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DIVERS FOR THE ENVIRONMENT

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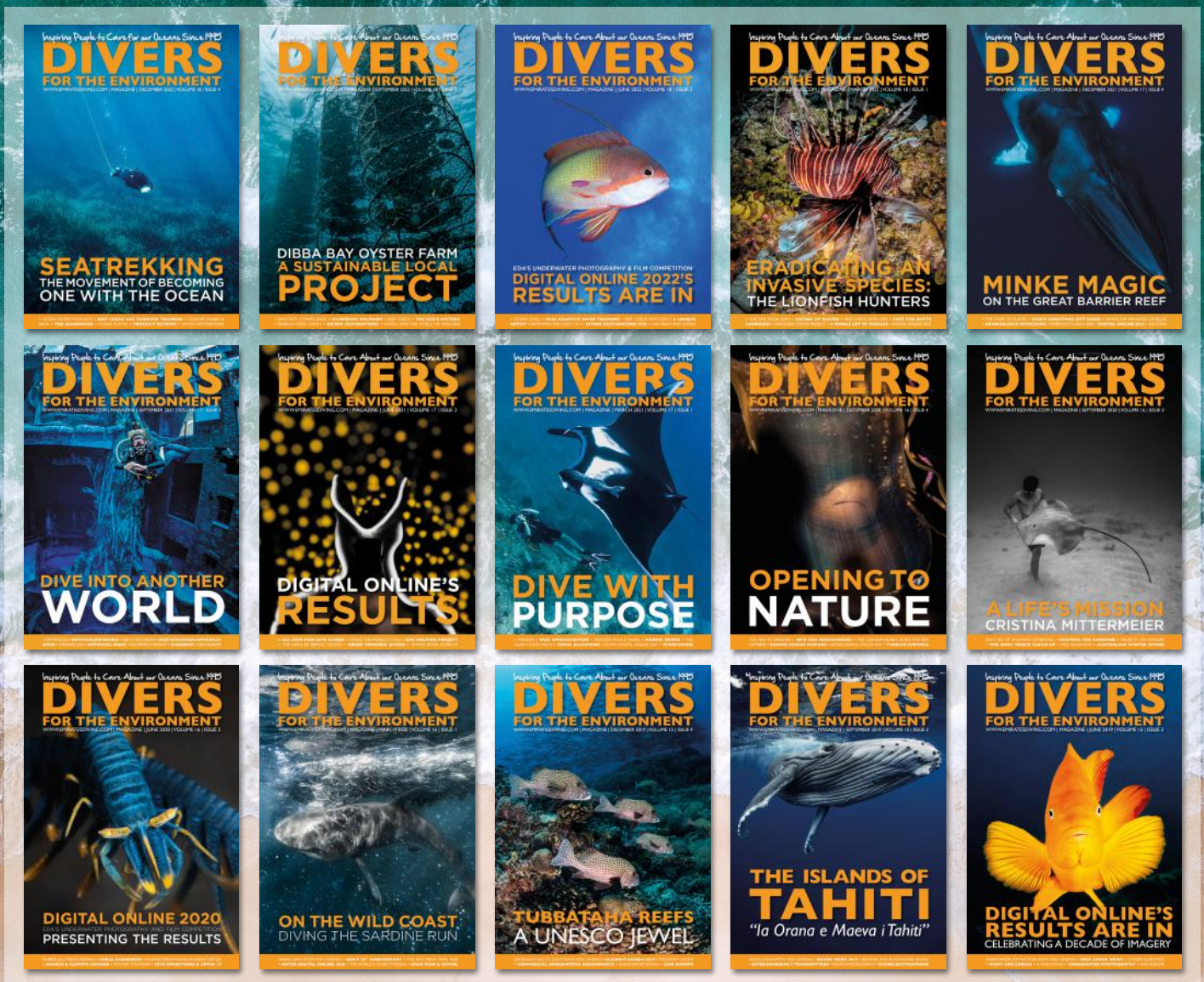
SEATREKKING

THE MOVEMENT OF BECOMING
ONE WITH THE OCEAN

• OCEAN SISTERS PODCASTS • REEF CHECK UAE ECODIVER TRAINING • CLEANUP ARABIA IS BACK • THE SEANOMADS • OCEAN PLASTIC • PRODUCT REVIEWS • DIVING DESTINATIONS

