Extreme Exposure Adventure Centre while remaining active in conservation, exploration, and filming projects worldwide. His explorations regularly place him in the most remote locations in the world, including several world record excursions at 90m during cave penetrations of nearly 10km. These dives include bottom times of more than 12 hours at 90m with total immersions of 30 hours. Jarrod is also an author with dozens of publications, including several books and numerous articles.

DAVID DILEY

David Diley is a multi-award-winning film-maker and underwater cinematographer based in the UK. He is best known for his work with sharks, in particular his feature documentary 'Of Shark and Man,' alongside short films and commercials including 'The Cave,' 'The Arrival' and 'Blue Mind'. David's work has contributed to several successful marine conservation campaigns around the world over his ten-year career, during which he has been involved in broadcast, theatrical and commercial productions for a host of major international brands and companies.

AHMED GABR

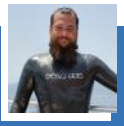
Ahmed Gabr is a 42-year-old Ex Egyptian Army officer; at some point in his career he eventually earned a scholarship to attend the US Army Combat Diver course. He is the only certified US Combat Diver in the Middle East. He began his diving career at the age of 18, diving for pleasure then later decided to get his diving instructor training. During his diving years he dove both for work and for pleasure, while continuously building and developing both his mental and physical abilities. Ahmed is a three-time Guinness World Record breaker; Deepest Scuba Dive, Deepest Sea Dive, and in 2015 he mobilised 614 divers for the Largest Underwater Clean-up.

FAISAL JAWAD HASHIM

The 33-year-old Kuwaiti is paraplegic, after having lost the use of his legs in a car accident when he was 20. His dive record-breaking time for 10km was 5 hours and 24 minutes, beating the previous record of 6 hours 21 minutes – which was set by an able-bodied diver – by almost an hour. The record had been a long-standing ambition of Mr Hassan's, who learned to scuba dive to assist with his personal recovery following the accident. "After my car accident, the first thing I did was challenge my fears," said Hassan. "I chose to learn how to dive. After I dove I felt free under water," he said, adding, "Diving sets me free from sadness and hopelessness".

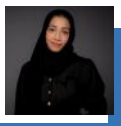
RICHARD LUNDGREN

Richard Lundgren has worked as a professional diver around the world for more than 20 years. He's been fortunate to participate in many sensational exploration projects such as HMHS Britannic, sister ship of the RMS Titanic, and the discovery of the mighty admiralship Mars the Magnificent, sunk during the Nordic seven-year war in 1564. Lundgren is a founding member of the exploration organisation the Global Underwater Explorers (GUE), and serves on the board of directors. Richard is a fellow member of The Explorers Club, Member of the Board of Scientific Divers and the Chief Executive Office of www.oceandiscovery.org.



YURIY RAKHMATULLIN

Yuriy was born in Ukraine but moved to the UAE as a child in 1996. He started freediving back in 2008 and was one of the first students of Freediving UAE, eventually taking over the company. Yuriy received his first freediving instructor certification in 2013 and since then has been happily introducing freediving to everyone interested. So far, Yuriy's freediving courses have been attended by more than 500 students. Pedagogy as the first academic degree helps him to improve the quality of teaching. In 2013, Yuriy attended his first World Freediving Championship as a Judge assistant, and since then regularly takes part in competitions of different levels as a main judge or organiser. Yuriy's passion for the sport helped build a strong freediving community that is considered the biggest and oldest in the region.



MARIAM FARDOUS

Mariam is an epidemiologist with a great passion for data science. She works as a Data Manager in the executive management of population health at Makkah Healthcare Cluster. Scuba diving is Mariam's hobby and in 2016, she became the first Arab woman, and the third international woman to dive at the geographical North Pole. Very recently, she became a certified PADI Scuba Open Water Diving Instructor.

THE DIVE TRACKS SCHEDULE

	11 MARCH 2022	12 MARCH 2022	13 MARCH 2022
17:00	**Jarrod Jablonski** – The Deepest Pool in the World	**Ahmed Gabr** – The Deepest Ever	**Mariam H. Fardous** – First Arabic Woman to Dive in the Geographic North Pole
17:45	**David Diley** – How to Build a Career as an Underwater Cinematographer	**Faisal Jawad Hashim** – From Disability to Guinness Record	**Yuriy Rakhmatullin** – Freediving: A Natural Way to Explore the Underwater World
18:30	**Passion for Diving Panel:** • Khalid Alrazooqi • Ibrahim Al-Zu'bi	**Richard Lundgren** – The Wreck Discovery of the Century	

BERMUDA DIVING CENTER
www.scubadiving.ae

THE DIVE POOL

Lead by the Bermuda Diving Center's team of PADI professionals, come and see the latest diving techniques, demos and even mermaids throughout the show. The Dive MENA Expo will open up a whole new world of discovery and adventure below the water's surface that can be enjoyed by everyone, young and old.

Free Show Entry to all EDA Members & Divers who have Dive Licenses with PADI, SSI, BSAC, CMAS, AIDA and NAUI!

AN EDA MOVIE SCREENING
EATING UP EASTER

We held our first 2022 EDA Movie Screening social event on the 3rd of February with Plastic Ocean's 'Eating Up Easter'. It's always great to see our members who are able to make it to these small events in person. As always, we have the option to watch our quarterly documentaries online for those unable to attend the screenings also.

We especially want to thank Deep Dive Dubai for supporting EDA and hosting our movie screenings at their venue.

SYNOPSIS

In Eating Up Easter, Native Rapanui (Easter Island) filmmaker Sergio Mata'u Rapu narrates to his son the modern dilemma of their people who risk losing everything to the globalizing effects of tourism.

The film follows four islanders, descendants of the ancient Moai builders of Easter Island, who are working to tackle the consequences of their rapidly developing home. Mama Piru leads recycling efforts to reduce trash, Mahani and Enrique use music to reunite their divided community, and Sergio tries to understand the motivations of his father who embraces the advantages of building new businesses. These stories intertwine to reveal the complexities of development and the contradictions within us all as we are faced with hard choices about our planet's future.

TOPICS ADDRESSED:

- Plastic Pollution
- Sustainability
- Waste Management
- Environmental Impact of Tourism
- Cultural Identity
- Globalization

WHY THIS FILM IS SO IMPORTANT TO PLASTIC OCEANS INTERNATIONAL

Eating Up Easter offers a balanced perspective into a local community's struggle to preserve their island's culture and history, while developing an economy and modern conveniences through tourism.

Tourism allows people from around the world to experience beautiful new cultures and learn of their incredible history. It also creates economic opportunities for communities, but it also demands a costly infrastructure to manage the waste and damage left behind.

Plastic has been an incredible addition to our modern lives, providing many benefits, including amazing durability, versatility and low cost. As such, demand and production have increased significantly over the past few decades, resulting in increased plastic waste and pollution. This growing problem is now affecting even the most remote part of the world, including Easter Island.

While this film is about Easter Island, the different perspectives throughout it should resonate with us all. They can be applied to every people, small island, town and city around the world which struggles to protect its culture and history, while modernising to provide economic sustainability.

WANT TO JOIN OUR EVENTS?

Our social events and online EDA Movie Screenings are only accessible to current EDA members and their families. Our screenings have limited spots available. Registration to join them is necessary in order to be on the guest list to join the social event or to receive the special link to view the films online. You can register for EDA membership or renew it via our website at:
www.emiratesdiving.com/membership-form

"A major contribution to indigenous cinematic storytelling."

Plastic Pollution • Sustainability • Cultural Identity

EATING UP EASTER

Chile/USA | 2018 | 76 mins

From Rapanui Native Director

SERGIO MATA'U RAPU

PLASTIC™ OCEANS

CLEANUP ARABIA CORPORATE EVENT

WITH AL FUTTAIM WATCHES & JEWELLERY AND SEIKO PROSPEX

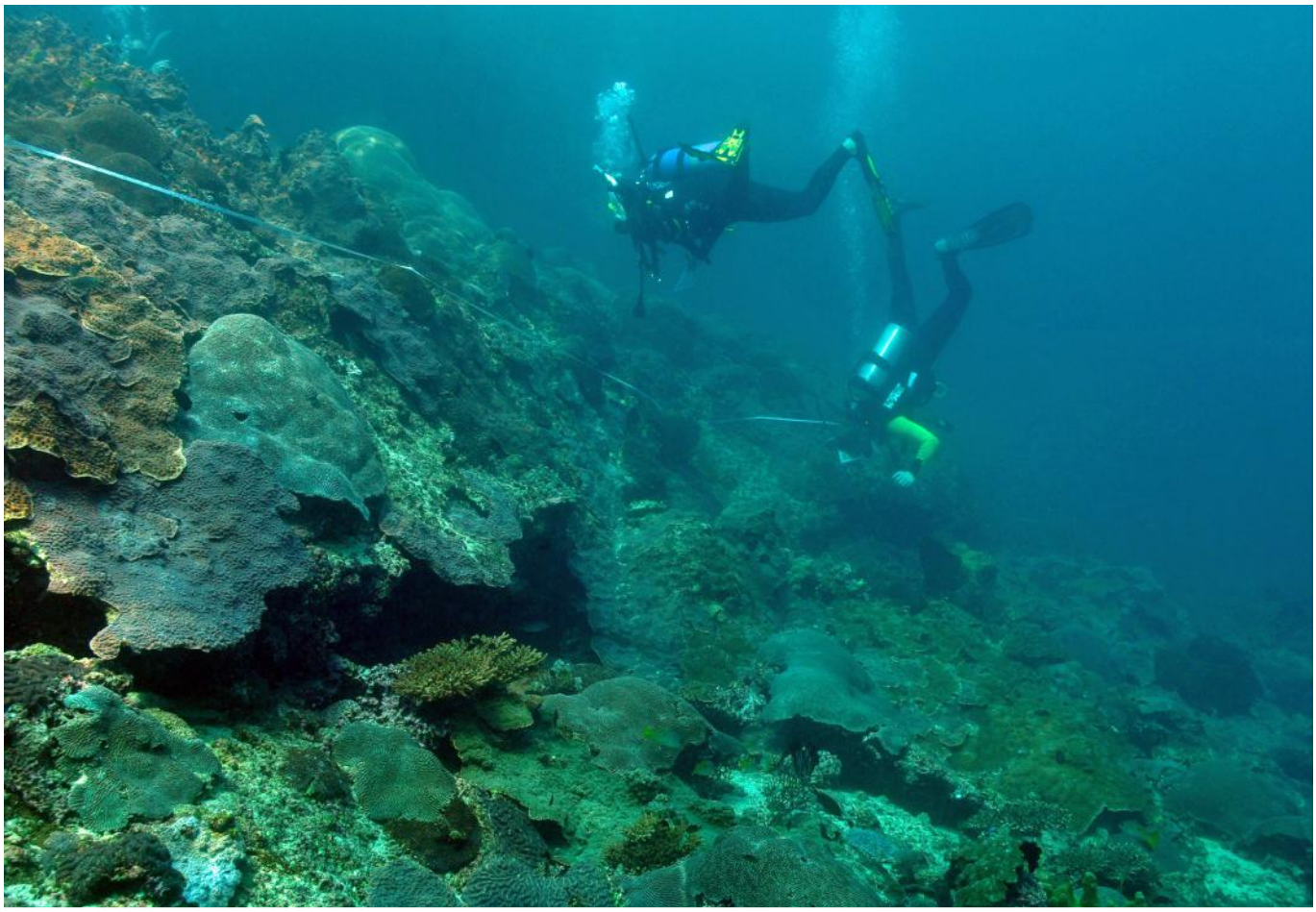
The Emirates Diving Association (EDA) organised a Cleanup Arabia corporate beach clean-up event in Dibba, Fujairah on the 14th of December for Al Futtaim Watches & Jewellery and Seiko Prospex who successfully played their part in cleaning up our environment. 25 participants filled 30 large sacks amounting to a whopping 151kg of rubbish. That was broken down to a total of 4,939 items collected out of the items we were able to count. 328 food wrappers, 212 aluminium takeout containers, 1,036 plastic bottle caps, 1,054 plastic beverage bottles, 280 beverage cans, 113 plastic bags, 53 plastic grocery bags, 85 straws, 43 plastic forks, knives and spoons, just to name a few.

There had been 7 separate BBQ areas in which single-use items had been left behind. Sadly, parts of that rubbish had been burnt in the pits leaving masses of melted plastic and foam to coat with other metals, glass and paper. Please remember that when you're out enjoying our beautiful beaches and deserts wherever you are in the world, nothing left behind, will ever disappear. It's the environmental volunteers and municipality staff that have to clean-up after you in order to protect our delicate ecosystems and we're still not able to collect absolutely everything as it breaks down into even smaller pieces that take a lot more time and effort to collect. Share your wisdom with others and continue to work together to get our beaches trash free!

DIBBA, FUJAIRAH PICNIC BEACH	
MOST LIKELY TO FIND ITEMS	TOTAL
Cigarette Butts	1
Food Wrappers	328
Plastic Takeout Containers	25
Aluminium Takeout Containers	212
Foam Takeout Containers	20
Plastic Bottle Caps	1,036
Metal Bottle Caps	67
Plastic Lids	43
Straws/Stirrers	85
Forks/Knives/Spoons	43
Plastic Beverage Bottles	1,054
Glass Beverage Bottles	103
Beverage Cans	280
Plastic Grocery Bags	53
Other Plastic Bags	113
Paper Bags	77
Paper Cups & Plates	209
Plastic Cups & Plates	153
Foam Cups & Plates	83
FISHING GEAR	
Fishing Buoys/Pots/Traps	2
Rope	166
OTHER TRASH	
Cigar Tips	1
Construction Materials	17
Fireworks	1
Tyre	1
PACKAGING MATERIALS	
Other Plastic/Foam Packaging	24
Other Plastic Bottles	27
Tobacco Packaging/Wrap	6
PERSONAL HYGIENE	
Diapers	2
Wet Wipes	43
TINY TRASH (< 2.5 cm)	
Foam Pieces	51
Glass Pieces	73
Plastic Pieces	512
EXTRA	
Shoes & Soles	5
Full Garbage Bags	5
Face Masks	11
Hooka Pipes	2
Clothing Items	4
Pillow	1
TOTAL NO. OF ITEMS	4,939
TOTAL NO. OF BAGS	30
TOTAL WEIGHT (KGS)	151

REEF CHECK WITH EDA

WE'RE BRINGING BACK THE ECODIVER TRAINING FOR EDA MEMBERS



ABOUT REEF CHECK AND EDA

If you are interested in knowing more about our marine environment, collecting data from our local reefs and getting more out of your dives, this may be what you are looking for. When you join a Reef Check EcoDiver training, you will learn about our local ecosystems and you will be able to participate in our regular survey dives which will help us to understand the threats our corals are facing by providing important data.

By joining our Reef Check monitoring team, you can help monitor and track the world's reefs. Reefs, both tropical and temperate, are in a state of crisis, today they look vastly different from what they did only 30 years ago. Big fish are scarce and some marine creatures have disappeared completely. Over 45% of the world's reefs are severely threatened by human activities including overfishing, pollution and global warming. By becoming a certified Reef Check diver, you can help track the health of our reefs by participating in monitoring surveys and conservation worldwide.

Reef Check
UNITED ARAB EMIRATES

For more information about Reef Check, visit:
www.reefcheck.org

Until now, EDA has trained more than 100 divers with Reef Check methodology. By dividing divers into different Reef Check teams, we are able to collect data at different sites in the UAE, with particular focus in the Marine Protected Areas (MPAs) in Dibba and

Al Aqah, as well as in Abu Dhabi. By collecting data on a regular basis, EDA will be able to monitor the status of coral reefs in the UAE, which will help us understand the principal threats that our marine environment is facing at the moment, and the actions that need to be implemented in order to re-establish a healthy ecosystem in the area.

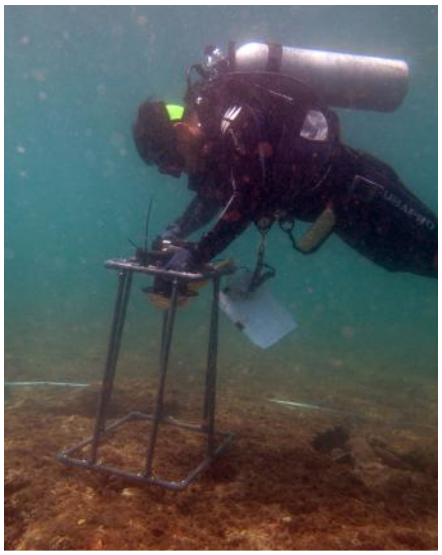
REEF CHECK FOR EDA MEMBERS

This course is designed to teach you everything you need to know to conduct full-scale Reef Check surveys and collect high-quality data for our global database. In this programme, you will learn about marine conservation issues, the role of citizen science, as well as how to identify key indicator fish, invertebrates, and substrates selected by Reef Check for assessing coral reef health.

Upon completion of this course, you will be able to join the EDA Reef Check team and assist in our regular underwater surveys in the UAE, as well as other underwater surveys in the Indo-Pacific region. This 4-day course includes both classroom and fieldwork, and an exam.

THE TRAINING TAKES PLACE OVER 4 SESSIONS/DAYS:

- 3 sessions of classroom classes. You will become familiar with many of the Indo-Pacific's marine species of fish, invertebrates and will be trained to identify different kinds of substrate, such as corals and sponges.
- One day consists of an underwater exam and three classroom exams.



Training materials (manual, informative videos, field guide flash cards, Reef Check ID card) are included in the training price. For the underwater exam, only tanks will be provided, each student will have to arrange their own dive gear.

QUALIFICATION

To join the Reef Check training the following is required:

- 15+ years old
- Open Water Diver certification (minimum)
- At least 25 logged dives, including 2 dives in the past 12 months

DATES AND SCHEDULE: To be confirmed

- 2-3 evenings during the week
- 1-2 days over a weekend

EDA Members are entitled to a discounted rate for the Reef Check EcoDiver programme. If you are interested in the course, please email us for more info at: **reefcheck@emiratesdiving.com**

SAVE THE BUTTS CAMPAIGN
KICKED OFF ON NATIONAL ENVIRONMENT DAY

New campaign cleans up the environment to convert cigarette butts into manufacturing material.

Do you know cigarettes contain more than 7,000 chemicals, many of which are environmentally toxic, making the butts a hazardous waste? The 4.5 trillion cigarette butts casually discarded every year, contain 95% plastic that continue to leach harmful chemicals like nicotine and other heavy metals such as arsenic into the environment, poisoning fish and other animals who accidentally consume them. On the occasion of the UAE National Environment Day, social enterprise Goumbook launched a new environmental campaign titled 'Save The Butts – Waste to Value'.

Speaking to the media at the launch, Tatiana Antonelli, the Founder and Managing Director at Goumbook explained, 'Save the Butts – Waste to Value' adopts the Circular Economy approach to environmental pollution by converting a waste item into a value-added resource. Both companies and individuals are invited to join the campaign and collect cigarette butts from UAE public spaces as well as corporate premises, thus keeping the harmful pollutants out of the environment." Founded in 2010, Goumbook is the leading social enterprise in the UAE promoting sustainable living and green practices.

The campaign is in alignment with the UAE Circular Economy Policy. The UAE Circular Economy Policy is a comprehensive framework for determining the country's approach to achieving sustainable governance and the ideal use of natural resources. Based on the Circularity Gap Report, only 8.6% of the Global Economy is Circular Economy. The take-make-waste economy consumes 100 billion tonnes of materials a year and wastes over 90%. The World Economic Forum highlights that "the circular economy tackles some of our greatest social and environmental challenges while unlocking $4.5 trillion in economic value by 2030." Our mission is to encourage behaviour change among citizens and highlight the potential of waste as a resource for the circular economy."

In order to provide a sustainable end-to-end solution to the waste problem, Goumbook has brought partners from the private sector on board to tackle the problem at hand in a holistic, innovative and simple way. Logistics are managed by ReLoop, a mobile application through which various waste streams can be recycled in a transparent and convenient manner.

"ReLoop is happy to work hand in hand with Goumbook and Terrax to ensure closing the loop from waste source to final production destination. Through the ReLoop App technology, we ensure traceability and tracking of the waste which enables all participants to know exactly how much they contribute to saving the environment and to the UAE's circular economy", Mohammad Abdulmoti, Co-Founder of ReLoop, explained.

Despite being toxic for living beings and the environment, cigarette butts have a value as well: Most filters are made up of 95% plastic which – while not conventionally recyclable – can be transformed into valuable materials that can become part of a circular economy. Terrax is pioneering such manufacturing technologies for non-recyclable waste items in the UAE.

"Terrax is very excited to partner with Goumbook and ReLoop in transforming cigarette butts into terrax boards for the construction industry", Theresa Wernery, Partner at Terrax, commented on the partnership. "By providing a circular solution to help solve this waste problem. We are removing these items from the environment; giving them a new purpose; and providing a sustainable construction product for the region", she added.

According to The World Health Organisation (WHO) "since the 1980s cigarette butts have consistently comprised 30-40% of all items picked up in annual international coastal and urban clean-ups". Out of the 6 trillion cigarettes produced every year, the remains of 4.5 trillion wind up in our forests, beaches and waterways where they pose a risk to humans, wildlife, and nature.

With a view to involve communities in protecting the environment and simultaneously saving resources, the 'Save the Butts' campaign aims to engage two key groups of our society: Youth and private sector entities. Youth can either participate as individuals by signing up for the programme and doing their collections independently to gain certified community service hours for programmes such as the Duke of Edinburgh or CAS (Creativity, Activity, Service) programmes, or they can join as part of clean-up drives organised in collaboration with educational institutions. Similarly, companies have two ways of getting involved: Either through corporate clean-up events or as annual members. The yearly membership is ideal for companies in the hospitality and F&B industry, landowners, and those entities which encounter high volumes of cigarette butts within their premises on a daily basis.

To participate in the campaign, go to:
www.goumbook.com/save-the-butts

save The Butts
WASTE TO VALUE

A new awareness campaign to collect cigarette butts and convert them into manufacturing material.

Most cigarette filters are

95%

made out of plastic

Worldwide littered

4.5 trillion

of cigarette butts yearly

Join us to remove cigarette butts from the UAE. Make the invisible visible.

To learn more, click **HERE** or please contact us at ask@goumbook.com

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
17 PARTNERSHIPS FOR THE GOALS

Goumbook
CHANGING MINDSETS

JUBAIL ISLAND TO EXPAND ITS URBAN GREEN SPACE
BY PLANTING 1 MILLION MANGROVE TREES OVER THE NEXT DECADE

In solidarity with the UAE government and Abu Dhabi Environmental Agency, Jubail Island Investment Company has today announced it will support the UAE's efforts to expand mangrove forest cover in the Emirate by planting one million mangrove trees on the island within the next 10 years.

To date, 350,000 new seedlings have already been planted on Jubail Island and over the next decade, a total of 1,000,000 additional new mangroves will be planted in support of the country's ambition to plant 100 million mangroves by 2030; representing an increase from 30 million, which was announced during this month's COP26 Conference in Glasgow.

The announcement by JIIC reaffirms its ongoing efforts to promote socially and environmentally responsible development, in addition to actively implementing programmes to protect and enhance the island's biodiversity. The new mangrove initiative will allow the introduction of new water channels to increase natural tidal flow conveyance into the surrounding wetland areas.