FOR THE OCEANS

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



REGULARS

- 5** EDA Co-Founder's Note
- 99** Round-Up
Upcoming Events and Updates
- 99** Did You Know?
Trees & Seas

NEWS

- 6** Dibba Bay's Friend of the Sea
Award Ceremony
- 7** End the Litter Trail
A Community Service Initiative by Rotaract Dubai
- 8** Oil Spill Linked with Mass Mortality
of Sea Snakes
From the Gulf of Oman, Coast of Sharjah
- 9** Ocean Sisters:
Podcasts from Ocean Conservation & Diving Enthusiasts
- 10** Aqua Explorers Scuba Camp
A Fun, Action-Packed Adventure!
- 11** The Environment Agency – Abu Dhabi
Showcases Significant Marine Projects During
International Boat Show 2022
- 12** How Much Do You Know
About Whales and Dolphins in Fujairah?
- 15** PADI Helps Secure Much-Needed Protection
For Sharks at CITES

KIDS CORNER

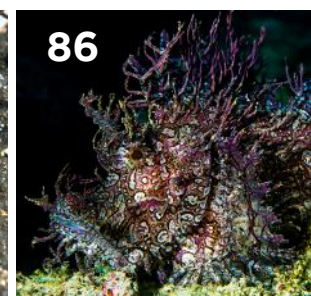
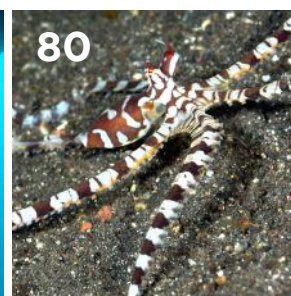
- 16** The Pink Mask
- 21** My Deep Dive
During my Junior Advanced Open Water

REEF CHECK

- 23** Rolling Out the First Reef Check EcoDiver
Training For EDA Members

DIVERS FOR THE ENVIRONMENT

Please note that EDA's magazine, 'Divers for the Environment' includes articles written by individuals whose opinions, whilst valid, may or may not represent that of EDA's. The magazine is a platform for individuals to voice their opinion on marine and diving related issues. You are welcome to suggest an article for the next issue released in March 2023. Send all articles, feedback or comments to: magazine@emiratesdiving.com



- 24** Malaysian for a Cleaner Malaysia
- 25** Volunteer Divers
Successfully Restore Kelp at Tankers Reef

FEATURES

- 26** Cleanup Arabia 2022
The East Coast, Dibba, Fujairah
- 36** Ocean Plastic:
What you Need to Know
- 42** Seatrekking
The Movement of Becoming One with the Ocean
- 48** Sounds Under the Sea:
A Glimpse into the Secret Lives of Dolphins
- 54** An Exploratory Dive
Down to 144m of the Arabian Sea

PRODUCT REVIEW

- 62** Isotta
Housings on Demand
- 66** Full Face Masks
Will they be the New Standard?

DIVING DESTINATIONS

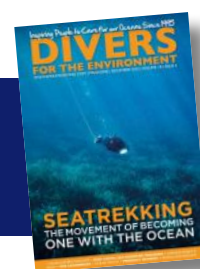
- 70** Mexico's Caribbean Coast
- 80** Shore Diving
At Tulamben, Bali Indonesia
- 86** Mauritius
A Short Trip to Paradise
- 92** We Take a Dive with PADI
Into the Wrecks of Bermuda