Ponds, labelled as 'Biodiversity Genesis Zones', have also been created within the new channel system and will improve the flushing of the channels to enhance the overall water quality within the wetland system. These new littoral zones have been shaped adjacent to existing areas of the mangrove forest and salt marsh and will also create additional habitat for native species.

In addition to the 350,000 seedlings already planted, Jubail Island has partnered with Etihad Airways to plant another 182,000 mangrove trees in the next five years at Jubail Island.

Mounir Haidar, Managing Director of Jubail Island Investment Company, said, "We extend our sincere thanks to the Environment Agency – Abu Dhabi for their continued support and guidance throughout our environmental initiatives, and for their strenuous efforts to work with partners with the common goal of protecting biodiversity and preserving the quality of life in the UAE for a sustainable future. At Jubail Island Investment Company, we are determined to develop Jubail into a prominent landmark destination that sets the standard for community development which will protect the natural environment and preserve the flora and wildlife that inhabits the island.

"Mangrove forests are an important part of the UAE's natural assets, providing a haven for wildlife whilst also helping to reduce overall carbon emissions, releasing oxygen and reducing erosion and pollution in our waterways and coasts. It is only right that we support the UAE's forward-thinking initiative by planting 1 million mangrove trees over the course of 10 years right here within Jubail Island. This planting initiative will further enhance Jubail Island position as a hub of ecotourism in Abu Dhabi as well as being an integral element of our overall landscaping plan for the island, which will be home to more than 10,000 residents when completed in late 2023."

Nestled among the breath-taking natural beauty and rich biodiversity of the mangroves, and covering more than 2,800 hectares, Jubail Island is perfectly situated between Yas Island and Saadiyat Island, and will become Abu Dhabi's leading sanctuary designed to appeal to wellness and nature enthusiasts.

SECRETARY GENERAL OF EAD HIGHLIGHTS THE IMPORTANCE OF CARBON SEQUESTRATION FOR CLIMATE CHANGE AT ABU DHABI SUSTAINABILITY WEEK

BY **ENVIRONMENT AGENCY – ABU DHABI**

During a virtual session at Abu Dhabi Sustainability Week in January, Her Excellency Dr Shaikha Salem Al Dhaheri, Secretary General of the Environment Agency – Abu Dhabi (EAD) stressed on the importance of conservation of the environment and sequestering carbon to achieve sustainable development.

During her video she shared insights and examples of initiatives and projects undertaken by EAD to help preserve mangroves to combat climate change.

She said, "One major programme we have worked on at EAD is the Blue Carbon Project. Blue Carbon refers to the ability of coastal vegetation to store carbon. Blue carbon ecosystems, which include mangrove forests, salt marshes, and seagrass beds, store and sequester carbon in biomass and sediments.

If these ecosystems are destroyed, buried carbon can be released into the atmosphere as carbon dioxide, contributing to climate change and ocean acidification. This means we should strive to always keep these ecosystems intact."

She added, "The UAE was one of the first countries to recognise the importance of coastal habitats, and mangrove restoration and conservation efforts have been implemented since the 1970s.

"This national affinity to the sea led to the initiation of the Abu Dhabi Blue Carbon Demonstration Project in 2012, which was led by the Abu Dhabi Global Environmental Data Initiative (AGEDI) together with EAD and illustrated the full potential of coastal ecosystems in Abu Dhabi.

"The success of the project prompted the initiation of Phase II, known as the National Blue Carbon Project in 2015, which extended the understanding and valuation aspects of coastal Blue Carbon ecosystem services, particularly in mangroves, in the Northern and Eastern regions of the UAE."

She concluded, "More recently, the UAE Mangroves Annual Carbon Sequestration trial study was completed to assess soil carbon sequestration rates of UAE mangroves. The study found that the mangroves of the UAE sequester carbon at a rate of 0.5 tons per hectare per year, in addition to the carbon stocks stored within mangrove tree biomass. These rates are far higher compared to terrestrial soils of arid regions and other reported mangrove soil carbon sequestration rates around the Arabian Peninsula."

Abu Dhabi Sustainability Week (ADSW) is a global platform for accelerating the world's sustainable development. Since its inception in 2008, ADSW has focused on delivering action across three principles: Global Collaboration & Leadership, Economic Development, and Technology & Innovation.

The platform brings together a unique fusion of policy makers, industry specialists, technology pioneers and the next generation of sustainability leaders.

ENVIRONMENT AGENCY – ABU DHABI AND ENGIE

COMPLETE PHASE II OF THE MANGROVE REHABILITATION PROJECT

BY **ENVIRONMENT AGENCY – ABU DHABI**

Abu Dhabi, 20th January 2022: The Environment Agency – Abu Dhabi (EAD) and ENGIE, the global energy company, announced the success of the second phase of the "Blue Carbon" Environmental and Social Responsibility project in partnership with Distant Imagery. Using highly innovative drone planting technology, more than 35,000 mangrove seeds were planted in the Mirfa lagoon in Abu Dhabi.

Ahmed Al Hashemi, Executive Director, Terrestrial and Marine Biodiversity Sector, EAD, said, "We are always eager to play an impactful role in tackling climate change in line with the vision of the UAE, which has now become a leader in the field. Moreover, the conservation of plant species is also a priority for us. The Blue Carbon project successfully combines our focus on these priorities and will contribute to achieving the Net Zero 2050 strategic initiative announced by the UAE government."

Al Hashemi went on to add, "After our success in the first phase of the project, we used a more robust and evidence-based approach from lessons learnt. This project is extremely innovative as planting via drones is a relatively new concept, which can greatly help rehabilitate and expand mangroves in Abu Dhabi, especially in remote areas which are difficult to reach using traditional planting methods. We are striving for a success rate of 35%, which would be a win for us at EAD in partnership with ENGIE."

Florence Fontani, Vice President Communications and Sustainability, ENGIE Africa, Middle East, and Asia (AMEA), said, "Rehabilitating mangrove ecosystems is an effective way to mitigate the effects of climate change and restore natural habitats and biodiversity. At ENGIE, we are honoured to be involved in such an impactful project that contributes to the UAE's carbon-neutral goals and promotes sustainable development for a greener future for generations to come."

The Mangrove Rehabilitation project, initiated in 2020, was a successful pilot project where approximately a hectare of coastline was planted with mangrove seed balls via specialised engineered drone rigging. The mangrove seeds were then monitored monthly for growth over a year.

The second phase involved further refined drone rigging and planting germinated mangrove seeds and seed balls to scale up the mangroves. The use of drones was crucial during each step of the project. They assisted in evaluating the above-ground environmental conditions, spatial arrangements, and ability to geo-map the site. Drones provide an efficient and fast method for dropping seeds at speeds of about 2,000 seeds per load. For the planting, Distant Imagery developed three different seed-dropping mechanisms based on soil, elevation, and tidal characteristics, with the objective to enhance success rate.

EAD will continue to support the project by actively monitoring the health of the mangroves.

ENGIE aims to enable governments and businesses to accelerate the transition toward a carbon-neutral economy and supports long-term sustainable solutions.

PADI AWARE FOUNDATION'S CAMPAIGN ACHIEVES GLOBAL WIN FOR MAKO SHARKS

After nearly three years of collaborative campaigns from ocean advocates around the world, the 51 countries and the European Union have agreed to place an immediate two-year ban on catching and retaining Atlantic shortfin mako sharks at the most recent meeting of the International Commission for the Conservation of Atlantic Tunas (ICCAT).

"The recent critical protection measures coming out of the ICCAT annual meeting are a direct result of a global, collective effort by numerous organisations and individuals all working toward the common goal of protecting mako sharks in the Atlantic," says Ian Campbell, Associate Director, Policy and Campaigns of PADI AWARE Foundation™.

"Mako sharks, classified as endangered on the International Union for Conservation of Nature Red List of Threatened Species, are particularly vulnerable to overfishing, especially in the North Atlantic, where we have witnessed populations decline severely. This ban is monumental and marks an important turning point for both the health of the mako shark population and, ultimately, the health of the ocean. We hope it will be the foundation for a much-needed recovery plan."

Since 2018, PADI AWARE Foundation has been collaborating with the Shark League NGO coalition to push countries to support the science to ban the retention of makos in the Atlantic, largely focusing on mobilising PADI® Dive Centres, Resorts and Professionals in the key countries of Brazil and South Africa, as well as supporting efforts across the European Union and the US. Campaign efforts included the global #Divers4Makos petition that earned nearly 30,000 signatures and the launch of the PADI AWARE Shark Conservation course, enabling PADI Members to build local support in their communities for the global protection of mako sharks in their local waters.

The main goal of these campaigns was to create a tidal wave of support from the public calling upon their governments to back the mako shark fishing ban, as well as illustrating the importance of a healthy ocean for marine tourism operators. By empowering PADI Dive Centres, Resorts and Professionals, the PADI AWARE Foundation was able to help create a powerful groundswell of letters, emails and social media movements directed at the respective governments in target countries. Efforts in Brazil and South Africa were particularly effective with locally-based operators able to advocate for mako shark conservation directly to their government representatives.

"Not only did we shift people's perceptions of sharks and the important role they play in the ocean, we were also able to get mako sharks the urgent protection they need, providing hope for their – and our oceans' – futures," says Campbell.

In total, there were over 400 participants in the PADI AWARE Shark Conservation course, which resulted in over 500 photos of divers taking action, who also contacted their government to demand immediate action to protect makos.

"The effort and level of support shown by the diving industry exceeded our expectations, and the recent mako shark fishing ban in the Atlantic was directly affected by everyone who took part, and demonstrates how local action really can create global impact. The positive outcome of these efforts further fuels our drive to protect more endangered and vulnerable marine species," says Campbell.

The PADI AWARE Foundation has a comprehensive portfolio of programmes that support the PADI Blueprint for Ocean Action and are currently working to reduce the number of shark and ray species threatened with extinction by 25% by deploying more localised conservation campaigns.

CATCH OF TOMORROW

THE FUTURE FISH SUPPERS SCUPPERED BY PLASTIC

To help hammer home the severity of the issues of plastic pollution home water filtration system, Virgin Pure – which has made it a mission to reduce the number of single use plastic bottles we consume in the UK – has partnered with marine conservation charity, PADI AWARE Foundation, to reimagine four classic fish recipes as they might be in 2050, by including one incongruous ingredient: plastic.

Imagine tucking into a hearty portion of fish and chips, or a comforting fish pie, but instead of eating fish, you're confronted with dirty, discarded plastic. The starkly damning image of whole fish replaced by plastic waste could well be a reality by 2050, when research predicts there will be more plastic than fish in our oceans. It may seem an extreme image, but it is already happening, albeit invisibly; studies continue to reveal how much we consume in the form of microplastics in our food and water.

The average Londoner still buys more than three SUP water bottles every week, an eye-watering 175 bottles every year per person. In total, some 7.7 billion plastic bottles are bought across the UK each year, resulting in substantial amounts of single-use plastic waste.

Data from PADI AWARE Foundation, which works with scuba divers across the world to remove plastic waste from the seas, also reveals there are over 8 million pieces of plastic entering the ocean each day; it estimates that there are 46,000 pieces of plastic in the ocean for every square mile, with the majority (80%) of that plastic coming from the land.

Virgin Pure has recreated four recipes as a wake-up call to all bottled water buyers: Golden Beer-Battered Fish with Chips, a seafood Linguine, a traditional Fish Pie and a Seafood Paella to the same quality standard but with one additional standout ingredient replacing the majority of the seafood in each: plastic. All the plastic used in the dishes has been retrieved from the ocean by PADI AWARE Foundation, meaning it's the exact plastic rubbish that's being dumped into the world's oceans which causes serious issues for marine animals and the environment.

These plastics are not only ingested by animal life, but through the water we drink and the food we eat. In fact, researchers believe that between 10 and 30% of fish in any sample will be contaminated with microplastics.

Tom Stazicker, CEO of Virgin Pure, comments: "None of us want to be consuming plastic, visible or not. Our products filter out harmful substances like chlorine, rust and microplastics that are commonly found in regular tap water, giving a better reason than ever before for people to stop buying bottled water. We're delighted to be supporting the work that PADI AWARE Foundation does by partnering them, and proud to be able to offer a solution for those who want to kick the plastic bottle habit for good."

Danna Moore, Global Director, PADI AWARE Foundation adds, "We hope this campaign helps bring to life just how severe the problem is, and encourages people to do better, get involved in ocean conservation and cut down on single-use plastic bottles. Whether you are a certified diver, a fisherman or a small child building a sandcastle at the local beach, the declining health of the oceans affects us all.

One of the benefits of Virgin Pure is that it provides clean tasting, filtered drinking water on tap, making it that much easier to stop buying bottled water altogether. The devices also filter out microplastics from tap water, the same microplastics that are also commonly found in fish and other seafood.

To donate to PADI AWARE Foundation, visit: https://netdonor.net/page/81717/donate/1

THE ARBOR SCHOOL'S DUBAI OYSTER PROJECT

FEATURE AND PHOTOGRAPHY **ALLY LANDES**

It was an absolute treat to visit The Arbor School – an international ecological school here in Dubai with a strong set of ethical values, a deep sense of ecoliteracy, sustainability and environmental justice. The school has an impressive engagement with the outdoor environment in which the students learn the values essential to their well-being and of the world they will inherit.

I got to meet with Ben Hren, the Environmental Educational Advisor. Ben is in his second year at the school, having worked in the UK, US, and Qatar, both for environmental charities and in schools as a science teacher and an environmental science teacher. I got to pose him with a few questions regarding their Dubai Oyster Project collaboration.

THE INTERVIEW

Tell us about The Dubai Oyster Project. How did it come about?

The Dubai Oyster Project was originally the idea of one of our board members at the Arbor School, and through his relationships and acquaintances of those he knew in the restaurant industry and marine conservation world, he convinced the Emirates Marine Environment Group (EMEG) and the Maine restaurant, to form a collaboration with us to found The Dubai Oyster Project. His aspiration is that it's a project that will involve many schools and other restaurants that produce similar food wastes in the form of oyster shells, but right now it's 3 organisations starting out.

What year are the students in that are involved in the project?

Our school goes from 4 year olds and it will go right through to 18 year olds, although right now we go through key stage 3 so we're adding our first cohort of key stage 4 next year and this particular project involves our Year 8. Specifically Year 8, because their curriculum focuses on the marine environment in Dubai, so this is their project.

Once you receive the oyster shells from the Maine restaurant, what happens next?

First they are diverted from the waste stream. Their staff members thoroughly wash them and put the shells back into the same styrofoam containers they were shipped in from the different parts of the world, and they are then brought to our school where we store them.

Once we have enough of them for the next stage, we take them to the Jebel Ali Marine Reserve. The Emirates Marine Environment Group provide the gargour (dome-shaped metal fish traps) which they have recovered from the sea bottom or which have been donated from storages because they are no longer in use.

Does the metal not get too brittle on the gargours if they've been left underwater a long time?

That's part of the strategy. By filling them with the oysters, again because we're at the early stages of the process, we don't know how many years it takes for those oysters to be fused together by organisms colonising them. When the rust degrades over time, eventually we'll be left with a pristine reef.

Are the students putting the traps down themselves at the reserve?

In October, we did our first installation. We took the entire class over and filled the traps

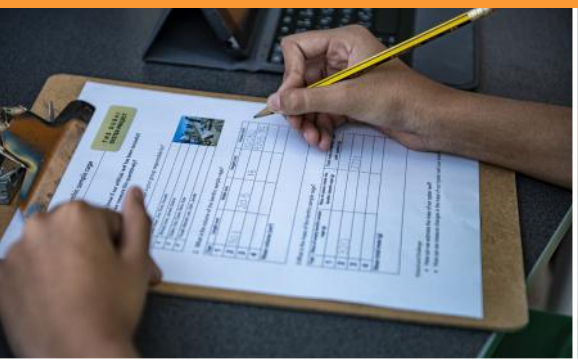
and put them into position underwater. Major Ali from EMEG had picked the site for us that had the right kind of tidal flow, salinity and water temperature, but it was also a place where in the past there had been fish traps there so there were a series of posts in the water. We were able to position our reef project inside those posts because Major Ali had done some experiments earlier and had found the current was strong and it would actually move our cages around. We needed a place that we could attach them instead of adding an artificial structure, so he simply put them inside this old abandoned fishing area.

How many oyster shells have you got so far?
So far, we have 12 cages in the water. We need to install some sample cages we can actually take in and out of the water for students to examine close-up. So today, the students are building those sample cages and this afternoon a small group of students will attach them to the reef and then when we go back next September or October with the next Year 8, this group will then be Year 9, they will do a handover to the new group of what they have done, they'll join forces and build the next section altogether.

It's fantastic that these kids get to have this experience. I'm jealous I wasn't given this opportunity so young when I was at school.
It's amazing how much this project matters to them. This project would be a waste of time if this wasn't something kids really understood with the significance of the challenges, what's happening in the marine environment, the amounts of waste we're producing in our restaurants, and the effects of these illegal traps that are reducing the fish that are struggling already in terms of numbers.

Now that this is an ongoing project as part of the school's curriculum, how far do you see this going?
In my perfect world, I see returning to the reef that we started with many, many times over the years and really being able to observe that whole process of reef succession. First watching the biofilm form, then watching barnacles and all those early colonisations. Then there is extending the reef so it's larger and beginning to experiment with what happens when it's two cages tall, versus one cage tall. There's so many things you can do with design to figure out what the optimal designs for this particular environment are.

Are the students involved in the design?
They will be, once they begin making observations. This is really baseline right now. We constructed the cages a certain way, we put them in a certain place. We're looking for certain things. Based on what we see, we may decide that maybe this is the optimal location for a reef like this, or we want to try one someplace else. If we do get good growth, then we'll ask, is it the optimal size? If it was bigger, what would happen? If it was taller,



what would happen? And really that's at the heart of our educational programme, because what we never want to do is have kids have the perception that there is only one way to do things. We want to ask questions and have them think about all the different ways to solve the problems, and the different designs they could use.

At what depth have you placed the reef?
The depths right now at low tide is less than a metre, and then at high tide, it's probably a metre and a half.

What are the water temperatures like throughout the year?
I don't know what the seasonal fluctuations are. That's still something we need to do. We haven't yet started monitoring some of those abiotic factors, but we're looking at introducing them to a whole range such as dissolved oxygen, water clarity, temperature and currents, salinity. There's a lot to do.

How much time will you give in-between each class reef survey?
Once we get the cycle up and running, we're hoping we can go every six months. I'd love to go more often, but part of it would be getting a feel for how quickly that succession happens because we want to make sure we're going often enough to monitor that so we can see any changes. But at the same time with kids this age, we want to make sure we see something, and that something is noticeable so they don't get discouraged.

It's going to be incredibly interesting to see what happens.
From EMEG's perspective, they actually see this expanding. This has started with a school, but they would really welcome working with other groups who would build reefs and get a whole reef network going.

THE CLASSROOM SESSION

I sat in on the following class and watched as the students prepared four sample cages to take to the Jebel Ali Marine Reserve that afternoon. These are the all-important cages the students will be able to take in and out of the water to examine them close-up.

The first part of their task was to work out the total volume of their cages. They measured the length x width x height. In order to get the overall mean of the sample cages combined, they needed to add up the total volumes and divide that by 4 (total cages).

The second part of their task was to figure out whether or not their artificial reef was going to be a success. For this, they had to work out how much mass of oyster shells they could fit into their cages. With kitchen scales at the ready, the students got to work and put their calculations up on the board. The success will be measured by how much mass has grown when they next go to check the progress of their artificial reef.

We're very much looking forward to following The Dubai Oyster Project and sharing the students' ongoing progress in 6 months time in the December magazine issue.

The Arbor School students attaching their sample cages at their site at the Jebel Ali Marine Reserve. Photos by Hannah Hall.

THE PINK MASK

STORY BY SLAVA NOOR ILLUSTRATIONS BY MADINA KAZANTAYEVA

CATS RULE!

"Ouch!"

"Mrrrrrrrrrrrrr! Meeeoooow!"

Where did this huge ginger cat come from that Ula has tripped over? And its no ordinary ginger cat, this one was the colour of a very ripe orange with black stripes. His long white whiskers were tense and showed distress, and his huge green eyes stated how annoyed he was.

"I'm sorry" said Ula feeling guilty for having bothered the cat.

The cat meowed in response in a low tone to show his frustration.

"I'm sorry" repeated Ula. "I do not understand you."

The cat sat down and looked into the girl's eyes and said, "Meow"!

And then she had an idea. The mask! What if it doesn't just work underwater? Ula took the mask out of her backpack and put it on the cat.

"You're not as silly as I first thought," declared the cat.

"Why are you running so fast, who are you running away from? I don't see any dogs or boys with sticks after you."

"From the Trash Monster... I mean... from a turtle... I don't know... I don't want..."

"Okay! Breathe in. One, two, three, and then breathe out. One, two, three. Breathe in and out, and calm down. Now sit and tell me the whole story. By the way, my name is TigRRR. What's yours?"

"I'm Ula," she replied and continued to tell TigRRR about the mask she had found, about meeting Rita the green turtle, the creepy Trash Monster who decided to enslave the ocean, and about her escape."

Ula was not ashamed to share her story with TigRRR and wasn't afraid he wouldn't believe her. TigRRR listened attentively while licking his paws and sharpening his claws on a tree. But when Ula paused, he rubbed his head on her legs or gently placed his paw on her knee.

"come on, don't be shy, I'm your friend. Surprisingly, Ula really did calm down by the end of the story."

"If the mask chose you, it means it believes in your strength, courage and good heart," TigRRR muttered.

"But I'm the one who found the mask!" objected the girl.

The cat smiled mysteriously and began to tel Ula all about the mask's legend.

THE LEGEND OF THE PINK MASK

A long time ago, a young mermaid befriended a girl from the shore. The girl was a good diver and swimmer, and her name was Ama. All the women in her family were pearl divers and they were highly respected in the community. They could dive very deep and stay underwater for a few minutes.

The little mermaid wanted to show her friend all her favourite places in the ocean, but how could she do that if the human girl had to surface every now and then? And then the little mermaid asked her father, the King of the Ocean, to think of a way to help her friend remain underwater as long as she wanted. That way, the little diver could become a part of the sea and enjoy it without any limitations.

The King of the Ocean summoned all his wise counselors. They thought for seven days and seven nights, and then the old Octopus said that he and his sons would make a mask that would allow the human girl to stay underwater for a very long time.

"I don't believe you. It's just a plastic mask, how could octopuses make it, and such a long time ago?" Ula asked.

"Don't interrupt me!" resented TigRRR. "Listen to the rest of the story." And he continued.

The Octopus made the mask from magic algae mixed with the smallest pieces of coral, then added a few drops of magic potion from a bottle found on a sunken pirate ship so that the mask would last for many lifetimes and it could change over time.

The King of the Ocean generously thanked the old Octopus and the mermaid could now spend hours and hours with her best friend underwater. They swam among the vibrant coral reefs, raced with the playful dolphins,

observed sharks, listened to the melancholic songs of the blue whales and even set-up an underwater pearl farm.

Their friendship was strong, and the girl kept visiting the mermaid regularly, even when she grew up, and grew old. And then one day she stopped coming, and the mermaid realised that her friend had died.

"Human lives are so short and fragile, yet so beautiful," thought the mermaid as she hid the mask under a rock. The mermaid's father told her that when the right time would come, the mask would find a new owner.

And so it happened. When the ocean was in danger, the mask would appear in the hands of a new owner, another girl with a kind and brave heart. The girl who lived on the shore and yet loved the sea. It is said that until very recently, the magic mask was worn by the great Sylvia.

"Who is that?"

"Oh! She is the world's most famous female marine biologist. She has been exploring the seas and oceans for over forty years. Diving underwater, studying the marine life and working hard for their preservation and conservation. She travels around the world and tells people how human predatory and foolish attitudes towards the oceans is gradually destroying it.

A little more and the blue whale and bluefin tuna could disappear forever. Human poachers have caught almost all the whale sharks. And the poor sea turtles! They were caught by the thousands and turned into turtle soup. And the ones that survived are now dying from getting stuck in old fishing nets, or eating plastic bags that they confuse with their favourite food – jellyfish."

"So that's what happened

to Rita's family!" Ula was horrified.

"Yes," TigRRR confirmed with sadness. "And so Sylvia shows the diversity of marine species and promotes the importance of their preservation. She stresses how we are all interconnected and how the oceans' health is important to all of us. The mask served her for many years, but now Sylvia dives less and less often, and so the mask has found you. It means it believes in you!"

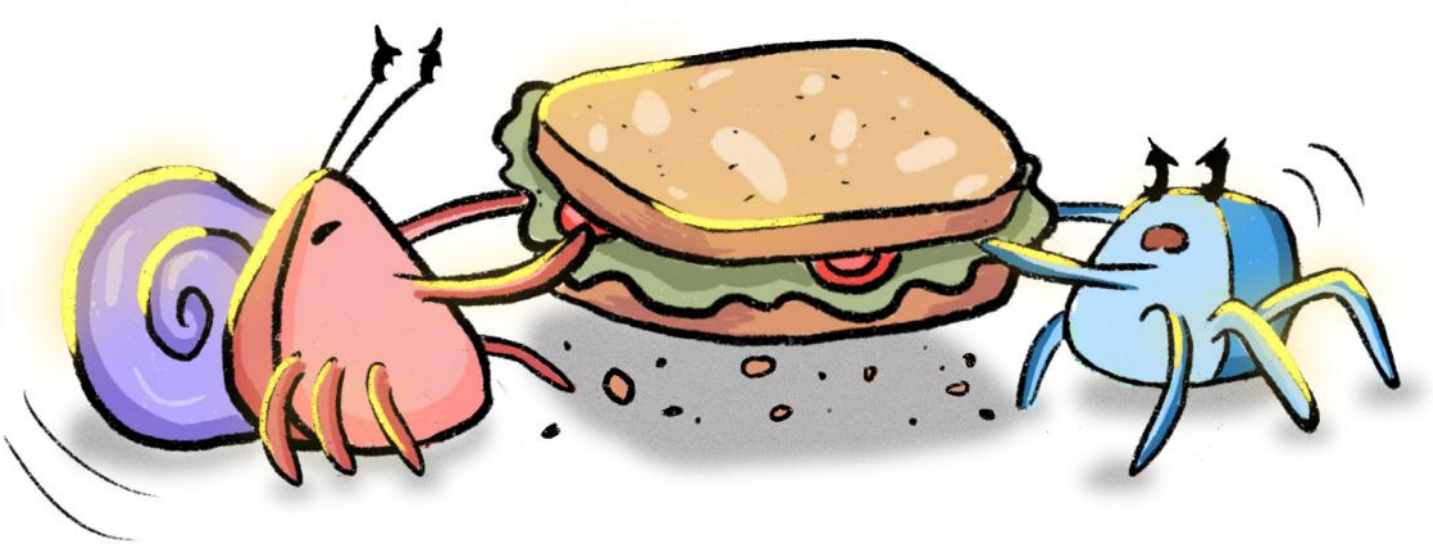
Ula looked doubtfully at her thin arms and legs.

"The mask can't be wrong!" TigRRR said firmly. "But, of course, you can't just go into battle with the Trash Monster unprepared. Go home, do your homework, get some sleep, and tomorrow after school, come to the beach and we'll start our training to prepare you for the battle."

That night, Ula had a nightmare about the huge black monster. It was bigger than a whale, with countless claws and tentacles, with the mouth of a shark, only it had a hundred times more teeth. And there were lightning bolts striking out from its black tail. It was also terribly dirty and smelly. Yuck! Ula would rather dream of how the monster could be defeated!

THE TRAINING DAY

When Ula arrived at the beach, her new friend, turned-personal-combat-trainer was already waiting for her surrounded by the same tiny crabs with whom she had shared her sandwiches and her thoughts only a few days earlier. The crabs were shyly peeking out of the sand, and there was a large shiny shell with finger-like tips next to TigRRR. The shell looked very different from the ones Ula had seen before, but she



could not imagine just how special it was.

It turned out that it had been passed on through the crabs by their great-great-grandfather, the Crab Sorcerer. There were only two of these shells and they could connect the land to the sea, just like a modern walkie-talkie does. The shell also had other powers like creating and dissolving a huge sea wave or moving someone to a far away place in just a few moments.

It turned out that this was Ula's only weapon against the Trash Monster.

"If you can't kill the Monster with a knife or a harpoon, or even a deadly bomb, your weapon will be the magic shell," said TigRRR.

"That's it?" Ula was rather upset.

"No," whispered the crabs, "we will also train you."

And they began to teach Ula the secrets of hiding by digging into the sand, as well as hiding in a coral reef.

TigRRR focused quite a lot on teaching Ula some martial arts. He also taught her to hiss, growl and make scary faces. And most importantly, he taught her to see things as they really were.

Ula tried this last skill in her class and was amazed. It turned out that their very strict teacher was even more shy and timid than the little crabs were, she just tried her best to hide it. Ula's unapproachable-looking classmate Amina was actually very kind and always ready to help. Ula really enjoyed practicing this particular skill and seeing past the appearance of things.

The electric rays taught her to control the waves with the magic shell. Ula also learnt to understand the underwater currents, and after just a few lessons she knew how to locate and ride them.

Brunhilde the shark, the same one that had scared people when she entered the creek, turned out to be a caring mother of three baby sharks. She was very worried about their future, and when she learned that there was a girl who would fight the Trash Monster, she immediately decided to help her. Brunhilde taught Ula the ancient spell of entanglement, "Twist, twist, twist." Ula was surprised that the spell was so simple and short, but Brunhilde said that the simple words were indeed the most powerful.

Ula's combat training went on for seven days before she fought the Trash Monster. And for seven nights, she dreamt of the monster, and each time he got larger and more disgusting. He reached his huge tentacles out towards Ula, trying to catch her, and he laughed at her with his squeaky voice...

EXAMINING LOCAL AND GLOBAL THREATS TO REEFS WITH REEF CHECK MALAYSIA

BY **REEF CHECK MALAYSIA**



In this article, Reef Check Malaysia focuses on threats to coral reefs and other marine ecosystems and what we can do to eliminate or mitigate the impact of these threats.

We divide threats to coral reefs into two broad categories: local in scale, and global in scale.

Local threats arise largely as a result of human activities and land use changes along coastlines adjacent to coral reefs. Local threats to coral reefs are many, and the impacts on coral reefs are reasonably well understood.

They include:

- Overfishing, which can result in detrimental changes to reef ecology;
- Destructive fishing (such as dynamite and cyanide fishing), which destroys the reef structure and hinders recovery;
- Coastal development, releasing silt and sediment that can smother reefs and alter hydrological flows;
- Pollution, from industrial and agricultural activities as well as sewage;
- Physical impacts from tourism, including divers, snorkellers and boats.

In Malaysia, the Marine Parks section of the Department of Fisheries (DoF), Sabah Parks and Sarawak Forestry Corporation are tasked with managing these local threats to their protected reef areas.

These local threats can be managed or mitigated in a variety of ways, including:

- Awareness campaigns for local stakeholders and tourists, to encourage more "reef-friendly" behaviour;
- More effective patrolling and enforcement activities to reduce encroachment in protected areas;
- Improved planning to ensure that coastal development in coral reef areas is implemented in such a way as to minimise damage to coral reefs, including site selection, site management and remediation measures;
- Pollution control measures both upstream (e.g. reduction in fertiliser loads from plantations through rigorous implementation of riparian zone regulations) and locally (e.g. annual septic maintenance programmes; grease traps).

These responses all have two things in common:

- They can be implemented effectively and efficiently at a very local level. In Tioman island, for example, as the Department of Fisheries (DoF)'s Reef Care partner for the island, we are helping the community in one village to reduce poaching of giant clams from the reef immediately adjacent to the village. On a wider basis, we are ensuring that all dive and snorkelling sites have well maintained mooring buoys to eliminate anchor damage. Biologically, we are controlling the number of Crown-of-thorns starfish (a coral predator) on the reefs. Finally, we have managed a programme of septic tank improvements, reducing the flow of sewage pollution onto local reefs
- Threat reduction and mitigation is much more effective if local communities are involved in management, because their participation leads to greater ownership of reef health issues, and improved compliance with regulations.

Against these local threats, a number of global threats have emerged over recent years, mainly resulting from the changing climate caused by global warming. Among these are mass coral bleaching and the impact of more frequent and stronger storms.

The first significant mass coral reef bleaching event reported in Malaysia was in 1998, in which an estimated 40% of corals in reef areas around Peninsular Malaysia died. Reefs had barely recovered before the 2010 mass coral reef bleaching event occurred, which fortunately saw lower coral death rates.

Scientists agree that mass coral bleaching is likely to occur with increasing frequency in the coming decades, and there is an urgent need to put in place plans to:

- Respond effectively to mass coral bleaching events with management interventions to protect reefs during bleaching events
- Build the "survivability", or resilience of coral reefs to better withstand future bleaching events

Even more recently, climate change has resulted in stronger storms, which, combined with wind-driven waves and sea-level rise, can have devastating effects. In early 2019, tropical storm Pabuk hit the Terengganu coastline causing significant damage to shallow coral reefs.

In September 2021, a storm in Mantanani island caused damage – in some cases severe – to 11 houses, as wind-driven waves caused beach erosion; others in the village were damaged by strong winds. For coastal communities such as these, climate change isn't some existential future threat – it's happening here, right now. And the time to take action is right now.

There is not much that local managers can do about the global threats. But what we can do – and should be doing, as a matter of great urgency, is address the local threats, because they are local and straightforward to fix. No new technologies are required, no great expenditure. Education and awareness programmes will fix many of the problems; sensible planning will resolve others; and small investments in infrastructure such as sewage treatment will take care of the rest. Remedying local threads will lead to healthier reefs and healthy reefs will be more resilient to withstand global threats that are difficult to address on the local level.

Putting a value on ecosystems such as coral reefs is difficult because they have such a wide variety of different values – from the value of a snorkelling tour for an individual up to the value of coastal protection for an entire island or community. But as they start to repair their homes and jetties, the people of Mantanani can put a value on coral reefs: RM60,000 (about $15,000). That's the bill for the repairs they are going to have to make. Until the next storm…

THE SEVEN COLOURS OF MAGIC:
REEF CHECK SAN ANDRÉS IN COLOMBIA

BY **CORALES DE PAZ**

The ocean is our true ultimate frontier and beneath the waves lies a fantastic, colourful, alien, and sometimes dangerous paradise.

Colombia sits in quite a privileged position, having access to both the Caribbean in the north, and the Pacific to the west. It's warm and teeming with life filled waters.

Some 700km north-west of the Colombian mainland, these waters make way for an island to rise, the island of San Andrés, probably one of the best examples of a Caribbean paradise ever sought after by tourists, marine enthusiasts, divers, as well as scientists.

San Andrés, also referred to as "The Sea of Seven Colours", is certainly Colombia's crown jewel on the Caribbean: white sandy beaches, crystal clear waters, tropical climate, and coral reefs that paint the waves in an unbelievable variety of shades of blue.

There is no better place than San Andrés to exemplify our core belief at Corales de Paz: Coral reefs are more than just an ecosystem, they are a source of unity, a way to bring human beings together; our purpose is to conserve and improve the condition of this habitat so this source of unity remains ever strong.

Bringing people together is both our purpose as well as our method: joining scientists with their innovative ideas and state-of-the-art research projects; locals with their vast knowledge of the waters surrounding them; altogether with tourists, divers and marine enthusiasts who enjoy visiting these gardens of Eden but also enjoy giving back to the seas.

And what better way to give structure to our endeavour than the Reef Check protocol? The first-ever volunteer effort to survey coral reefs worldwide.

The first Reef Check survey in San Andrés was carried out in 1998, in which scientists and experts were the main participants; the project did not quite lift off at the time, however the idea of citizen science remained dormant waiting to be picked up again some 20 years later.

The Sea of Seven Colours is of utter importance to Colombia, housing more than 70% of all coral reefs in the country, plus sustaining a population of more than 50 thousand inhabitants and more than a million tourists a year. However, tourism overload and overfishing, combined with coral bleaching, has led to a decline in live coral cover in the surrounding reefs.

Information regarding the status and health of coral reefs is sometimes difficult to access for people, because most of the surveys are carried out by private organisations, universities or scientific groups.

Based on his experience around the world as a Reef Check EcoDiver and EcoDiver Trainer, Corales de Paz founder and director Phanor Montoya PhD, noticed that it is not only scientists or universities with interest in coral reefs, but almost anyone. Tourists, recreational divers, marine enthusiasts, local communities, even children, common citizens who probably can't tell the scientific differences between one coral species and the next, but nevertheless, are willing to take their time to learn, to travel, to dive, to endure hardship, with the sole reward of preserving and surveying these ecosystems. People with a ton of varied interests from different backgrounds and yet all of them gathered around an ecosystem.

Coral reefs bring people together. The involvement of non-scientific citizens in coral reef surveys and monitoring projects around the world has been a complete success. So why not apply this concept in Colombia? Hence, Corales de Paz.

We began our first Reef Check surveys in 2017, across multiple destinations in Colombia, providing our participants with a new way to make science but at the same time dive tourism and conservation, the ultimate combination for any marine enthusiast.

Reef Check San Andrés was one of the first surveys we carried out; since then we've been monitoring the reef's health and status on a yearly basis. But not only that, Reef Check San Andrés has been embraced by local inhabitants, so much so that many local fishermen and recreational divers have been certified as Reef Check EcoDivers, giving them the possibility to support and participate in any Reef Check monitoring programme on the island. That way, we make sure that the most valuable resource remains evermore in the hands of those who depend on it.

Reef Check San Andrés is our avant-garde project; science and tourism combined in a paradise destination. Take a chance and enjoy citizen science, or better, enjoy meaningful diving; get to know new people, who just like you, are driven to monitor and conserve these underwater gardens. Moreover, the money participants invest in their expedition goes entirely to the project, supporting our monitoring and conservation efforts, making Reef Check San Andrés quite a sustainable model of citizen science.

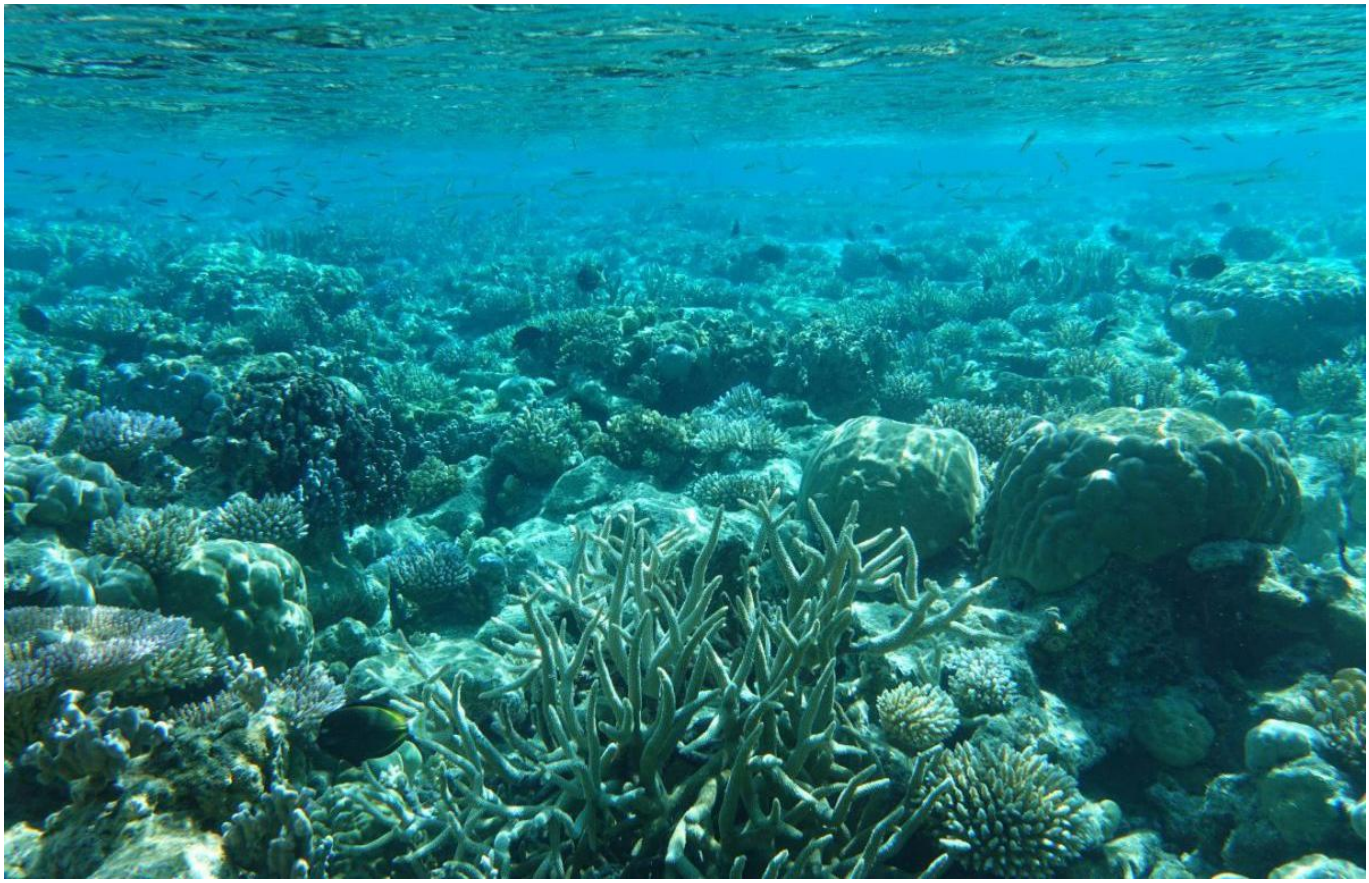
For centuries, people have only dreamt of visiting a Caribbean paradise as the one described here. This is your chance to make that dream come true, plus the add-on of being able to express your inner scientist or explorer, while at the same time helping a conservation effort for a very important ecosystem, of which we, humans, rely so much upon.

For more information on this project and how to get involved, please visit: **www.coralesdepaz.org/program/san-andres-reef-check/**

NEW RESEARCH FROM FLORIDA TECH

USES REEF CHECK DATA TO IDENTIFY CORAL REEF 'BRIGHT SPOTS'

REPRODUCED WITH PERMISSION FROM FLORIDA INSTITUTE OF TECHNOLOGY



Marine heatwaves are threatening coral reefs around the world. A new study led by researchers at Florida Tech has identified coral reef 'bright spots' that will likely maintain relatively high coral cover through climate change, as well as 'dark spots' that are likely to lose significant coral cover.

The findings from the research lab led by Florida Tech professor Rob van Woesik and the non-profit organisation Reef Check were published this week in the journal Global Change Biology.

The study is based on an extensive study at thousands of sites around the globe supported by the National Science Foundation and conducted by Reef Check using a standard method.

"While coral reefs continue to be threatened by climate change, our study sought to locate reefs around the world that may survive such temperature stressors, in the hope that we could influence policy and turn those 'bright spot' reefs into sanctuaries, or climate-change refuges, and thereby protect them from local disturbances such as pollution," said van Woesik, a professor and director of Florida Tech's Institute for Global Ecology.

"We have developed maps of future coral cover based on climate change projections," said Shannon Sully, an author of the study who recently earned her PhD at Florida Tech. "These Google Earth maps are now freely available so that local management can use them as decision-support tools for geographical conservation efforts."

While the reasons why some sites are bright spots and some are dark spots are still being determined, the study also suggests that some larger-scale, coordinated management efforts could ensure that reefs with the greatest chance of survival receive specific conservation focus, van Woesik noted.

"In particular, these findings identify reefs in Indonesia, Malaysia, the central Philippines, New Caledonia, Fiji and French Polynesia, which should be focal localities for multinational networks of protected areas," he said.

The article, 'Present and Future Bright and Dark Spots for Coral Reefs Through Climate Change,' is available at: **http://doi.org/10.1111/gcb.16083**

STEWARDING THE NEXT CORAL REEF ADVOCATES FOR THE RED SEA

Reef Check Red Sea Coordinator and EcoDiver Course Director Dr Mohammed M.A. Kotb has been busy assisting the region's up and coming researchers and coral reef advocates. As a professor of coral reef ecology at Egypt's Suez Canal University, he is currently supervising two MSc projects on coral diseases on Egyptian Red Sea reefs as they pertain to the negative effects climate change has on reefs.

In addition, Dr Kotb teaches an underwater survey methods course at the university, as well as at several training workshops for different sectors, especially the Red Sea Protectorates. Dr Kotb always introduces the Reef Check methodology as the common method used in the world and in the Red Sea and encourages all participants to submit their data to Reef Check's global database, so that they can be proud to know that they are actively participating in conserving their reefs.

If you would like to get involved, you can reach out to Dr Kotb via email at: **kotb13@gmail.com**

REEF CHECK MALAYSIA RELEASES 2021 ANNUAL SURVEY REPORT

Reef Check Malaysia (RCM) has published its 2021 annual report on the Status of Coral Reefs in Malaysia, marking the 15th year of its annual survey programme. Despite facing several setbacks due to the Covid-19 pandemic, a total of 206 sites were surveyed in 2021: 86 sites in the Sunda Shelf region, 11 sites in the Malacca Strait region, and 109 sites in the North Borneo region.

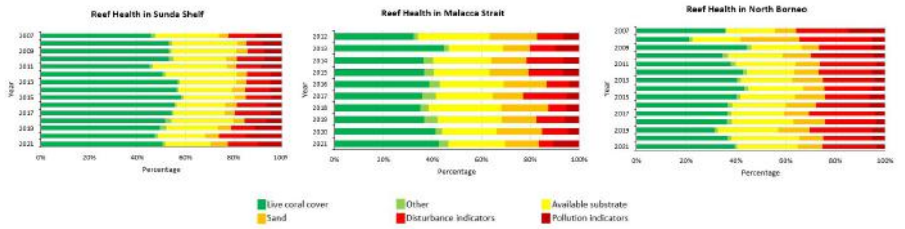
The survey data documents the health status and trends of the coral reefs in Malaysia. Based on the overall survey results, in average, the reefs in Malaysia are considered in "Fair" condition with a level of living coral at 44.26%.

KEY FINDINGS:

- There is a slight increase of live coral cover from 41.32% in 2020 to 44.26% in 2021.
- Abundance of both fish and invertebrate indicators remains generally low suggesting either historical or on-going fishing pressure.
- Numerous indicators of disturbances, such as nutrient indicator algae, recently killed coral, and crown-of-thorns starfish, highlight the ongoing concerns about the trajectory of reef health.
- Both local impacts such as sewage pollution and global impacts such as ocean warming are visible in survey data.

After another year of movement restrictions and low tourism activity, there are some indications that reef health can recover if the impacts and disturbances resulting from high tourist numbers are reduced or eliminated. Live Coral Cover has improved for the first time since 2015.

RCM emphasises the need to review the country's approach to tourism and to reef conservation. A recent study by Tourism Malaysia highlighted several trends indicating that tourism preferences are changing – moving away from mass tourism to more tailored experiences, with safety and hygiene high on the list of priorities. This reflects trends in the international market.



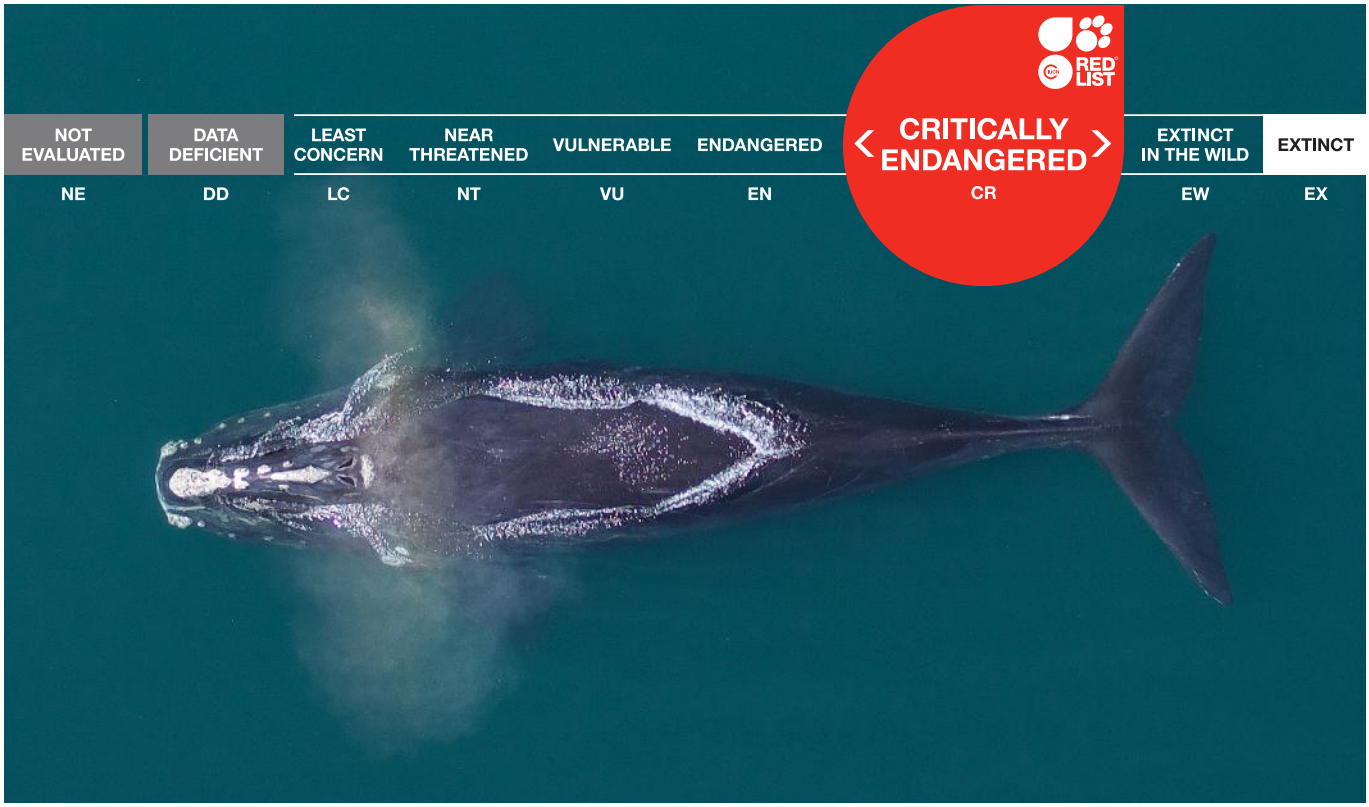
Locations surveyed in Malaysia. Each location consists of numerous survey sites.

All stakeholders need to get together and discuss these challenges and derive solutions that benefit us all. We all have a role in taking action and protecting coral reefs and the ecosystems services they provide.

FEATURE CREATURE

NORTH ATLANTIC RIGHT WHALE (*EUBALAENA GLACIALIS*)

FEATURE **IUCN RED LIST 2020** PHOTOGRAPHY **DAVID ABEL**



RED LIST CATEGORY & CRITERIA: CRITICALLY ENDANGERED
Scientific Name: *Eubalaena glacialis*
Synonym: *Balaena glacialis Müller, 1776*
Common Name: North Atlantic Right Whale

TAXONOMIC NOTES

The taxonomy follows the view of the IWC Scientific Committee and the Society for Marine Mammalogy's Committee on Taxonomy which now recognise Right Whales in the North Atlantic, North Pacific and Southern Hemisphere as three distinct species in the genus Eubalaena, namely *E. glacialis* (North Atlantic Right Whale), *E. japonica* (North Pacific Right Whale), and *E. australis* (Southern Right Whale) (IWC 2004), based mainly on the mtDNA phylogenetic findings of Rosenbaum et al. (2000).

The North Atlantic Right Whale was included in previous Red Lists together with the North Pacific Right Whale under the species name *E. glacialis* (Baillie and Groombridge 1996).

Rice (1998) classified Right Whales in the North Atlantic, North Pacific and Southern Hemisphere as the single species *Balaena glacialis*, in the genus Balaena along with *B. mysticetus*, the Bowhead Whale. While not all cetologists accept that the three Right Whale taxa qualify as full biological species, their clear geographical separation means that their treatment as separate taxa for conservation purposes is appropriate.

JUSTIFICATION

The estimated number of North Atlantic Right Whales alive at the end of 2018 was 409 individuals (Pettis et al. 2020), of which fewer than 250 were mature. The population was declining during 2011-2020 due to a combination of increased mortality rates (driven primarily by entanglement in fishing gear and vessel strikes) and reproductive rates below the average for previous years. Because the former eastern North Atlantic subpopulation of Right Whales, if it still exists, contains at most a few individuals, it can be assumed that the western North Atlantic subpopulation contains over 90% of North Atlantic Right Whales. The species therefore qualifies as Critically Endangered under criterion C2a(ii).

GEOGRAPHIC RANGE

The Right Whale formerly was common on both sides of the North Atlantic. It appears to be effectively extirpated in the eastern North Atlantic but in the past probably ranged from a calving ground in the Golfo de Cintra (23°N) off Western Sahara, through the Azores, Bay of Biscay, western British Isles, and the Norwegian Sea to the North Cape (hence the Dutch, German and Scandinavian name Noordkaper/ Nordkaper) (Rice 1998). It may also have occurred in the Mediterranean Sea (Rodrigues et al. 2018). In the western North Atlantic the species migrates from calving grounds off Florida and Georgia along the eastern seaboard of North America, to summering grounds largely in the Gulf of Maine, south of Cape Cod, Bay of Fundy, Scotian Shelf, and Gulf of Saint Lawrence.

Today, North Atlantic Right Whales are regularly seen in the winter calving grounds off Florida and Georgia, and in spring/summer feeding grounds in Cape Cod Bay and south of Cape Cod, the Great South Channel off Massachusetts, the Gulf of Maine, the Scotian Shelf, the Bay of Fundy, and increasingly in the Gulf of Saint Lawrence (Hayes et al. 2019). There have been a few sightings off Cape Farewell (southern tip of Greenland) (Brown et al. 2007) and Iceland (Hamilton et al. 2007), and in the Gulf of Mexico (Ward-Geiger et al. 2011). Adult females appear to migrate to the southern calving grounds in winters in which they bear a calf while most males and other females do not migrate to the calving grounds, especially after summers with below-average prey abundance (Gowan et al. 2019).

There have been very few sightings in the northeast Atlantic in recent times. A possible Right Whale was sighted in the Bay of Biscay in 1977 (Aguilar 1981) and a cow-calf pair was sighted off Cape Vincent, Portugal in 1995 (Martin and Walker 1997). One Right Whale was apparently sighted off the island of Sardinia (Mediterranean Sea) in 1991, but a survey of the former Cintra Bay calving ground off Western Sahara failed to locate any Right Whales (Notarbartolo di Sciara et al. 1998). Individual Right Whales sighted off Norway in 1999, off the Azores in 2009 (Silva et al. 2012) and off France in 2019 (Pettis et al. 2020) have each been identified as animals from the western North Atlantic subpopulation (Jacobsen et al. 2004, Silva et al. 2012, Pettis et al. 2020). There have been unconfirmed reports from northwest Ireland and the Canary Islands.

The distribution map shows where the species is known to occur, based on confirmed records post-1900, and may occur, based on oceanography. The species has not been recorded for all the states within the hypothetical range as shown on the map.

POPULATION

Northwest Atlantic

Based mainly on photo-identification data, the North Atlantic Right Whale population was estimated to have been increasing at an average rate of 2.8% per year from 1990 to 2011, peaking at about 480 individuals in 2011. Abundance has been declining since 2011, to an estimated 409 individuals by the end of 2018. Reproduction has declined as reflected in both lower calf counts (average 10 calves per year observed during 2012-19, compared with 24 per year during 2004-11) and longer calving intervals. Associated with a lower estimated survival rate for females, the female proportion in the population is estimated to be only about 40%, despite a birth sex ratio close to 50:50. During 2017-19, only 12 calves were observed but 30 deaths were documented. (Pace et al. 2017, Pettis et al. 2020).

There has also been a change since 2011 in patterns of habitat use (IWC 2017). There has been a northward shift in summer distribution into the Gulf of Saint Lawrence, leaving fewer whales in the Bay of Fundy and Gulf of Maine (Stokstad 2017).

Calf counts have been conducted since 1980, and calf production has fluctuated. It was particularly low during 1998-2000 and again during 2012-2019, with no calves at all observed in 2018 (Pettis et al. 2020). Years of low calf production have been correlated with environmental conditions (Greene et al. 2003) and with poor body condition of adults (Rolland et al. 2016). Based on the pattern of occurrence in the calving grounds of females at different stages in the calving cycle, Browning et al. (2010) inferred that there is considerable cryptic perinatal mortality in addition to known calf deaths. For the period 1989-2003, those authors documented 191 surviving calves and 17 known calf deaths and estimated a further 28 cryptic calf deaths.

The demographics of North Atlantic Right Whales compare unfavourably with those of Southern Right Whales in terms of birth and death rates as well as indicators of health (Rolland et al. 2016, Corkeron et al. 2018). The occurrence of skin lesions of a kind not seen in Southern Right Whales was recorded in North Atlantic Right Whales during the period 1995 to 2002, and appeared to be correlated with the failure of females that would normally have been ready to have reproduced on schedule (Rolland et al. 2007). Body condition as measured by blubber thickness was poorer in the North Atlantic Right Whales than in Southern Right Whales (Miller et al. 2011).

Northeast Atlantic

Due to the paucity of records in recent times

(see Geographic Range), and the fact that all photographed sightings have been identified as migrants from the west, it seems unlikely that there is a remnant northeast Atlantic breeding subpopulation. It is also unclear whether in the past the animals in the northeastern part of the range (off Iceland and Norway) belonged mainly to the western or eastern breeding subpopulations, or to what degree the two breeding subpopulations were separate.

HISTORICAL POPULATION SIZE

The first documented records of Basque whaling in the Bay of Biscay are from the 11th century (Rey-Iglesia et al. 2018). At least dozens of Right Whales were killed each year in the Bay of Biscay until a marked decline was evident by 1650, and whaling declined during the 18th century. Basque whalers arrived in Iceland as early as 1412, and participated in the Right Whale fishery around the British Isles and Norway from the 14th to the 18th century, but probably many more whales were taken by Dutch, Danish, British, and Norwegian whalers. Quantitative estimates of catches are not available. Historical "right whale" catches as far north as Iceland and Norway appear to have been mainly Eubalaena glacialis, with Bowhead Whales being the main species only in the far north (Greenland and Svalbard) (Aguilar 1986). Smith et al. (2006) documented extensive whaling for Right Whales in the North Cape area (northern Norway) in the 17th century. Right Whale hunting in the northeastern Atlantic seems to have declined from the mid-17th century and all but disappeared by the mid-18th century, but there was a brief period of Right Whale catches by modern whalers operating from shore stations in the northwestern British Isles and off Iceland, with at least 120 Right Whales taken during 1881-1924 (Collett 1909, Brown 1986). The last recorded catch was a cow-calf pair off Madeira in 1967, accompanied by a third individual that escaped. There is some archaeological and historical evidence for a Right Whale wintering ground in the Mediterranean Sea in classical times, with a likely fishery near the Straits of Gibraltar (Rodrigues et al. 2018).

It is not clear when Basque whaling first spread to the western North Atlantic, but it had been established no later than 1530. It had long been thought that large numbers (tens of thousands) of Right Whales were taken off Labrador and Newfoundland by the Basques between 1530 and 1610 (Aguilar 1986, Reeves 2001) but recent genetic evidence suggests that many, if not most, of these were Bowheads (Rastogi et al. 2004, McLeod et al. 2008). Shore-based whaling along the US east coast began in the mid-17th century and continued at least sporadically over the next two and a half centuries (Reeves et al. 1999).

Historical catches, particularly in the northeastern Atlantic, are insufficiently documented to allow estimation of the pre-whaling population size. Monsarrat et al. (2016) used historical catches in the North Pacific, which are better documented, to relate pre-whaling Right Whale summer abundance to habitat parameters, and then applied this relationship to the North Atlantic. This resulted in an estimated pre-whaling total abundance in the North Atlantic of 9,000-21,000, based on ecological carrying capacity. Much of this population is predicted to have summered in the Norwegian Sea and on the Grand Banks off Newfoundland.

HABITAT AND ECOLOGY

Right Whales feed on calanoid copepods and other small invertebrates (smaller copepods, euphausids (krill), pteropods, and larval barnacles), generally by slowly skimming through patches of concentrated prey at or below the surface (Mayo and Marx 1990). The most common prey species is the copepod *Calanus finmarchicus* (Baumgartner et al. 2007).

Relative abundance of Right Whales has been positively correlated with copepod density off the northeastern United States (Pendleton et al. 2009), and also correlated with sea surface temperature, sediment type, and bathymetry (Good 2008). Baumgartner and Mate (2005) attached satellite-monitored radio tags to Right Whales in the Bay of Fundy in order to investigate their habitat use. They found that when the tagged animals left the Bay, they did not frequently visit the deep basins of the Gulf of Maine and Scotian Shelf, where abundance of *C. finmarchicus* was thought to be high. Instead, the whales visited areas characterized by low bottom water temperatures, high surface salinity, and high surface stratification.

THREATS

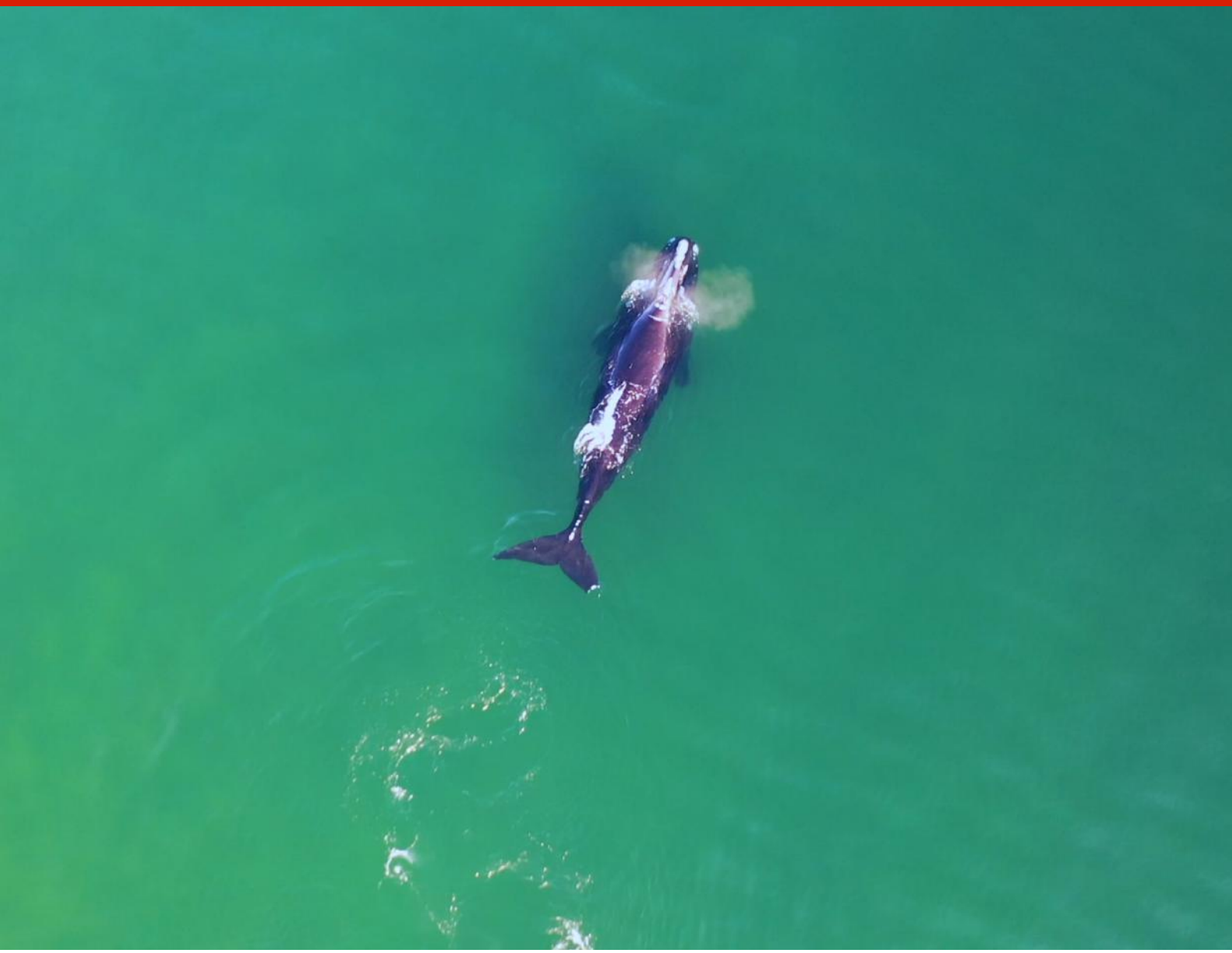
Right Whales in the North Atlantic are no longer hunted, and the most serious current threat is death and injury from entanglements in fishing gear and ship strikes off the east coast of North America (Kraus et al. 2016). During 2012-2016, there were 30 confirmed human-caused deaths or serious injuries, including 26 entanglements and two ship strikes (Hayes et al. 2019). Because some human-caused deaths probably pass undetected, the reported events are minima. Entanglement events appear to be increasing in both frequency and severity (Knowlton et al. 2016). A further 30 deaths were recorded during 2017-19 of which 21 were in Canadian and nine in US waters (Pettis et al. 2020).

Photo-identification images revealed that most individual Right Whales (82.9%) bear evidence of being entangled at least once while over half (59.0%) of the individuals have been entangled more than once. The evidence suggests that Right Whales acquire new entanglement scars on a nearly annual basis, juvenile whales at a higher rate than adults (Knowlton et al. 2012). Based on observations during 1995-2008 of 50 free-living individuals observed to be carrying fishing gear, compared with 459 individuals never seen with gear during that period, Robbins et al. (2015) estimated a mortality rate of approximately 25% during the first year after which the individual was first seen with gear. Because some deaths may occur before the whale is seen with gear, this provides a minimum estimate of the mortality rate of entangled whales in addition to those that die immediately following entanglement. Even if not directly fatal, entanglement is detrimental to the whale's energy balance leading to poorer body condition, lower reproduction and lower survival (Pettis et al. 2017, van der Hoop et al. 2017).

In the Bay of Fundy and on the Scotian Shelf (Canada), from 2004 to 2008, groundfish hook-and-line gear was found to pose the greatest risk to Right Whales during the summer, and lobster gear during the spring and autumn migration periods (Vanderlaan et al. 2011). However, of 12 Right Whale deaths recorded in the Gulf of Saint Lawrence in summer 2017, six were examined, and the cause of death was found to be entanglement in snow crab fishing gear in two cases and suspected to be blunt trauma consistent with vessel strike in four cases. In addition, five live whales were observed entangled including at least four in snow crab gear. Three of those whales were freed by human intervention or freed themselves, and the fate of the remaining two was unknown (Daoust et al. 2017, Taylor and Walker 2017).

Right Whales appear to be the most vulnerable large whales to ship strikes (Vanderlaan and Taggart 2007). Ship strikes were found to be the cause of death for 53% of the 40 Right Whales necropsied between 1970 and 2006 and could have been responsible for up to 10 individual North Atlantic Right Whale deaths per year (Vanderlaan et al. 2009). Confirmed Right Whale deaths due to ship strikes declined from 2.0 (2000-2006) to 0.4 per year (2012-2016) (Hayes et al. 2019). The decrease may have been due, in part, to spatial mitigation efforts (so-called Seasonal Management Areas, or SMAs) implemented in US waters in 2008 (van der Hoop et al. 2015). The SMAs were designed to correspond to Right Whale feeding, calving, and migration areas and it is estimated that this mitigation effort reduced mortality by 80-90% (Conn and Silber 2013). The risk of ship strike was reduced by an estimated 82% due to an "Area to Be Avoided" vessel-routing initiative implemented by the International Maritime Organization in the Roseway Basin Area on the Scotian Shelf (Vanderlaan and Taggart 2009). However, the shift in summer distribution of Right Whales may have increased their exposure to ship strikes in the most recent years.

Low-frequency in-water noise from shipping activity has been linked to physiological stress (increased glucocorticoid levels) in North Atlantic Right Whales (Rolland et al. 2012), but the evidence is weak. Acoustic masking from



anthropogenic noise (especially ship noise) may negatively affect both reproduction by interfering with courtship vocalization and prey acquisition by interfering with communication and reducing feeding opportunities (Hatch et al. 2012).

Environmental neurotoxins produced as a result of harmful algal blooms have the potential to affect reproduction and development. Paralytic shellfish toxin and domoic acid that were detected in faecal samples indicate that Right Whales are exposed to environmental neurotoxins on an annual basis for up to six months of the year (Durbin et al. 2002, Doucette et al. 2012).

Climate change appears to have caused a northward shift in the summer distribution of North Atlantic Right Whales, likely due to effects on prey distribution, which exposes the Right Whales to shipping and entanglement risks over a greater area (Meyer-Gutbrod et al. 2018).

USE AND TRADE

This North Atlantic Right Whale is no longer hunted. It was once the target of major commercial whaling.

CONSERVATION ACTIONS

Right Whales have been protected from hunting by the International Convention for the Regulation of Whaling since it came into force in 1948, and by its predecessor in the 1930s. The North Atlantic Right Whale is listed as Endangered under both the US Endangered Species Act and the Canadian Species At Risk Act and it is listed in Appendix I of both the Convention on International Trade in Endangered Species and the Convention on the Conservation of Migratory Species of Wild Animals.

Efforts are underway in both the US and Canada aimed at limiting North Atlantic Right Whale deaths and injuries due to ship strikes and entanglements. In both countries, recovery plans have been implemented. In US waters, mandatory time-area speed restrictions in the form of Seasonal Management Areas were implemented in 2008 in an effort to reduce the frequency and severity of ship strikes. A Mandatory Ship Reporting Scheme has been in place since 1999 in two areas of the Right Whale calving and summering grounds to warn vessels of whales' presence. Regulations specify minimum approach distances for whale-watching and other vessels. Regulations are in place in the US involving restrictions on certain types of fishing gear in areas where, and times when, Right Whales are common. Pace et al. (2015) found that measures adopted prior to 2009 to reduce entanglements had not been effective. New measures adopted since 2009 have yet to be evaluated (Hayes et al. 2019).

Canada has introduced measures to limit ship speeds and close areas to snow crab, lobster and other non-tended fixed-gear fishing in areas where the Right Whales are common and in other areas following sightings of Right Whales (Fisheries and Oceans Canada, 2019).

CITATION

Cooke, J.G. 2020. *Eubalaena glacialis* (errata version published in 2020). The IUCN Red List of Threatened Species 2020. Accessed on 15 February 2022. **www.iucnredlist.org**

A WHALE IN DUBAI

INCREDIBLE SIGHTINGS FROM THE PUBLIC THIS WINTER

FEATURE **ADA NATOLI** AND **BRYANA COPE** (UAE DOLPHIN PROJECT INITIATIVE & ZAYED UNIVERSITY)

Little is known about Bryde's whales in this part of the world. They are regularly reported in the Gulf and in the Arabian Sea, which undoubtedly are part of their home range, but we do not know the reason why they enter the Gulf or whether this is seasonal behaviour.

ABOVE: This male killer whale, Arion, was identified in Sri Lanka thanks to whale watchers reports to the Northern Indian Ocean Killer Whale Alliance. It was also sighted in 2008 and 2019 in Dubai and Abu Dhabi waters. Photo by Chammika Kumara/Northern Indian Ocean Killer Whale Alliance. **OPPOSITE PAGE:** Rare sighting reported by the public of a young Bryde's whale sighted in Dubai Harbour on the 9th of January 2022. It stayed in the harbour for a full day and only left during the night. Photo by Jasmin, My Ocean Company.

On January the 9th of this year, multiple reposts flooded Instagram which drew HH Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai's attention, ultimately making their way to the UAE Dolphin Project. What were these posts about? A whale! Yes, a real whale in Dubai's Marina Harbour.

After looking through multiple photos and videos sent in, the team concluded that it was a Bryde's whale (pronounced 'Broodus'). When a picture of the head is available, Bryde's whales are easily recognisable by the presence of 3 characteristic parallel ridges that run from the blowhole to the tip of the head.

With an estimated size of 7 metres maximum, it was definitely a young individual, but most likely already able to feed itself, although it looked skinny and somewhat malnourished. Adult individuals of this species can reach up to 15m in length and weigh 25-30 tons, whereas a Bryde's whale calf is normally about 4-4.5m with a "modest" weight of one ton. They learn to feed themselves quite quickly in respect to other species, a few months from birth (check: **https://wwhandbook.iwc.int/en/species/brydes-whale** for more info). This individual stayed in the marina for a full day and left for deeper waters during the night, probably taking advantage of the quiet time to find its way out of the harbour.

The team went on site the morning after having received the information, but there was no sight of it. The most likely explanation for its visit is that it was following the small fish shoals returning to the nearshore waters of Dubai. This was likely related to the fact that the sea temperature finally dropped (later than normal this year) in the preceding weeks. This year, the sea temperature remained extremely high until late December. This raises concerns as it may disrupt the normal cycle of fish presence, movements and reproduction, and in turn, it can affect the ability of top predators such as whales and dolphins to find suitable and sufficient prey to sustain themselves. This can be an issue especially for migratory species as it has been reported for Grey whales migrating along the eastern North Pacific coasts (see: **https://www.sanignaciograywhales.org/new-publication-poor-body-condition-associated-with-gray-whale-mortality-event/**).

Little is known about Bryde's whales in this part of the world. They are regularly reported in the Gulf and in the Arabian Sea, which undoubtedly are part of their home range, but we do not know the reason why they enter the Gulf or whether this is seasonal behaviour. Scientists are still working on the species identification as differences between Bryde's whales offshore and coastal populations have been observed across the range. Historical data from Soviet whaling records in the region suggests two breeding seasons in the Arabian Seas, with the Gulf of Masirah (Oman) being an important breeding ground. We also know that in the mid-1960s, this species was a target for illegal whaling, resulting in the mortality of 849 individuals (Notarbartolo di Sciara, G., Baldwin, R., Braulik, G., Collins, T., & Natoli, A. (2021). Marine mammals of the Arabian Seas. In The Arabian Seas: Biodiversity, Environmental Challenges and Conservation Measures (pp. 637-678). Springer, Cham.).

Bryde's whales are listed as "Least Concern" by the IUCN Red List worldwide, although there is little current information on their status, especially in this region where we have no idea of their population size and trend. Further concern is raised by the fact that a number of dead individuals of this species have been recorded recently in the Gulf.

But this wasn't the only exciting sighting. Killer whales have once again made an appearance! After a long pause of sightings by this species, two killer whales were reported at the end of December by the Environment Agency – Abu Dhabi. Then, in January, just a few days after the report of the whale in Dubai Harbour, we received a video of a pod of Killer whales sighted about 50km off the Dubai World Islands (once again kindly shared by HH Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai). This

ABOVE Arion with other individuals of what is known as Pod 11 for the Northern Indian Ocean Killer Whale Alliance. Two females from this pod, Lassana and Fender, were also sighted in Dubai waters in 2019, and one of them in 2008. Killer whale pods are matriarchal and generally stable and maintained across generations. The stable male individuals in the pod are generally the offspring of the matriarch. Photo by Chammika Kumara, Northern Indian Ocean Killer Whale Alliance. **BELOW** The young Bryde's whale captured surfacing just metres from the pier in Dubai Harbour. Bryde's whales generally travel alone or with 2-3 individuals. Photo by Jasmin, My Ocean Company.

pod included at least 6 females, one calf and one male.

Interestingly, a few weeks later, a killer whale sighting was recorded in Iran off Qeshm Island. Sadly, none of the footage from these sightings were good enough to identify whether they were the same individuals. Just like smaller dolphins, individual killer whales can be identified by notches on their dorsal fin, as well as distinct colourations on their body.

Killer whales, or Orcas, are rare but regularly sighted in the Arabian Gulf and neighbouring waters. Past footage from the public and in collaboration with the Northern Indian Ocean Killer Whale Alliance (**https://niokillerwhales.wixsite.com/niokwa**), has allowed us to identify at least two individuals that occurred in UAE waters in 2008 and 2019, and amazingly the same individuals had been reported in Sri Lanka in 2015! Thanks to the public reports and international collaborations, scientists have been able to track individuals for the first time and prove killer whale movements from the Gulf across the Northern Indian Ocean and back! The individuals sighted in the UAE are known in Sri Lanka as Lassana, Arion and Fender, and belong to what is known as Pod 11.

Killer whales have a very strong matriarchal social structure with related females forming a pod, travelling together throughout their lifetime, and helping each other in raising their calves. Male offspring from the mother can also belong to the pod. Killer whales are long lived creatures, but reach adulthood only around 11-14 years old and ultimately only rear 4-6 calves in their life time, which is a pretty low reproduction rate.

Killer whales are generally thought to be found in cooler waters, but they actually occur throughout all oceans from tropical to polar waters. Although only one species is recognised, there are different forms of killer whales in different parts of the world. They differ from diet preferences, whether they are fish eaters or marine mammal eaters, and behaviour, whether they are resident or transient populations. Different forms will not mix even if they have overlapping ranges. Despite their global distribution they are among the few species of whales and dolphins that are still considered "Data Deficient" according to the IUCN Red List, meaning there is not enough data to actually assess the status of their population globally. We have no information about the killer whale population that roams the Northern Indian Ocean and the Gulf. They are not resident in the Gulf but how big their population is, what their population trend is, and how big their home range is, is completely unknown.

The Dubai dolphin Survey is approaching its end of year data collection which started in February 2021. This would not have been achieved without the support from Zayed University, Atlantis the Palm, F3 Marine, and Dubai Municipality, and a great number of volunteers that despite COVID restrictions and extreme weather conditions, have joined our surveys. Overall, we have collected a good number of sightings and extremely valuable data on the local dolphin population and other species that frequent Dubai waters that are now under final analysis. To know more, watch this space in the next few months.

While we cannot deny some frustration after all the hours spent at sea over the past month and not having been able to witness these amazing sightings ourselves, we are very grateful to have received the precious information from the public. Please continue to report your sightings. You can make a real difference in helping the conservation of these amazing cetaceans!

U.A.E. DOLPHIN PROJECT

REPORT YOUR SIGHTING!

WHAT YOU CAN DO TO HELP:

If you encounter a dolphin or whale, the information you collect is extremely useful to research!

1. Take photos or videos (if you can). You are there in that moment so you are the scientist. Only you can make a difference. Any image of any quality is better than nothing and will help experts to confirm the species. If you can capture an image from the side of the whale or dolphin so the fins are clearly visible, this will help scientists track the individuals, but please keep a safe distance!
2. Call as soon as possible if you are witnessing a special sighting or you encounter a dead animal, so experts can reach the site and gather more information.
3. Take note of the date, time, how many individuals you see, and the approximate location – if GPS is not available, saving a dot to google maps works great.
4. Share your data to the following: **www.uaedolphinproject.org**, Facebook, & Instagram, Whatsapp or Call: 050 955 1742 or 056 671 7164.

Ecobarrier Inflatable Oil Boom, Kalba, UAE.

PROTECTING
BLUE CARBON ECOSYSTEMS

FEATURE **ECOCOAST – WWW.ECOCOAST.COM**

Within the last year, there has been just under 60,000 tons of oil spilt into our waters across the globe, destroying blue carbon ecosystems in its wake.

Ecobarrier Inflatable Oil Boom, Kalba, UAE.

Over the past few decades, there has been a growing interest in exploring innovative ways to minimise the environmental footprint of coastal developments and marine disasters for blue carbon ecosystem protection.

Given that there were on average 1.8 large oil spills from tanker incidents every year in the decade from 2010 to 2019, countries whose coastlines are currently laid vulnerable to oil spills become ecological disaster target zones. Areas that have been impacted most recently are the Israeli, Lebanese and Mauritian shorelines last year, and the Peruvian coastline this year.

Given the significant impact blue carbon ecosystems have on climate change, they need to be protected against oil spills and debris. Oil booms are systems primarily used to contain oil spills and debris, to prevent damage to the blue carbon ecosystems. Placing oil booms in key positions around beaches and reserves can prevent environmental damage caused by oil spills.

HOW BLUE CARBON ECOSYSTEMS FIGHT CLIMATE CHANGE

The coastal ecosystems of mangroves, tidal marshes and seagrass meadows provide numerous benefits and services. These are essential for climate change adaptation along coasts globally, including protection from storms and sea level rise, prevention of coastal erosion, regulation of coastal water quality, provision of habitat for commercially important fisheries and endangered marine species, and food security for many coastal communities. These blue carbon ecosystems can be up to 10 times more efficient than terrestrial ecosystems at absorbing and storing carbon long term, making them a critical solution in the fight against climate change.

Blue carbon ecosystems are found along the coasts of every continent except Antarctica. Mangroves grow in the intertidal zone of tropical and subtropical shores. Tidal marshes are intertidal ecosystems occurring on sheltered coastlines ranging from the sub-arctic to the tropics, though mainly in Europe, North America, Australia and in the higher latitudes of South America and Africa. While seagrass meadows are communities of underwater-flowering plants found in coastal waters of all continents with the exception of Antarctica.

WHY THEY NEED PROTECTING

Despite these benefits, coastal blue carbon ecosystems are some of the most threatened ecosystems on earth, with an estimated 1,312 to 3,783 square miles being destroyed each year. It is estimated that up to 67 per cent of the global coverage of mangroves have been lost to either deforestation, chemical spills and other human causes. If these trends continue at current rates, a further 30-40% of tidal marshes, seagrasses and nearly all unprotected mangroves could be lost in the next century.

Ecobarrier Solid Flotation Boom, Water-Link, Belgium

When degraded or lost, these ecosystems can become significant sources of the greenhouse gas, carbon dioxide.

About a year ago, the cargo ship MV Wakashio ran aground on a coral reef on the southeast tip of Mauritius in the Indian Ocean. The resulting oil spill caused immense damage to the marine ecosystem in the area. The Japanese-owned vessel held 200 tons of diesel and 3,900 tons of fuel oil, of which an estimated 1,000 tons leaked into the sea when the ship's hull cracked. The spill has left a 15-kilometre stretch of the coastline – an internationally recognised biodiversity hotspot – smeared with oil. An area that was particularly vulnerable were the mangroves on the northern shoreline, which have been covered by the oil slick. Given the importance of mangroves to marine ecosystems, this is a hugely concerning development.

THE EFFECTIVENESS OF OIL BOOMS

Oil booms are primarily used to protect blue carbon shoreline areas from the damage caused by oil discharge. They can be implemented in ports, harbours, pipeline and intake projects, marinas, waterways and offshore as well, to protect them from oil spills. In addition, they also serve to protect marine areas from unwanted debris.

Following a spate of oil spills off the UAE coast, Ecocoast was required to install an inflatable oil boom. These oil spills affected a wide range of people – not only those living along the coast, such as fishing communities, but also hoteliers, diving centres, blue carbon nature reserves and mangrove swamps.

Following the deployment of the inflatable oil boom, we were recently tasked with manufacturing and installing an Ecobarrier Harbour Boom in a fishing village harbour. The Ecobarrier Harbour Boom is a heavy-duty, durable oil boom that has been designed to stay in the water for years, with minimum maintenance. Constructed of high tensile material, the booms typical installations include intakes, ports and harbours. Its floats are rotomolded, foam filled, long and wide, which provide superior buoyancy in rough water.

With its installation, we plan to keep the precious mangrove ecosystem in the UAE safe, secure, and protected from any future man-made disasters, for years to come.

Within the last year, there has been just under 60,000 tons of oil spilt into our waters across the globe, destroying blue carbon ecosystems in its wake. We urge Governments, Environmental Agencies and Councils to seek preventative measures to stop oil in its tracks, saving resources from clean up, and the environmental areas from disasters.

For more on Ecocoast & the booms mentioned, please visit: www.ecocoast.com

INTRODUCING THE ARABIAN MARINE SPECIES OBSERVER (AMSO) COURSE

FEATURE AND PHOTOGRAPHY **REBEKKA PENTTI** AND **OLIVER FARRELL**

The AMSO programme content and design is a collaboration between Nautica Environmental Associates, headquartered in the UAE and Five Oceans Environmental Services in Oman, combining 30 years of experience in the region with leading scientists in the field of marine species identification.

Spinner Dolphin (*Stenella longirostris*)

ABOVE: Pantropical Spotted Dolphin (*Stenella attenuata*) photo by Rebekka Pentti; Dugong (*Dugong dugon*) photo by Oliver Farrell; Indian Ocean Humpback dolphin (*Sousa plumbea*) photo by Rebekka Pentti. **OPPOSITE PAGE:** The dorsal fin of a Risso's dolphin (*Grampus griseus*) photo by Rebekka Pentti.

The rapidly developing Arabian Peninsula hosts a rich diversity of marine megafauna, including marine mammals, turtles and sharks that are under increasing pressure from anthropogenic activities. Many species, in particular marine mammals, are heavily impacted by the noise created during coastal development, seismic exploration, and mere commercial shipping.

Globally, the presence of trained marine mammal observers onboard is a regulatory requirement for many large offshore developments. This is now increasingly enforced in the Arabian Peninsula region, which encompasses the Arabian Gulf, Gulf of Oman, Arabian Sea, Gulf of Aden and the Red Sea. Previously, most regionally employed observers had international qualifications, focusing primarily on the marine species of the UK or Gulf of Mexico. As a response to this regional knowledge gap, Nautica Environmental Associates and Five Oceans Environmental Services prepared The Arabian Marine Species Observer (AMSO) Course; the first fully regionally specialised marine species observer programme in the Arabian Peninsula.

The AMSO course introduces the marine species observer industry. It is aimed at acquisition of in-depth knowledge, attaining new skills, and achieving competencies in marine species identification, data recording, distance estimation and the implementation of impact mitigation protocols. It also helps experienced individuals broaden their knowledge on the site-specific legislative frameworks protecting Arabian marine species. The 2-3 day course involves both theory and practical elements, with online theory options available for experienced species observers with other international certifications, or those generally interested in the topic but not looking to work as full-time species observers.

So why do we need a dedicated course for the Arabian Peninsula? The Arabian Peninsula is very unique from a biogeographic point of view; seasonal upwelling in the Arabian Sea provides nutrients for a wide range of marine megafauna, including large whales all year round. The Arabian Peninsula is an isolated area compared to the rest of the world's oceans; movement of animals towards the north is restricted due to the Asian continent. The Arabian Gulf and the Red Sea are further isolated and unique; the Arabian

ABOVE: AMSO Practical Sessions. **OPPOSITE PAGE:** Spinner dolphin with calf (*Stenella longirostris*) photo by Rebekka Pentti; Indian Ocean Humpback Dolphin (*Sousa plumbea*) photo by Oliver Farrell.

Gulf is shallow and relatively nutrient rich, whereas the Red Sea is deep and nutrient poor in comparison.

Due to these biogeographic factors, many marine species don't migrate elsewhere from the Arabian Peninsula and are endemic or genetically isolated. Therefore, population declines here can lead to extirpation (local extinction). While marine megafauna elsewhere can migrate when faced with threats such as warming seawater temperatures, the marine wildlife of the Arabian Peninsula do not have many options out. AMSO trained personnel provide a platform of opportunity for the offshore industry and non-commercial entities to safeguard marine megafauna during offshore activities and to learn more about the unique adaptations of species here.

The AMSO programme content and design is a collaboration between Nautica Environmental Associates, headquartered in the UAE and Five Oceans Environmental Services in Oman, combining 30 years of experience in the region with leading scientists in the field of marine species identification. The course is accredited by the IMarEST (Institute of Marine Engineering, Science and Technology) as well as ACTVET (Abu Dhabi Centre for Technical and Vocational Education and Training).

ABOUT THE AUTHOR

My name is Rebekka Pentti, I am a marine scientist and training manager at Nautica Environmental Associates LLC. Our AMSO course is increasingly acknowledged as the industry standard for maritime professionals working in sensitive offshore areas and it is the first fully regionally specialised marine species observer programme in the Arabian Peninsula!

I am very proud to have been involved in putting the AMSO course together as I now feel that our work has an increasingly widespread positive impact protecting marine megafauna from offshore activities while increasing environmental awareness amongst project crews. The UAE and the Arabian Peninsula have some incredible conservational organisations and groups, and I am truly grateful to have collaborated with many like-minded people on these shared goals.

Please head over to **www.amso.ae** to learn more about the AMSO course!


NDEASON

ERADICATING AN INVASIVE SPECIES: THE LIONFISH HUNTERS

FEATURE AND PHOTOGRAPHY **LORENZO MITTIGA**

Lionfish are native to the Indo-Pacific but are now found along the southeast coast of the US, the Caribbean, and in parts of the Gulf of Mexico. This invasion may be one of the greatest threats of this century to warm temperate and tropical Atlantic reefs, and associated habitats.

Lionfish are native to the Indo-Pacific but are now found along the southeast coast of the US, the Caribbean, and in parts of the Gulf of Mexico. This invasion may be one of the greatest threats of this century to warm temperate and tropical Atlantic reefs, and associated habitats.

The Indo-Pacific Red Lionfish (*Pterois volitans*) is a venomous, voracious predator characterised by reddish-brown striped bodies, large ornate pectoral fins, and fleshy tentacle outgrowths above their eyes. They bring true meaning to the term 'generalist' as they live anywhere from 1-300 metres in coral reef, mangrove, seagrass and estuarine habitats. Their generalist term also extends to their diet as they pretty much eat anything that will fit in their mouthes, ranging from small fish, shrimp, crab, lobster and even octopus and stingrays!

Their reproductive output is remarkable as they can release about 20,000 eggs every 4 or 5 days. This coupled with the lack of natural enemies and the naivety of native prey to their many feeding strategies, contribute to their success and makes them one of the worst marine invaders of all time.

Lionfish cause the majority of their impact based on what they eat. Thus my research has focused on monitoring their diet and how it changes over time in order to predict their impact, i.e. how will local industries and ecosystems be affected based on the proportion of commercially and ecologically important species being consumed.

HOW DID THE LIONFISH GET TO THE ATLANTIC?

While the exact cause is unknown, it's likely that humans provided a "helping hand".

Experts speculate on a few theories:

- That people have been dumping unwanted lionfish from home aquariums into the Atlantic Ocean for up to 25 years;
- That lionfish were accidentally released from public aquariums after they were destroyed by hurricanes;
- Involuntarily transported as larvae in ship ballasts loaded in the Indian Pacific, and then released in the Atlantic.

Since lionfish are capable of adapting to a wide range of temperatures, they survived the temperate waters of the US Atlantic coasts and widely reproduced. But one of the main reasons lionfish have spread so far, is since they are not native to Atlantic waters, they have very few predators. They are carnivores that feed on small crustaceans and fish, including the young of important commercial fish species such as snapper and groupers.

Unfortunately, specialised researchers have concluded that invasive lionfish populations will continue to grow and cannot be eliminated using conventional methods. Marine invaders are nearly impossible to eradicate once they have established a position.

How lionfish will affect native fish populations and commercial fishing industries has yet to be determined. What is known is that non-native species can dramatically affect native ecosystems and local fishing economies. Experts are carefully studying these invaders to better understand their role in, and potential threat to the Atlantic Ocean ecosystems.

Lionfish have venomous spines that can be very painful. Scientists are also actively studying these fish to better understand the potential threat that lionfish pose to key reef and commercial fish species.

SO WHAT IS BEING DONE IN BONAIRE TO TACKLE THIS PROBLEM?

Throughout the Caribbean region, numerous lionfish control and management strategies have been initiated in a means to quell the future spread and growth of the lionfish population, but they all vary in their success rates. Bonaire has one of the most effective and successful lionfish management strategies; which is due to the involvement of dedicated volunteer lionfish hunters and partnerships with the nature governing agency STINAPA Bonaire; and the local dive shops.

The most effective means is with divers as this means there is no by-catch. However, using divers means there is a depth limit to which they can go. So the tool used to tackle the lionfish depends on the country you work in, and the people doing the removal. Where lionfish are found at great depths, you need traps which are most effective. In shallow waters of 14 metres and above, divers are most effective.

Before the lionfish arrived along the coasts of Bonaire, they were already spreading fast along the southeast US Atlantic coasts to the Caribbean islands and a control plan began with informative workshops involving the Bonarian government and the diving industry in April 2009. The first lionfish were sighted and collected on the 26th of October, 2009.

The STINAPA Bonaire Marine Park (BNMP) immediately activated the second phase of the control plan. With the arrival of the lionfish, dive centres began providing divers with information given during the BNMP orientation. Divers were given markers with which to mark the location of lionfish and would then alert the BNMP. At that time, BNMP staff would remove the lionfish using nets.

Near the end of 2009, the BNMP began training volunteers in lionfish removal techniques. BNMP rangers held more than 40 training workshops in which dedicated staff were trained to coordinate the programme.

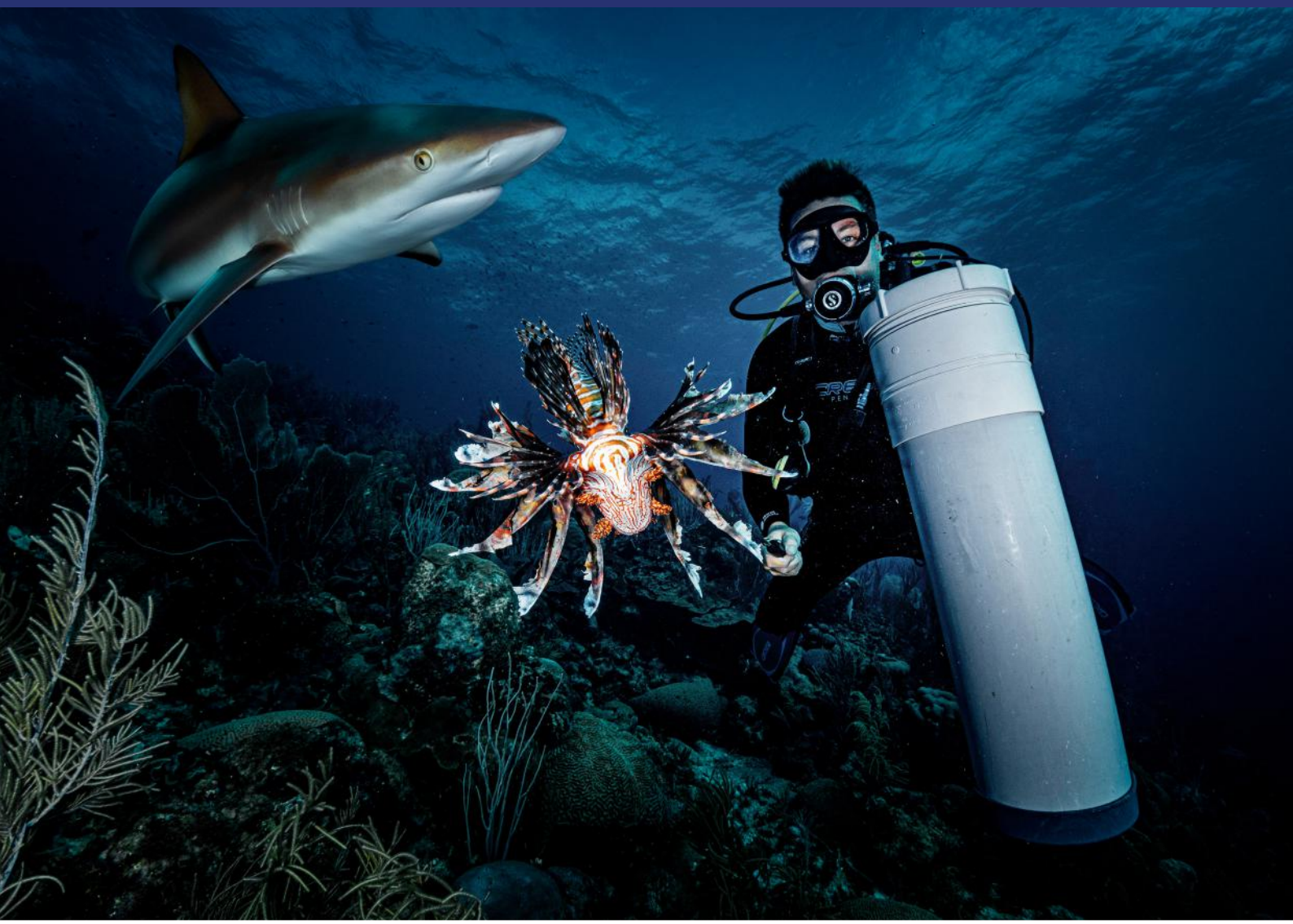
In the beginning, volunteers amongst the tourists, and local divers were shown how to spot, mark and report lionfish and all the information was uploaded to the "death row" database.

Given the new situation, the spearfishing legislation was changed in September 2010: "Articles Concerning Fishing" Article 9

1. It is forbidden to use mechanical gear, explosives, hand spears or poles with hooks, to hunt or catch marine life.
6. With the exception of explosives, the prohibitions set forth in paragraph… do not apply to the Manager or to the persons assigned by the Manager, upon catching, gathering and killing of harmful species… of the Island Resolution Nature Management Bonaire".

THE ERADICATE LION FISH TOOL (ELF)

As Bonaire is a marine park, there is a ban on spearguns, but an Eradicate Lion Fish tool can



be used. More than 300 mechanical Eradicate Lion Fish tools (ELF) were distributed. The ELF tool was developed by divers who were concerned with the damage that alternative lionfish hunting devices such as traditional spearguns and nets do to the reefs.

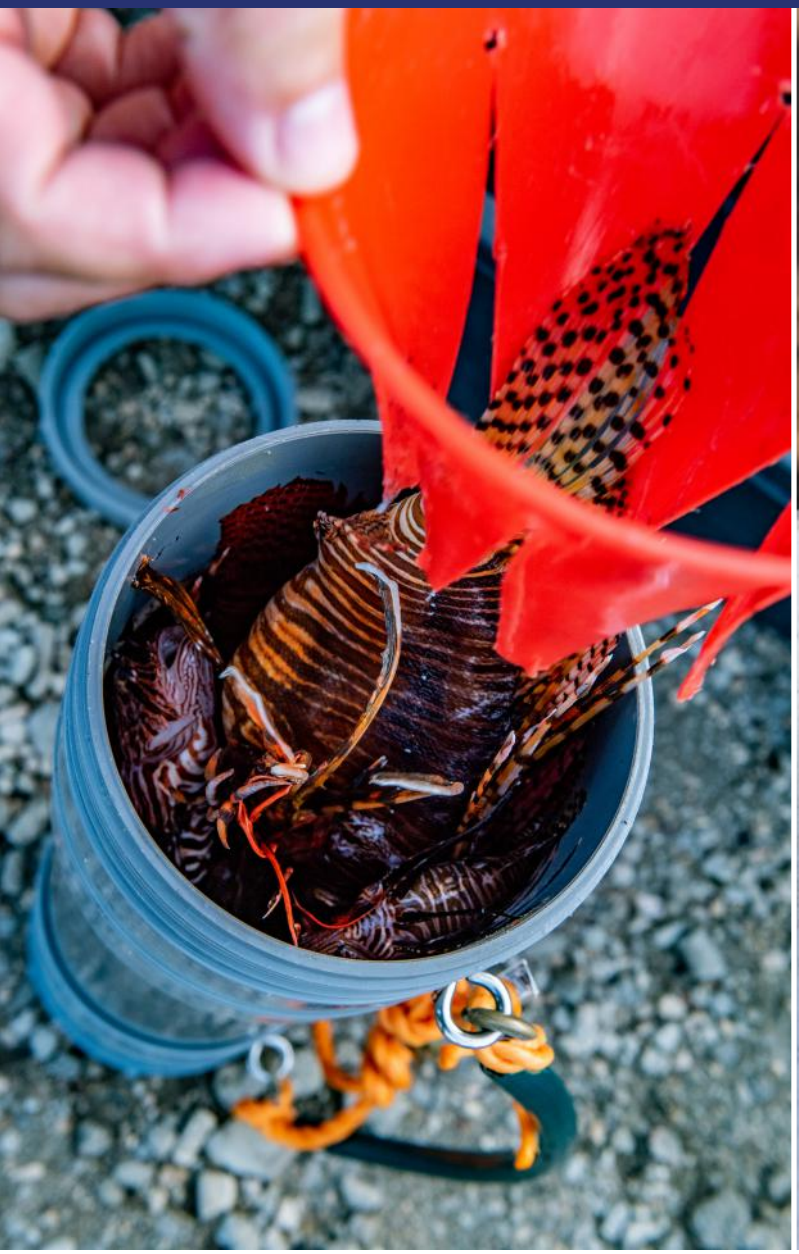
A mandatory training course was held by BNMP staff to teach volunteers how to properly use the ELF tool to reduce the impact of hunting on the reef. The number one rule was, "do not shoot if you are not sure to kill the lionfish with one clean shot". In fact, lionfish learn from experience. If the shooter misses that lionfish, it will be harder to catch later. The lionfish easily associate divers as hunters and while years ago they were relatively easy to catch, they are now more difficult to get when hiding in coral reef cracks.

The dive centres were involved and began giving lionfish hunter courses to locals and tourists. Locals can apply to use an ELF from STINAPA after completing the mandatory training course. Tourists are only allowed to use ELFs after completing a course with a local dive centre, and a local guide present.

THE HUNTERS

Within Bonaire, the hunters tend to be people that are a little older with the time to spare, or those who are dive enthusiasts. Forty percent have been Americans. They are not necessarily diving professionals, but they have considerable diving experience, with as much as 500 to 2,000 hours of dive time.


BAPRO



The results have been considerable. Back in 2010, you would have seen lionfish in high numbers in Bonaire. In a single one-hour dive, there would have been 30 to 40 lionfish. Now, you are lucky to see one. There had been reports by divers in submarines that lionfish were being seen down at 300 metres. There is definitely a difference in the shallower depths, but it's not known if hunting them has actually reduced the population, or if it has made them seek refuge in deeper waters.

THE ZOOKEEPER

In the beginning of the lionfish eradication programme, hunters were using a "wet bag" to store the lionfish they caught. While catching a lionfish is relatively easy, removing it from the spear and hauling it around in a bag without getting hurt from the venomous spines is quite difficult and dangerous. Finding an alternative system to the bag was added to the top of the "to do" list. After several devices were tried unsuccessfully (baskets, clear dry bags, etc) the lionfish hunters began using what is called a "zookeeper", and similar such devices.

The zookeeper is a PVC pipe closed at one end, with a modified plastic funnel on the other end. Once the lionfish is speared onto the ELF, it can easily be removed from the tip by inserting the ELF and lionfish into the funnel and pulling the ELF out again, leaving the venomous fish behind in the hard PVC pipe with no chances of it puncturing through and harming the diver. At the same time, the fish cannot escape because of the funnel.

If a diver is accidentally punctured by a venomous spine (not all the spines are venomous), the probability is very low but it can happen if the fish is badly handled by the hunter. To avoid a scenario from happening, some basic rules should be followed at all times when handling these fish:

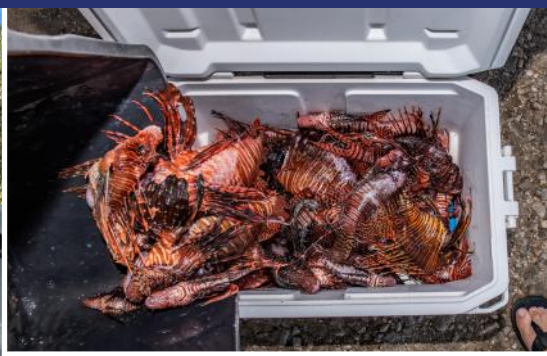
- Always use a zookeeper;
- Do not touch a speared lionfish;
- Do not kill a lionfish with a knife;
- Do not trust gloves.

Another inconvenience when hunting lionfish, is the presence of predators such as sharks and morays. Some irresponsible hunters have offered dead lionfish to predators which have made them more inquisitive and dangerous towards the divers. Predators can easily associate divers with an easy catch and they can get aggressive. It has happened in certain dive spots that divers, hunters or not, have been chased by morays or sharks.

Although lionfish stings are very painful, most cases can be managed at home if the pain is controlled and a tetanus immunisation is up to date. Symptoms following lionfish stings develop within minutes to a few hours and can include swelling, tenderness, warm skin directly surrounding the stung area, redness, sweating, muscle weakness, and a tingling sensation. A lionfish sting involving multiple spines increases the risk of infection and body-wide symptoms such as changes in heart rate, abdominal pain, sweating, and fainting. Deaths from lionfish stings are rare. Symptoms can last anywhere from 8 hours to 30 days depending on the severity of the sting.

NOTHING GOES TO WASTE

With more than a decade of experience in



managing the lionfish programme on Bonaire, dive centres' lionfish hunter courses are the most popular activity with tourists that come to the island. With scuba diving as a main attraction on an island as small as Bonaire, the involvement of so many hunters has drastically reduced the number of lionfish, increasing the protection of the local reefs and marine life. This is something that is not happening on many other islands where the diving industry is less active and not coordinated with marine park authorities.

But what happens to the catches? Well, it was discovered that lionfish are venomous, but they are not poisonous – only some spines have a toxin, and it's not in the flesh. The spines can easily be removed and the fish can be filleted and eaten in various ways, from ceviche to fried. Because of this, Bonaire started a side business and sold the lionfish to local restaurants that have become very specialised in lionfish dishes over the years. Some local divers regularly hunt and sell lionfish to local restaurants for an additional income. The largest restaurant bought 967kg of lionfish in 2014 and 150kg in 2018. These statistics show just how drastically lionfish populations have reduced in the area. Most of the lionfish caught are brought home for consumption and not reported.

In the end, the best way would be to develop markets for the end users of lionfish as a food supply, using it to make jewellery – some local people developed a line of necklaces and earrings using the lionfish spines – and developing a market for all sizes of lionfish. The large lionfish are plate fish, small lionfish can be used as sausages or deep-fried. You can use the spines to make toothpicks, and use the fish heads and bones to make soup stock. Creating monetary value with lionfish would encourage more people to remove them from our waters.

TODAY ON BONAIRE

Active volunteers are permitted to hunt everywhere except in the reserves. There are at least 10 to 20 divers actively hunting lionfish every day on the island. To maintain a low density of lionfish and keep the volunteers enthusiastic, the BNMP periodically opens the dive reserves exclusively for lionfish hunters calling this event, the "Lionfish Derby".

Twelve lionfish hunters removed a total of 302 lionfish in a three-hour dive during the 2021 competition. Bonaire lionfish hunters have been controlling the population, however, there are areas not accessible to hunters all the time.

CONTINUOUSLY MONITORING THE SITUATION

Every year the BNMP does a lionfish density survey. Marine biologists set transects of 50m along the reef at 24 dive sites during a period of 10 days. The transects are placed at 35m, 25m, and 15m depths.

From the results obtained, it is clear that Bonaire lionfish hunters have been doing a great job in controlling the invasive species numbers. The open communication between the dive industry and the volunteers is a successful one and has been the best option in controlling the population.

WWW.EMIRATESDIVING.COM

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Sunday 17th April 2022 @ 11:59 pm (GST)

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

DIGITAL ONLINE 2022

EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION

SUBMISSIONS OPEN: Sunday, 20th March 2022 | **SUBMISSIONS CLOSE:** Sunday, 17th April 2022 @ 11:59 PM (GST)
DIGITAL ONLINE AWARDS NIGHT & EXHIBITION OPENING: Thursday, 19th May 2022 | Deep Dive Dubai

THE EVENT

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

AN EVENT BY

EDA
جمعية الإمارات للغوص
Emirates Diving Association

EXHIBITION HOST

DEEP DIVE DUBAI

PRINTING PARTNER

PRINT WORKS

Digital Online 2019's Awards was our last social event since the pandemic and we're looking foward to hosting this year's live event once again now being held at Deep Dive Dubai.

DIGITAL ONLINE'S MAIN OBJECTIVES ARE:

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

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

DIGITAL ONLINE 2009-2022

Digital Online is about to celebrate its 13th Anniversary! The competition was introduced by EDA in 2009 to resident photographers to develop a relationship and human interaction amongst those unfamiliar with the underwater world environment. The competition holds both local and international marine life categories to offer variety between our local and international diving enthusiasts. The film category was introduced as an extension to the competition in 2012 to share our underwater world through motion pictures and deliver a better understanding of the habitats and surroundings.

The event, now going into its 13th year, sees continuous and steady growth of new underwater photographers taking part and joining our regular yearly participants. The enthusiasm and passion strives on, and the drive to bring our underwater world's conservation to the forefront increases over time. The purpose of Digital Online is to keep our underwater world visible by displaying its hidden beauties and to exemplify its importance to all life on Earth through the powers of its ecosystems.

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

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

COMPETITION CLAUSE

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

THE DIGITAL ONLINE RULES AND GUIDELINES 2022

RULES AND GUIDELINES

- Digital Online is open to all photographers and videographers of all skill levels with a valid EDA membership status. EDA membership must be acquired or renewed if expired in order to take part which can be done through the EDA website.
- Each competitor can only win one prize or prize package.
- Winners will choose their own prize.
- Participants are obligated to follow environmental conservation regulations and to respect the underwater world during the process of taking their stills and video. Be advised that any damage to the underwater world, including the disruption of the natural habitat of marine life, provocation through touching, displacing, feeding or annoying, is prohibited and will disqualify the images or the photographer/videographer.
- By entering the competition, entrants declare that they own copyright of the submitted photographs and films and it entails an automatic acceptance of all the rules. EDA reserves the right to publish images in the 'Divers for the Environment' magazine, EDA's social media pages and on the EDA website. Images will also be used in any future promotional material for EDA events and competitions royalty free, but copyright remains with the photographer. Use of images or video will require no additional written or verbal permission from the photographer or videographer.
- Images (photos or videos) must not have already been submitted to previous Digital Online competitions.
- Photos & videos must be taken underwater unless specified in a category description.
- Manipulation is restricted to colour correction, brightness, contrast, sharpening and cropping, except for the Creative Photography category. The Digital Online judges reserve the right to examine untouched images in the other categories if requested.
- Removing backscatter is allowed to an extent, this does not include the removal of subjects such as fish or divers or cutting and pasting sections of images from one to another, except for the Creative Photography category.
- The winners will be announced and their work displayed at the exhibition and award ceremony on May 19th, 2022. Participants who do not make it to the evening of the event will be asked to collect their prize from the EDA offices.
- Sponsors and prizes will be announced in the December 2021 magazine issue.
- We pledge to run this photography and video competition ethically and with integrity. Our judges have volunteered their time to help. The photographers' details remain hidden to the judges during the judging process.
- All judges' decisions are final.

HOW TO ENTER

- Submissions can be entered from Sunday, 20th March 2022.
- The entry deadline is Sunday, 17th April 2022, at 11:59 pm (GST – Gulf Standard Time).
- The participant must be a valid EDA member. Submit entries via email to **photo@emiratesdiving.com** with the requested category detail information.
- File names should include participant's name and the category:
  – Name - Macro.jpg
  – Name - Wide Angle.jpg
  – Name - Best of the UAE.jpg
  – Name - Black & White.jpg
  – Name - Creative Photography.jpg
  – Name - Rising to the Oceans.mp4
- Photo entries must be saved in jpeg format and should be sized between 2000 and 6000 pixels in the longest dimension. Please limit your images to a maximum file size of 5MB. Images will be viewed on a monitor and should be in the Adobe RGB 1998 or sRGB colour space.
- Video submissions must be in mp4 format.
- Photography and video entries are to be sent electronically through WeTransfer.
- You will receive an email to confirm your registration and photo(s)/video upload. If you do not receive one within 24 hours, your email may not have come through and you may need to try again.

Good luck to everyone taking part in Digital Online 2022. Dive safely and have fun!

***NOTE:** HOW PRIZES ARE AWARDED

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

Best of show with the highest points will get first choice. 1st place winners by highest score will choose a prize before all other winners, 2nd place winners before 3rd place winners, etc. Please note, each individual can only win one prize or prize package. If photographers get a multiple win, their highest scoring image will win a prize and the other will get a highly commended mention which will also be displayed at the Exhibition.

PHOTOGRAPHY CATEGORIES

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

DETAILS TO INCLUDE WITH EACH PHOTO SUBMISSION:

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

1. **MACRO**
   Definition: Photographs taken with close-up equipment, portraying underwater flora and/or fauna. The photographer may not crop the original more than 20%. The original image may be requested.
2. **WIDE ANGLE**
   Definition: Photographs taken with a wide-angle lens (or adapters that provide an equal field-of-view), with or without human presence, portraying the natural beauty of the underwater environment.
3. **BEST OF THE UAE**
   Definition: Any underwater subject taken in the UAE and Musandam.
4. **BLACK & WHITE**
   Definition: Black & white photography is timeless and elegant. Focus on tonal contrast, shapes and textures and the composition of the shot.
5. **CREATIVE UNDERWATER PHOTOGRAPHY**
   Definition: This field is wide open. It can involve a simple workflow used to capture a unique look of a photo. Or it can be a complex post-processing technique that is used to bring out the mood and textures in an image. Photos entered into this category can be taken in any underwater environment – including controlled environments (e.g., pools, tanks). The main subject can be anything ranging from an abstract concept to a person (a diver, freediver, model, etc.) to a fish. There are no post-processing (photoshop) limits in this category. This category is designed to let your imagination swim free.

VIDEO CATEGORY

Videographers may enter one film with the following title:

6. **RISING TO THE OCEANS**
   Definition: Looking for films of all genres – documentaries, narratives, shorts and animation films. Film subject must focus on all aspects of our underwater world including but not limited to, ocean exploration, wildlife, environmental, conservation and oceanography.

- All film genres will be accepted.
- Content must focus or relate to the ocean.
- Non-English films must have subtitles.
- If music is used, it must be from a public domain or royalty-free.
- Film length should be 5 minutes or less, including credits.
- Winning films will be chosen on the basis of creativity and the ability to tell a story that leaves the audience better informed and/or moved about the ocean.

THE SPONSORS AND PRIZES

Digital Online's 2022 Prize Sponsors will be offering this year's 18 winners the following prizes to choose from:
NOTE: Participants are only able to win one prize each. Entrants with multiple winning entries will be given priority in the points awarded.

1. **FREESTYLE DIVERS** | www.freestyledivers.me
The Local Hero Conservation Course
5 x 1 hour zoom sessions & 2 days of in water training at Freestyle in Dibba

The Local Hero Conservation Course offers you a unique opportunity to learn all about the ocean environment in your own time. It includes 5 online webinars or downloadable videos that you can access when you have the time available.

Once the 5 modules are complete, you can come to Freestyle Divers and gain some hands-on conservation diving experience as well as context for your newly acquired knowledge. This abridged version of the core course will give you a good foundation to build upon to help you understand how the underwater world works.

TOPICS COVERED:
The Blue Planet: Why are the oceans important and how do they help the whole planet to sustain life? What are the chemical and physical limitations of the oceans and how does this affect marine species?

Marine Ecosystems: A look at how the previously identified physical factors affect distribution of marine life and an examination of the different ecosystems throughout the Earth's oceans.

Marine Biodiversity: An introduction to the range of species found throughout the planet's ocean ecosystems and how the ocean environment drives speciation.

The State of the Reefs: What are the threats posed to the earth's marine ecosystems and particularly the coral reefs throughout the tropical regions? Whether caused naturally or by man, the health of the oceans is declining and we identify and examine the threats in this section.

Marine Conservation: What techniques and actions can be taken to mitigate these threats?

FOLLOWED BY 4 DIVES OVER TWO DAYS, COVERING:
Coral Reef Ecosystems: Start learning about coral identification.

Relationships on the Reef: Symbiosis examples; clownfish and anemone, cleaner shrimp and wrasse.

Vertebrates & Invertebrates: 2nd day more advanced fish and invertebrate identification.

Coral Reef Conservation: Coral nurseries, damaged coral, coral diseases & bleaching.

2. **EDA** (6 Prizes) | www.emiratesdiving.com
1. Scuba up to 30m for Certified Divers in Deep Dive Dubai – 2 Dives Available
Explore the different sections of Deep Dive Dubai's underwater city up to the depths allowed by your certification. All experiences include one of their professional dive guides to show you around and make sure you get the most out of your experience.

2. Reef Check – 4 Courses Available
If you are interested in knowing more about our marine environment, collecting data from our local reefs and getting more out of your dives, this may be what you are looking for. When you join a Reef Check EcoDiver training, you will learn about our local ecosystems and you will be able to participate in our regular survey dives which will help us to understand the threats our corals are facing by providing important data.

This course is designed to teach you everything you need to know to conduct full-scale Reef Check surveys and collect high-quality data for our global database. In this programme, you will learn about marine conservation issues, the role of citizen science, as well as how to identify key indicator fish, invertebrates, and substrates selected by Reef Check for assessing coral reef health.

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

This 4-day course includes both classroom and fieldwork, and an exam.

The Training Takes Place over 4 Sessions/Days:
- 3 sessions of classroom classes. You will become familiar with many of the Indo-Pacific's marine species of fish, invertebrates and will be trained to identify different kinds of substrate, such as corals and sponges.
- One day consists of an underwater exam and three classroom exams.

QUALIFICATION
To join the Reef Check training, the following is required:
- 15+ years old
- Open Water Diver certification (minimum)
- At least 25 logged dives, including 2 dives in the past 12 months

DATES AND SCHEDULE:
To be confirmed
- 2-3 evenings during the week
- 1-2 days over a weekend

3. SUPPERCLUB (3 Prizes) | www.supperclubme.com
The Best 'Secret' Discounts on 5-Star Dining, Spas and Leisure

Supperclub is a unique membership which gives members access to exclusive offers and discounts at 5-star restaurants, spas and beach clubs at places such as JW Marriott, Zaya Nurai, Emirates Palace, Atlantis, Fairmont and more. The membership gives you unlimited discounts of up to 60% off normal prices and Buy 1 Get 1 offers for you and your entire family. An unlimited number of guests can enjoy the discount with you and there is no need for vouchers, codes or a card as the discount gets automatically applied to the bill.

1. **A dining voucher worth up to AED250 at one of Supperclub's 5-star hotel restaurants along with a 12-month Supperclub Diamond Membership.**

2. **A 12-month Supperclub Diamond Membership**
2 Available

4. GRAND STORES (2 Prizes) | www.grandstores.com

1. **Rollei Actioncam 425**
- 4K Video Resolution (3840 x 2160 pixels/25fps) – 2.7K Video Resolution (2704x1524 pixels/30fps) – Full HD Video Function (1920 x 1080 pixels, 60/30fps)
- 170° Super Wide Angle Lens – Integrated Wi-Fi with up to 20m range – Simply have access to the camera via App (iOS/Android) from your Smartphone or Tablet PC*
- Incl. 2.4G RF wireless remote control for wireless shootings up to 15m distance, waterproof up to 1m
- Incl. underwater/protective case for depths up to 40m – Battery run time up to 90 minutes (without Wi-Fi)
- Box Contains: Rollei Actioncam 425, 2.4G RF wireless remote control, underwater protective case with 2 exchangeable rear panels (1x for diving, 1x splash protection), rechargeable lithium-ion battery, camera frame holder and adapter, mount basic with 2 component screw, Safety Pad flat with 3M sticker, Safety Pad curved with 3M sticker, quickshoe, tripod mount, USB cable and manual

2. **Rollei Actioncam 415**
- Wi-Fi Action Camcorder with Full HD Video Resolution 1080p/30fps – Simply have access to the camera via App
- 140° Super Wide Angle Lens – Integrated Wi-Fi with up to 20m range
- Includes underwater/protective case for depths up to 40m
- Includes 900 mAh lithium-ion battery – Battery run time up to 90 minutes (without Wi-Fi)
- Rollei Actioncam 415; underwater protective case with two exchangeable rear panels (one for diving, one for splash protection)

5. XTAR (2 Prizes) | www.xtar.cc

1. **D30 1600 Diving Flashlight**
The Best Video Light and Focus Light for Underwater Photography
- Maximum 1600 lumens output, four light colours – white, red, blue and UV.
- High CRI, with 7 Cree LEDs – XHP35 for white light, XPE2 for coloured lights.
- 130 degree wide beam angle.
- Multiple lighting modes for colour compensation in UW photography.
- Press switch. Lock function to avoid accidental on/off.
- Two hours runtime for 1600lm, 6.6 hours for 400lm.
- Powered by 1x18650/26650 battery with a LED power indicator showing the battery status.
- Class III Hard Anodized Finish, Aluminum 6063 material.
- Waterproof to underwater 100m.

2. **SN4 Camera Battery Charger**
7-in-1 Multiple Camera Battery Charger
- Available for Canon, Nikon, and Sony batteries
- Advanced modular docking station
- Charge 4 batteries at the same time
- PD45W adapter, 4 times faster charging
- Special intelligent charging protocol to protect your batteries
- Multiple protection for over-voltage, short-circuit, over-charge etc.
- Plug-and-play connectivity
- Compact size to save space and weight for travel
- USB Type-C port for multi-power charging

***Please use the XTAR charging cable and XTAR PD45W adapter only, as the SN4 is high-powered and fast charging.**

6. DIVERS DOWN | www.diversdownuae.com
6 Dives Package to dive the East Coast's dive sites. Includes tank and weights.

7. AL MAHARA DIVING CENTER | www.divemahara.com
2 tank dive trip to Zone 2's shipwreck in Abu Dhabi. Includes equipment, tank and weights.

8. SANDY BEACH DIVE CENTRE | www.divesandybeach.com
Double tank boat dive trip with or without equipment, including tanks and weights.

9. AL BOOM DIVING | www.alboomdiving.com
2 dives on East Coast (Fujairah) with full equipment for 1 person.

WHO WILL MAKE THIS YEAR'S JUNE MAGAZINE COVER?

What happens if more than one of my photo entries wins?
Photo entries that score as a winning image but cannot take a prize due to the photographer already having won one, will still be printed for display at the exhibition and the photographer will receive a 'Highly Commended' mention.

THE DIGITAL ONLINE JUDGES

STEVE WOODS
Adventure and Wildlife Photographer

Steve is a British adventure and wildlife photographer, based in Vancouver, Canada. His aim is to photograph the natural world to show people how beautiful and awe-inspiring it is as well as trying to highlight the danger we are inflicting on the very ecosystems we revere so much, by photographing and documenting the issues at hand. Steve has worked for many years as a photographer in the UK and abroad, firstly as a newspaper and sport photographer, then moving into commercial, advertising and wildlife/adventure photography. With his passion for the natural world, he uses his skills as a photographer to work in marine conservation.

WEBSITE: www.stevewoodsunderwater.com
FACEBOOK: @SteveWoodsPhotographer
INSTAGRAM: @steve_woods_photography

DAVID DILEY | SCARLET VIEW MEDIA
Filmmaker, Underwater Cinematographer and Digital Colourist

David is a multi-award winning Film-maker, Underwater Cinematographer and Digital Colourist from the UK best known for his work with sharks and large marine megafauna as well as his multi-award winning feature documentary, "Of Shark and Man".

His profile has increased rapidly thanks to his work on a wide variety of projects for film and television, alongside his commercial work for a number of household brands.

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

WEBSITE: www.scarletviewmedia.com
FACEBOOK: @daviddileyfilmmaker

IMRAN AHMAD BIN RAYAT AHMAD | ESCAPEINC
Internationally Published Underwater Photographer

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

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

WEBSITE: www.escapeinc.com.sg
FACEBOOK: @IMP.ESCAPEINC

MOHAMED ALMUSALLAMI
Underwater Photographer and Marine Biologist

Mohamed is a son of the Arabian Gulf. Coming from a long line of legendary pearl divers and fishermen, a strong bond ties him to the deep blue. Born in Dubai on a stormy night in November of 1989, he started his passion as a freediver and a spear-fisherman at an early age and naturally fell in love with the beauty of the underwater world. Mohamed started his underwater photography in 2008 which won him several awards and to which he has been published internationally since. His eye-catching and distinctive style is aimed at pushing the limits of how photographers represent life below the waves. Mohamed has dedicated himself to conservation and to the Art of Underwater Photography, putting forth the message, "The Ocean has given our ancestors everything, now it is our turn to give back". As a marine scientist with a masters degree in Environmental Science, he works closely with sea turtles, dugongs, dolphins, sharks and all other exotic species, as well as being responsible for many rare scientific discoveries in the Arabian Gulf region. Mohamed is also a PADI Instructor, a PhD candidate at UAE University, and an affiliate at Mohammed bin Rashid Academy of Scientists (MBRAS).

INSTAGRAM: @b47r

SIMONE CAPRODOSSI | SUNDIVE BYRON BAY
Underwater Photographer

Simone is an Italian underwater photographer, who has been awarded in several prestigious competitions and published internationally. After over 10 years of corporate life in Dubai, he recently moved to Australia where he now co-owns and manages Sundive Byron Bay, a PADI 5 Star Dive Centre offering dives at the amazing Julian Rocks in Byron Bay. After travelling to and photographing many unique diving destinations worldwide, he also runs expeditions with Sundive to help others experience and photograph his favourite ones such as the Sardine Run and Djibouti. Simone was the Overall Winner of Digital Online for two consecutive years until he became a judge for the competition and has been a main feature contributor to the EDA magazine, 'Divers for the Environment'.

FACEBOOK: @SimoneCaprodossiPhotography
INSTAGRAM: @scaprodossi

ALLY LANDES | EMIRATES DIVING ASSOCIATION
Project Manager, Editor, Graphic Designer, Photographer & Videographer

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

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

WEBSITE: www.emiratesdiving.com
FACEBOOK: @emiratesdivingassociation

FOR THE OCEANS

OCEAN STORIES | CONSERVATION | DIVE TRAVEL

EXPLORE ALL OUR BACK ISSUES

Beautiful photography and captivating stories, by divers for divers!

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Emirates Diving Association

Tel: +971 4 393 9390 | **Email:** projects@emiratesdiving.com | **Website:** www.emiratesdiving.com

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

Like our group page on **www.facebook.com/emiratesdivingassociation** Follow us on **www.twitter.com/emiratesdivingassociation** Follow us on **www.instagram.com/emiratesdivingassociation**

EGYPT'S
MARSA SHAGRA DIVING VILLAGE

FEATURE & PHOTOGRAPHY **MARWA EL-AGROUDY** PHOTOGRAPHY **TOBIAS DORSCH**

Marsa Shagra is one of three diving villages that constitute the Red Sea Diving Safari, an establishment that was founded in 1990 and nowadays is considered as one of the most eco-friendly and nature-based tourism providers.

ABOVE: Photos by Tobias Dorsch

Becoming a diver hadn't really crossed my mind before despite having close friends who are avid divers. I guess, the more I travelled and explored, the more I wanted to try and experience new things. I thought to myself, let's see what the fuss is all about, and I gave diving a shot in 2016.

Having absolutely no idea of what to do or where to go, I turned to a dear friend of mine who had been diving for almost 10 years back then and he highly recommended Marsa Shagra in the southern Red Sea. I absolutely loved the place when I checked it out online, and just like that, I had myself booked for a PADI Open Water certification during the very hot month of August. Needless to say, I got hooked from the very first open water dive. The course was a success and I was certified! Sadly, I didn't have enough time to prolong my stay then to be able to dive some more, so I was quite thrilled when I was able to return to Marsa Shagra as an experienced diver 4 years after my first encounter at that gorgeous place.

Marsa Shagra is one of three diving villages that constitute the Red Sea Diving Safari, an establishment that was founded in 1990 and nowadays is considered as one of the most eco-friendly and nature-based tourism providers. The village is 40km south of the Marsa Alam Airport, and about 26km north of the city of Marsa Alam along the southern shores of the Red Sea.

The village is home to one of the most beautiful house reefs in the Red Sea which makes it an ideal place for divers and non-divers alike. It offers a wide range of accommodation from tents to deluxe chalets, and they all come with an all-inclusive basis. You won't need to worry about food and beverages, they will be abundant. It is a well-known fact amongst divers who go there regularly, that any visit to Marsa Shagra will result in gaining a couple of kilos in weight due to the super delicious food offered there.

Besides diving, there are a selection of other activities available as well, such as kayaking, snorkelling, or even going on excursions around the region. Another great thing about Marsa Shagra, is the availability of a doctor around the clock in the hyperbaric medical centre in the diving village. With all the amenities the place has to offer, whether you are a diver or not, you are guaranteed to find something to do.

The Red Sea is the world's most northern tropical sea and is known for its rich and diverse ecosystem with hundreds of species of corals and fish of which, some are endemic. The extensive shallow shelves of the Red Sea is home to some of the best coral

ABOVE & BELOW: Photos by Marwa El-Agroudy

reefs, making it a popular destination for both divers and snorkellers. In Marsa Shagra we had an abundance of rich reef life. The colours of the corals and the different species of fish that inhabit the reef blew me away. Besides the permanent residents – a giant moray and a turtle – there was always something new to witness; blue-spotted rays, triggerfish, red sea clownfish, groupers, fire corals, hawkfish, and the list goes on, and on, and on. If that's not exhilarating enough for you, you can go shark "hunting" in Elphinstone or go and see the dugongs in Sharm Abu Dabab. There's always a high chance to encounter dolphins en route.

I loved the routine of the place, it was so easy to fall into it. It was literally dive, eat, sleep, and then repeat. My favourite activity of all was chilling on the hammock listening to the waves crashing just a few steps away from me. I could stay there forever. Marsa Shagra is truly a beautiful place that makes it easy for anyone to relax and unwind whilst offering spectacular diving to diving enthusiasts. I enjoyed every minute of my stay there and can't wait to go back again. Whether you are a hardcore diver or just someone who is looking for a relaxing holiday, Marsa Shagra will deliver. If you have been to the Red Sea before but haven't made it south yet, I highly recommend putting it on your list.

GENERAL TRAVEL INFORMATION

VISAS

For most passport holders, a visa upon arrival to Egypt will cost $25 and is valid for 30 days. Alternatively, applying for a visa can be done at any Egyptian embassy in the country of residence and usually takes a couple of weeks to process.

TRANSPORTATION

Marsa Alam can be reached by car, bus, or flight. It's a 10 hour journey by road on the bus and costs EGP280 or AED65/seat. Direct flights between Cairo and Marsa Alam used to be scarce, but now the 1 hour 25 minutes flight starts at AED280 on Egyptair.

PCR TEST REQUIREMENTS

As per the IATA Travel Centre website, travellers to Egypt must present a negative PCR test not older than 72 hours, or a vaccination certificate approved and certified by the Egyptian embassy in the country of residence. Nonetheless, make sure to check the latest COVID-19 travel regulations before flying in.

MARSA SHAGRA DETAILS

For more information about the location, diving, and packages available at Marsa Shagra, pay them a visit at: **www.redsea-divingsafari.com**

[DESTINATIONS TO DIVE WITH WHALES]

WHALES

HOW TO SWIM WITH & SAVE THEM IN 2022

FEATURE **PADI**

There's nothing more magical than an encounter with a gentle giant underwater. Looking into their all-knowing eyes, you'll quickly realise you are a visitor in their world! Supporting responsible whale tourism around the world is a great way to support local conservation efforts and catch a glimpse of the ocean's largest ambassadors.

Photo by Stephane Granzotto of a pod of sperm whales.

Humpback Whale and her calf.

There's nothing more magical than an encounter with a gentle giant underwater. Looking into their all-knowing eyes, you'll quickly realise you are a visitor in their world! Supporting responsible whale tourism around the world is a great way to support local conservation efforts and catch a glimpse of the ocean's largest ambassadors.

As protected species in most of the waters of the world, often you are limited to viewing whales from afar on the deck of a boat. But if your dreams of swimming with whales run deep, then PADI, the world's largest diving organisation with over 6,600 dive centres and resorts, can make those dreams come true.

In some parts of the world, it's possible to not just view them from the deck of a boat, but to enter the water and responsibly swim with them – often without any dive training required!

From sperm whales to humpbacks to the charismatic orcas (who are actually dolphins but definitely deserve a spot on the list), these are the places around the world where it's possible to meet a whale underwater.

WHERE TO SWIM WITH HUMPBACK WHALES

Humpbacks are famous for their mesmerising whale songs, which can be heard by other whales many thousands of miles away. Growing 50 to 60 feet long, they are strong swimmers that can propel themselves completely out of the water and into the air (aka "breaching").

Getting their name from the small hump in front of their dorsal fin, the underside of each whale is unique in its pattern and pigmentation. Perhaps the coolest thing about humpbacks (besides their crazy water acrobatics) is that they are known to blow bubbles in order to confuse and catch fish!

Their long migrations lead them from the poles to the equator, allowing whale lovers to have close encounters along many diverse coastlines. While there are pretty tight regulations against swimming with humpbacks in much of the world, here are a few where it is legal through sustainable tourism operators.

1. TONGA: JULY – OCTOBER

Every July through October, huge numbers of humpbacks travel north from Antarctica to Tonga to mate and calf. The best places to swim with the whales from my experience are the islands of Vava'u or Ha'apai. Only a handful of boat operators receive permits to go near the whales each year, and each boat can only take a small number of people, so booking your trip early is important.

2. TAHITI, FRENCH POLYNESIA: AUGUST – OCTOBER

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

3. WESTERN AUSTRALIA: JUNE – NOVEMBER

From June to November each year, approximately 40,000 whales migrate along the coastline of Ningaloo Marine Park, including Ningaloo Reef, in order to feed

Photo by Jay Clue – Dive Ninja Expeditions of a sperm whale.

at the poles. Also referred to as Australia's coral coast, Ningaloo is the site of a thriving coral reef which is home to other marine life including dolphins, rays, and turtles. Tours here take small groups on full day excursions to swim with the migrating whales and are designed to have little to no impact on the marine environment.

4. SOUTH AFRICA AND MOZAMBIQUE: JULY – OCTOBER

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

5. DOMINICAN REPUBLIC: JANUARY – APRIL

The Dominican Republic's Silver Bank is in a 650-square-mile marine sanctuary (now expanded as part of the "Sanctuary for the Marine Mammals of the Dominican Republic") located about 50 miles north of the island. A large population of North Atlantic humpbacks gather here each winter and spring to mate and calf from the months of January through April. Take a week-long yacht trip to Silver Bank for the chance to swim with the whales every day during the trip.

WHERE TO SWIM WITH SPERM WHALES

Sperm whales are the largest of the toothed whales, as they can grow to be nearly 60 feet long, and are recognisable by their huge, rounded foreheads. They can dive down more than 3,000 feet (deeper than nearly all other whales) and hold their breath for 90 minutes, which helps them in their quest to eat giant squid and 2,000 pounds of fish per day.

Female whales and their calves travel in groups of 15 to 20, while male sperm whales usually travel on their own. They are the loudest animals on the planet, as the clicking sounds they make reach such an intense frequency (more than 200dB) that the whales can hear each other's clicks from thousands of miles away. (To a human, sounds over 110dB can be painful, so sperm whale sounds could blow out your eardrums!) They're not just loud, though, but also highly intelligent. A sperm whale's brain is approximately six times the size of a human brain, making it the largest brain of any animal on Earth!

Fun fact: the whale in Moby Dick is a sperm whale.

Given that they dive down so deep and can be shy, the best way to swim with them is to find a group of 'standing' sperm whales, which is how they sleep. Through and through, sperm whales are gentle giants who sometimes even take interest in interacting with humans.

1. DOMINICAN REPUBLIC: WINTER MONTHS

In the winter, females and their calves can be spotted off the shores of this Caribbean island nation, which is located halfway between the islands of Guadeloupe and Martinique. Swimming with these whales requires some pre-planning: permits are required, only snorkelling is allowed, and you must be accompanied by a licensed operator.

Photo by Jero Prieto of a pod of orcas.

2. SRI LANKA:
FEBRUARY – APRIL

Off the northern coast of Sri Lanka, sperm whales can be spotted from February to April. Tour operators need to obtain a permit from the Sri Lankan government, with the majority of tours organised as whale watching tours. But if you get lucky enough, there are a few that focus on actually swimming with these mystical creatures.

Fun fact: Sri Lanka is also one of the only countries in the world where you can swim with the biggest mammal in the world, the blue whale. They aren't particularly interactive, so your best bet is to jump in the water as it passes by like a freight train, underneath you.

WHERE TO SWIM WITH ORCAS

Often called killer whales, orcas are actually in the dolphin family, but they deserve a spot on this list because they're beautiful, amazing and a once-in-a-lifetime opportunity to swim with. While known to be some of the deadliest creatures in the ocean, they are equally some of the most intelligent. They can even hunt great white sharks! Orcas travel in pods of up to 40, so if you see one, there will be dozens more close by.

1. NORWAY:
OCTOBER – FEBRUARY

From the end of October to the beginning of February, the Tromsø region in the far north of Norway is perhaps the best place to see killer whales in their natural habitat, thanks to the high concentration of herring which brings thousands of orcas (and humpbacks, too) all to one geographical location. Scuba diving typically is not necessary, as the whales remain pretty close to the surface, but snorkelling and swimming are common each winter.

Luckily, the orcas are not on the hunt for anything but fish, so they won't take any interest in you. Because an adventure like this must be so tightly planned and regulated, spots are few and planning ahead is important. Booking online is easy, and there are many tours and excursions to choose from.

2. BAJA CALIFORNIA SUR:
ALL YEAR LONG

Baja California Sur's magical waters offer an incredible array of opportunities to swim with all sorts of marine life, including orcas. You can easily hop on an exploratory trip with PADI Dive Centre Dive Ninja Expeditions with the goal of finding resident pods of orcas that live and hunt off the coastline. There are on average, three core pods of orcas that swim through these waters, making an encounter with them highly likely!

SIX TIPS FROM PADI ON HOW TO HELP SAVE THE WHALES:

WHALES NEED YOUR HELP!

Thanks to the brutal practice of whaling over the last century, whales are still recovering from plummeting populations: nearly three million whales were killed. Today, whales (and their dolphin cousins) face constant threats from entanglements in fishing gear, ship strikes, noise, pollution, and habitat loss. Further, plastic particles outnumber plankton in many of their key feeding grounds.

Researchers from Harvard University have determined that whales' feeding habits actually "fertilise" phytoplankton, which in turn provides half the world's oxygen, scientific evidence that firmly links healthy whale populations to the fight against climate change.

Whether you love whales, or not – it's critical to protect them. Healthy whale populations play a vital role in our world's largest and most important ecosystem – an ecosystem that provides more oxygen than all the rainforests combined is our best defence against rising CO_2 levels, and provides more than ⅕ of the world's population with food.

By protecting whales and their habitats, we are protecting… ourselves. So here's a few easy tips from PADI on how you can take action

1. GO PLASTIC FREE

At least 8 million tons of plastic end up in our oceans every year and more than 250 million tons of plastic are estimated to cloud our waters by 2025. It's difficult to wrap our heads around how much plastic that really is and even harder to stomach (pun intended) how much of this debris ends up ingested by whales and other marine creatures, usually resulting in death-by-starvation. It is one of the biggest threats to all whales and dolphins occurring throughout the world's oceans.

2. CLEAN-UP YOUR ACT

According to the United Nations Environment Programme, 8 million pieces of marine debris enter the ocean every single day. This equates to 6.4 million tons of trash each year. The

Photo by Jay Clue – Dive Ninja Expeditions of a humpback whale breaching.

majority of marine litter enters the ocean from land. So recycle whatever you can, pick up trash you find, and avoid letting balloons go.

Why not take a few hours out on a Saturday to plan a local beach clean-up. Disposing of your trash responsibly and picking up other trash near waterways is a simple and effective way to help protect whales and dolphins.

3. BECOME A DIVER; THEN DIVE WITH A PURPOSE

Becoming a scuba diver opens up a whole new world to you – and connects you to a global community of passionate ocean advocates. Not only can you actually enter the whale's home and maybe – just maybe if you are lucky enough – come eye to eye with one, but you'll also be able to take meaningful action to save them.

After you receive your open water diving certificate, you can support local communities in their protection areas through dive tourism, engage in citizen science efforts to restore the whales home (like planting corals!), get a "Whale Warrior" distinctive speciality, or even participate in a Dive Against Debris and submit a survey every time you dive.

For almost three decades, divers have been partners in the fight against marine debris. Divers are adding the unique underwater perspective to this global crisis through the AWARE Dive Against Debris® citizen science programme and collecting evidence to inform measures that can stop the problem at the source.

4. SUPPORT RESPONSIBLE WHALE TOURISM

When we see something, we care about it more. So whether you book a whale watching tour, a swim with the whales journey, or encounter them during a dive trip in whale hot spots, your passion for protecting them and educating others to do the same will increase ten-fold! Your first whale encounter will make you a whale advocate for life – and you can do so with PADI Centres all over the world. It also ensures that whales are protected around the world – thanks to the tourism impact upon local economies.

5. USE YOUR WORDS, YOUR WALLET AND/OR YOUR TIME TO MAKE A DIFFERENCE!

Making a difference can be as simple as your signature – ensuring local legislation protects endangered sea creatures and their homes. Many conservation groups rely on your help to advocate for their protection. Sign petitions or write letters to elected officials to increase protections for whales and dolphins. And if you have more time, consider volunteering.

Finally, if you can afford it, support an organisation you trust by donating or even adopting a whale of your own!

6. BE A SPOKESPERSON ON LAND WITH WHALE GEAR: PROCEEDS PROTECT THE WHALES

You can score amazing gear that celebrates and also supports whale conservation. Start meaningful conversations, shop sustainably and donate to their protection – all at once.

CHECK OUT PADI GEAR'S WHALE COLLECTION – WITH PROCEEDS GOING DIRECTLY TOWARDS HELPING TO SAVE THE WHALES.

1. CHARITY BREACHING WHALE TEES AND TOTES

Save the whales with our limited edition charity tees and totes. This limited edition design was created to celebrate our filter-feeding friends. 20% of the proceeds from this Charitee donates to PADI AWARE's campaigns to keep the seas plastic-free and these majestic creatures healthy.

2. SECRETS OF THE WHALES BOOK, SIGNED BY AUTHOR BRIAN SKERRY

Get your exclusive, signed copy of "Secrets of the Whale" by award winning photographer Brian Skerry. . This visually stunning book of whale photography offers bold new insight into the lives of the world's largest mammals from their complex societies and amazing abilities to learn to their specialized feeding and parenting technique–and demonstrates how these majestic creatures can teach us about ourselves and our planet. What's more, part of the proceeds fund their Pristine Seas initiative, a mission to protect the world's largest and most important ecosystem

3. WHALE RING – STERLING SILVER

Wear this unisex, adjustable ring as a daily reminder of the important role we all play in protecting their – and our – shared futures. 15% of profits from every Whale Ring are donated directly to the Centre for Coastal Studies in Provincetown, to support their efforts in protecting whales.

4. WHALE TAIL BEESWAX REUSABLE FOOD WRAP

We love these zero-waste food wraps made with organic, sustainable materials in Hawaii featuring whales. Long-lasting and eco-friendly, they come in a set of three – small, medium and large. Use them in place of plastic wrap and keep our seas plastic-free. One three pack will replace 5 rolls of plastic wrap per year.

[DESTINATIONS TO BECOME A MERMAID]

HOW TO SAVE THE OCEAN AS A MERMAID

SOME SUPERHEROES WEAR CAPES, OTHERS WEAR MERMAID TAILS

FEATURE **PADI**

For PADI Mermaids and Mermen, it's about more than learning to swim with a tail and sharing beautiful, evocative imagery with the world. Of course the magical imagery captures our hearts and minds, making us fall in love with the ocean all over again. But PADI Mermaids and Mermen are driven to do more. They are truly one with the ocean and stand up for what they love. Their causes range from coral bleaching to teaching younger generations to care for our blue planet, serving as shining examples of what mermaids are to PADI: voices for an ocean and all of its creatures – who can't speak for themselves.

Photo by Laura Hudson


Photo by Pullman Maldives Maamutaa

Since World Mermaid Day is coming up on the 29th of March, now is the perfect time to take that leap and make your mermaiding dreams come true. Or, maybe, just add a little more sparkle into your life. After all, who doesn't want to become a mermaid?

Last year, PADI set a Guinness Book of World Records in China for pulling off the largest underwater mermaid show, with over 100 PADI Mermaids dazzling underwater at the Atlantis Sanya Resort. Since then, mermaiding in China has exploded in popularity, with nearly 100 PADI Mermaid Centres throughout the country.

Now, PADI is ready to teach the world how to mermaid. They have rounded up the top PADI Mermaid Instructors around the world (including the most popular mermaid on TikTok and Miss Mermaid UK) to form their official PADI Mermaid Team. With PADI Mermaids in every corner of the globe, the organisation is officially ready to be the way the world learns to mermaid.

For PADI Mermaids and Mermen, it's about more than learning to swim with a tail and sharing beautiful, evocative imagery with the world. Of course the magical imagery captures our hearts and minds, making us fall in love with the ocean all over again. But PADI Mermaids and Mermen are driven to do more. They are truly one with the ocean and stand up for what they love. Their causes range from coral bleaching to teaching younger generations to care for our blue planet, serving as shining examples of what mermaids are to PADI: voices for an ocean and all of its creatures – who can't speak for themselves.

HOW TO BECOME A PADI MERMAID

There are seven different levels of PADI Mermaiding. From an introductory Discover Mermaid Experience to becoming a professional Mermaid Instructor Trainer, you can live out your mermaid dreams as a weekend warrior or for a full-time career. Learn more here about how to become a PADI Mermaid.

Here are Seven Magical Mermaid Itineraries – Feed Your Wanderlust and Your Dream to Grow a Tail:

Yes – you read that right. You can take an amazing holiday and come back with incredible memories as well as a Mermaid certificate!

Better yet – anyone from the age of 6 can become a PADI Mermaid or Merman with the new PADI Mermaid Course. Whether you are learning breath holding for the first time or wanting to enhance your mermaiding skills, you can go nearly anywhere in the world where there's an official PADI Mermaid Centre on an incredible holiday and return an official PADI Mermaid! No prior experience is required to join the global team of Mermaids taking action for our blue planet.

With PADI Professionals and Dive Centres teaching the world how to mermaid, you can safely and quickly learn the art of the mermaid tail in the tropical atolls of the Maldives, in the glacier lakes of Switzerland, in farmland Wisconsin, along picturesque beaches in Australia or in Cornwall – the mermaid capital of the world. (Who knew?)

Here are seven dreamy mermaid itineraries where you can spend your days learning the art of splashing your tail, diving deep to swim through colourful coral reefs and having the most intimate connections underwater that dreams are made of. Your Instagram will blow up for weeks to come!

1. MAUI, HAWAII

Led by PADI Mermaid Instructor Laura Ferguson, Mindful Mermaids on the tropical island of Maui offers a mermaid experience for all ages and skill levels. The classes are structured to teach all skill levels the joy of the water offers and build confidence to find that same joy in the Pacific Ocean. Learn about Maui's diverse sea life, get the ultimate

holiday snaps and flip your tail amongst the palm trees.

Mini Mermaid Programme: $89pp
Beginner + Advance Mermaid Class: $129pp
Mermaid Photo Shoot: $300pp

2. MAAMUTAA ISLAND, MALDIVES

Mermaids are taking over PADI Dive Resort Pullman Maldives Maamutaa, where you can not only sleep in an over water villa, but take part in their four different PADI Mermaid courses. From their Discover Mermaid experience where you test out the tails to the Advanced Courses that will have you confidently exploring the crystal clear waters.

3. ADELAIDE, AUSTRALIA

With Australia set to start welcoming travellers from around the globe this year, they can come to the land down under and return an official PADI Mermaid. And nothing makes for a better holiday than the combination of touring the wine country of Adelaide and learning the art of mermaiding. PADI Dive Centre Adelaide Scuba works with Mermaid Mizuko to provide boutique mermaiding courses and experiences for any skill level. For the travelling family, ditch your kids at a mermaid class while you go wine tasting for the day – or join in on the underwater magic as a family.

4. FLORIDA, USA

The sunshine state offers more than just their white sandy beaches and azure waters. Mermaid Freedive runs actual mermaid retreats that are led by PADI Mermaid Instructors Brandee Anthony and Kayleigh McBride. Taking place every month this year, these all-inclusive four day, three-night retreats are hosted in the stunning Florida Springs and are curated specifically for either beginners, advanced and couples. When not learning how to mermaid, you will spend your time on dry land enhancing your wellbeing with hypnotherapy, yoga, meditation and breath work.

Price: $1500
(price includes all accommodation, meals, photoshoots, mermaid training and wellness sessions)

5. KOH SAMUI, THAILAND

As Thailand prepares to open up to the world once again, they have added in some mer-magic experiences that should be at the top of any bucket list. PADI Mermaid Instructor Trainer Lukia Lu is officially opening the first ever Mermaid centre in Thailand later this year. Learn the art of looking beautiful underwater and get dream-worthy holiday pics in the process.

6. COZUMEL, MEXICO

Mermaids and whale sharks were meant to be. And in Cozumel, those two worlds collide thanks to Freedive Cozumel. They are hosting Mer Week Cozumel this July 15-22 2022, inviting fearless mermaids of all levels to gather on the island for a week of enhancing mermaid skills, taking part in local conservation activities and escaping the human world for some mermaid vibe relaxation. They also offer mervacation packages throughout the year, with all-inclusive plans for the mer-perfect holiday.

All-Inclusive Prices: PADI Mermaid: $700
PADI Advanced Mermaid: $950
Freediving Mermaid: $1375
PADI Mermaid Instructor: $2175
Book Here: www.freedivecozumel.com/mervacation-packages

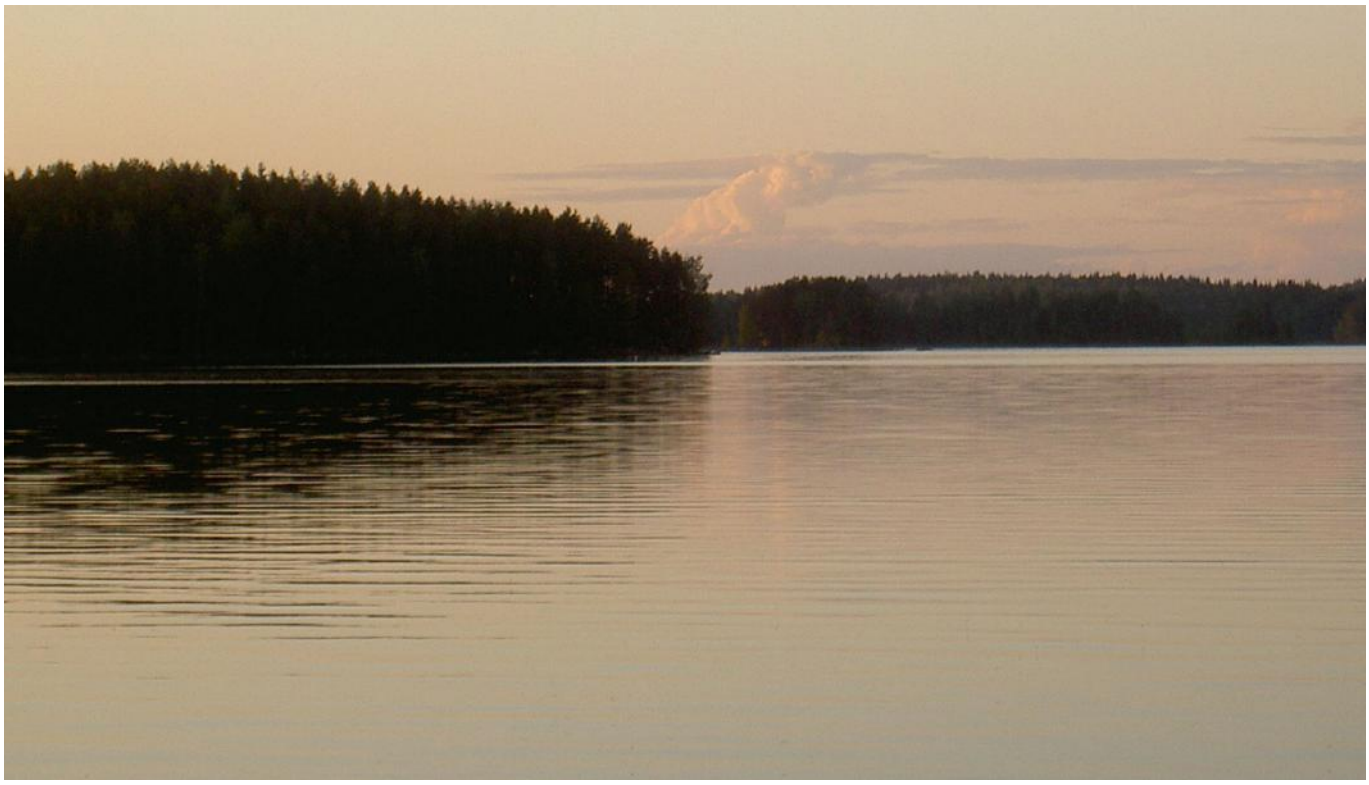
7. TENERIFE, SPAIN

While the destination is known for the diversity of landscapes that you can explore, one of the best-kept secrets (until now) of the Canary Islands is that you can come back a mermaid. PADI Dive Resort Tenerife Diving Academy offers the chance to turn your childhood dream into a reality. Their course consists of a stretching and relaxation session, a mermaid tail testing session, and a skills session.

EAR BAROTRAUMA FOLLOWING A LAKE DIVE

HOW DAN'S EMERGENCY MEDICAL NETWORK MADE A DIFFERENCE

FEATURE **MARTA MARROCCO** AND **MICHAEL MENDUNO**



THE INCIDENT

A Finnish diver and her dive buddy were making their first dive of the day in Lake Vesijako, Finland in their drysuits. They descended to a maximum of two metres in the bracing 6°C water, but the diver couldn't equalise the pressure in her right ear and called the dive off. Two days later, her ear still felt blocked and hurt a little bit so she decided to go see a local health centre physician.

The doctor diagnosed her as having inflammation in the middle ear and prescribed her antibiotic ear drops and sent her home. However, that night, she experienced a sharp pain in her ear, which went away, and her ear started bleeding. The diver called the local hospital and then went in for tests. They determined that she had a ruptured eardrum. She was sent home and continued with the antibiotic drops.

After nearly a week, the diver still felt pressure in her right ear, which remained blocked, and her hearing in the ear had diminished. She grew concerned and emailed the DAN Europe hotline (emergency@daneurope.org) hoping to be able to meet with an ear specialist who was knowledgeable about diving injuries. She wanted to make sure that she wouldn't have a permanent injury and wanted to know when she could safely return to diving.

The DAN Hotline team immediately opened an assistance case file for her, called the diver and put her in touch with DAN Europe's Finnish Diving Medical Officer (DMO). After speaking to the diver and reviewing her reports, the doctor determined that she had had an external ear squeeze due to her drysuit hood at the beginning of the dive which forced her to terminate the dive.

According to the DMO, "The bloody and swollen ear canal supports this view. Hence, I think it is an external ear barotrauma and not an infection. Unfortunately, her primary general practitioner misinterpreted the barotrauma as an infection, or alternatively, there was a secondary infection developed after the initial barotrauma," he said. "In my opinion this is a diving related problem and falls within the coverage of her policy."

The DMO then provided her with a referral to an Ear, Nose and Throat (ENT) specialist who was also a diving physician and so very familiar with this type of diving injury. The diver saw the specialist and forwarded the results to the DAN Europe team, which they then shared with the Finnish DMO for advice and a medical opinion. "The report was very clear and along the same lines as my interpretation that the primary insult was an external ear barotrauma and prescribed drops for the ear. The ENT specialist also suggested that it may be beneficial to perform oro-nasal endoscopy to control the situation."

The hotline team then arranged another call for the diver to discuss her case with the local DMO, who instructed her to protect the perforated ear from water and let it heal. If there is any more pain, or any excretion comes from the ear, she was told to again get in contact with the ENT. They also scheduled her for a control visit in one month's time to check that the perforation and ear canal were well healed.

With the acute phase of the injury now over, the DAN Europe hotline team closed the emergency assistance file, and the claims department contacted the diver to proceed with the administrative side of the case. The diver promptly provided all the documentation needed to file the claim for her medical expenses. A few weeks later, the diver was reimbursed for the doctor visits, medicines and transportation costs related to the acute phase of her diving accident that occurred within her country of residence.

UPCOMING EVENTS

DIVE MENA EXPO

CO-LOCATED AT THE DUBAI INTERNATIONAL BOAT SHOW

9-13 March 2022 | 3pm-8pm | Dubai Harbour

This March, the Dive MENA Expo will be taking dive professionals a notch deeper! World-famous professional divers such as Ahmed Gabr, Faisal Jawad Hassan, Yuriy Rakhmatullin, and others will take centre stage to share their thrilling experiences at the Dive Talks.

If dive gear and gadgets are on your shopping list, then the Dive MENA Expo is the place for you. Come here to source everything from dive equipment, dive electronics, and find out about the latest technologies on the market.

EDA MOVIE SCREENING

OCEAN SOULS

Thursday 5th May 2022 | 58 mins | Deep Dive Dubai | Online Screening Option Available

Ocean Souls is an emotive documentary about cetaceans, showing possibly the largest diversity ever seen on film. It highlights new science and discovers that there is an intelligence beneath the waves that closely mirrors our own. Cetaceans, despite looking so different to us, are possibly our closest relatives in terms of cognitive abilities and family ties. In the same way Live Aid united the world's best musicians, Ocean Souls unites over 100 filmmakers, 25 of the world's best scientists and several experts. It is truly an unprecedented collaboration. Join us as we explore the remarkable lives of these magnificent ocean souls.
www.oceansoulsfilms.com

DIGITAL ONLINE 2022

THE AWARDS NIGHT & EXHIBITION AT DEEP DIVE DUBAI

Thursday 19th May 2022 | 18:00 Registration, 18:30 The Awards Begin

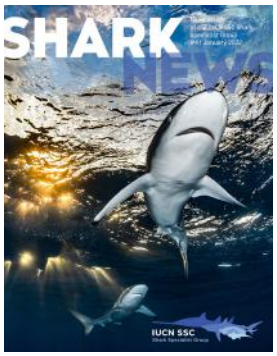
DIGITAL ONLINE
جمعية الإمارات للغوص
EMIRATES DIVING ASSOCIATION
PHOTOGRAPHY AND FILM COMPETITION

Digital Online – EDA's Underwater Photography & Film Competition's social event is back! Be the first to see this year's participants showcase their work at the Digital Online Awards Night & Exhibition at Deep Dive Dubai and congratulate our winners as they receive this year's fantastic prizes.

DID YOU KNOW?

SHARK NEWS | IUCN SSC & SSG MAGAZINE

Welcome to the quarterly issue of Shark News – the official IUCN Species Survival Commission (SSC) Shark Specialist Group (SSG) magazine. Shark News provides a forum for the exchange of information on all aspects of shark, ray, and chimaera conservation matters for SSG members and the general interested audience.



Shark News
Issue 04
January 2022

Download Low Resolution (29.6 Mb) Edition:
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Download High Resolution (85.6 Mb) Edition:
https://bit.ly/3r2yzti

EDA
جمعية الإمارات للغوص
Emirates Diving Association

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 standardisation of practices.
- Promote and preserve historical aspects of diving within the gulf region and enhance environmental education to diving and non-diving communities through EDA activities.

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NOW AT
Dubai Harbour

DIVE MENA EXPO
9 - 13 MARCH 2022

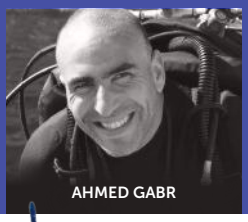
ON TO NEW *Adventures*

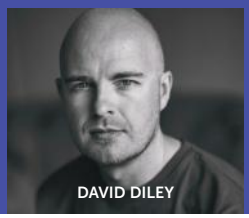
OCEAN LOVERS!

ARE YOU EQUIPPED TO TAKE THE PLUNGE?

This March, the Dive MENA Expo will be taking dive professionals a notch deeper! World-famous professional divers such as Ahmed Gabr, Faisal Jawad Hassan, Yuriy Rakhmatullin, and others will take centre stage to share their thrilling experiences at the Dive Talks.

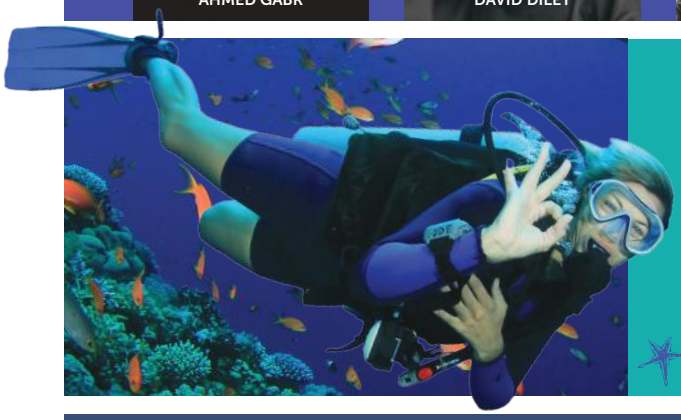
If you are a certified diver, flash your diving licence and walk-in free!


AHMED GABR


DAVID DILEY


FAISAL JAWAD HASSAN

GET YOUR FREE TICKET >



DIVE IN!

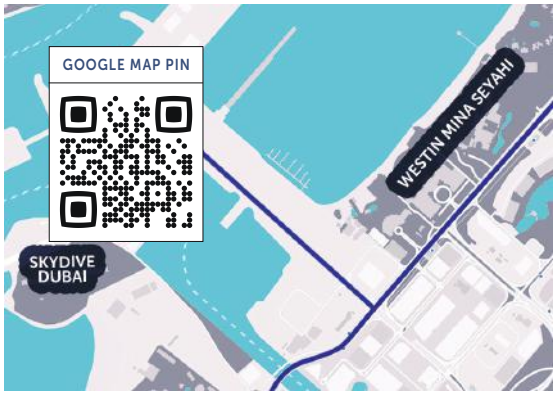
Ever had the urge to go scuba diving, but scared of the deep? You're not alone and we have the perfect thing to get you started and overcome your phobia! Trained experts will demonstrate how to overcome these fears and enjoy the experience at The Dive Pool!

GET YOUR FREE TICKET >

SAFE, LIVE AND IN-PERSON EXPERIENCE

We are committed to providing you with a safe environment to do business in accordance with all the health & safety guidelines set out by the local authorities.

- Wearing masks at all times is mandatory
- Sanitisers available when boarding vessels
- All vessel touchpoints are disinfected regularly
- Vessel capacity should not exceed 50% as per DMCA
- Food and beverages to be consumed in dedicated F&B areas



SHOW TIMINGS
9 - 10 March 3 pm - 8 pm | 11 - 12 March 3 pm - 9 pm | 13 March 3 pm - 8 pm

#dubaiboatshow
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