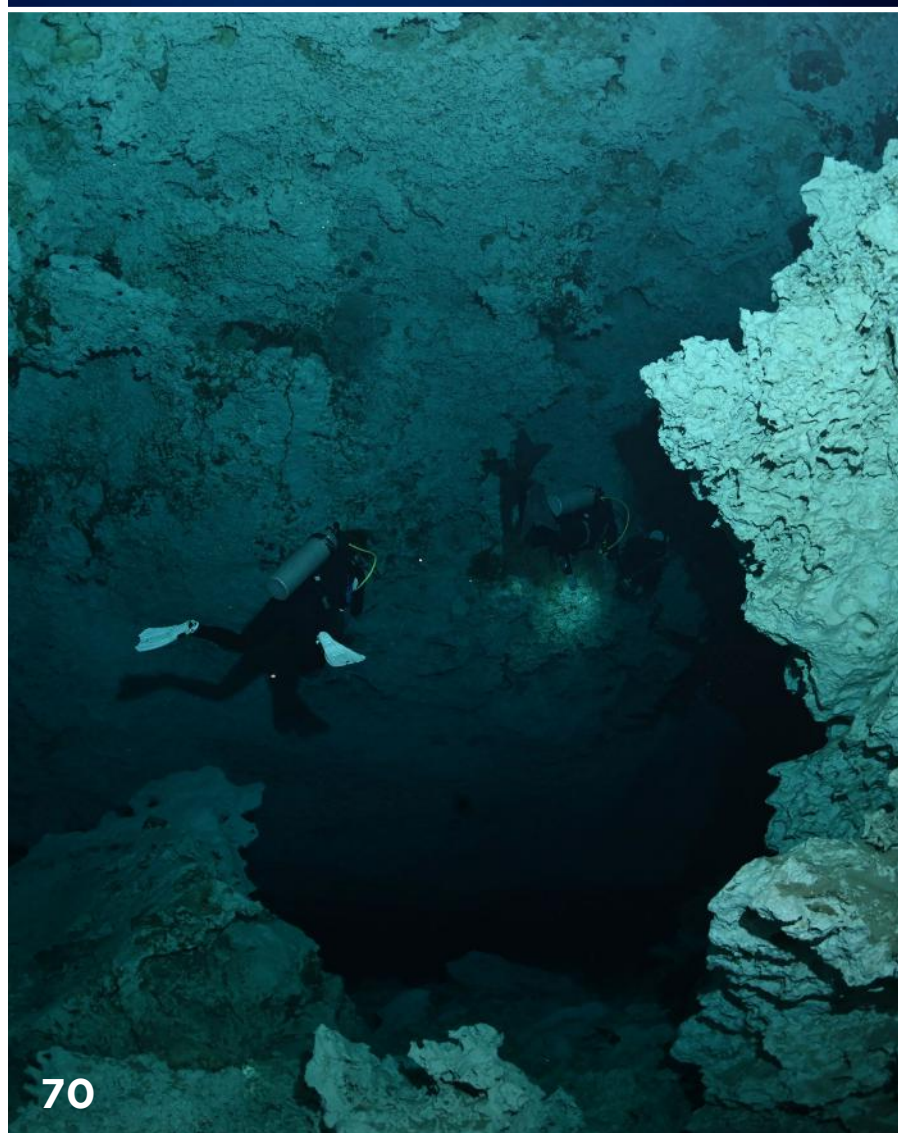
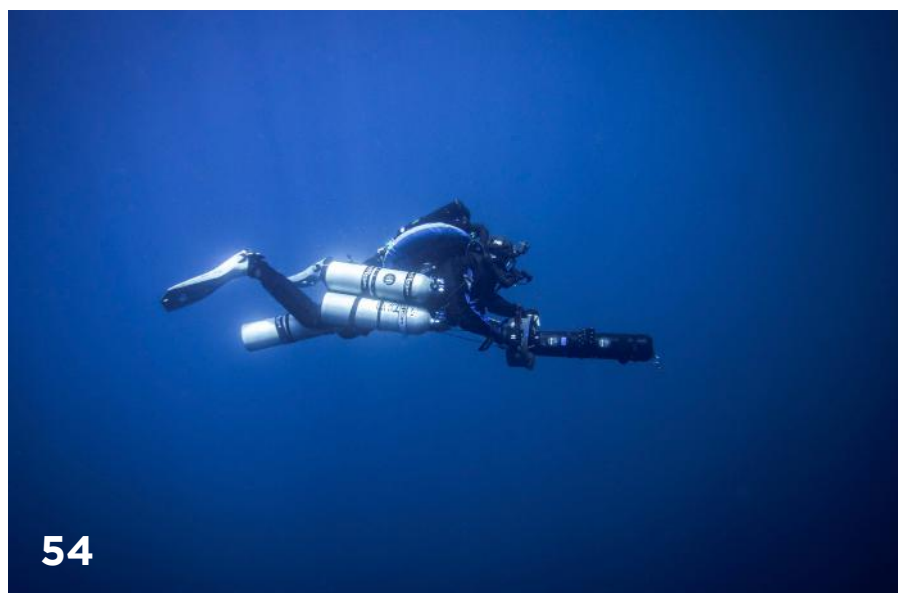
HEALTH

- 98** Decompression Illness
Following Two Nitrox Dives

COVER

PHOTO BY MEIKO HERRMANN
Seatrekking pioneer, Bernhard Wache glides through the blue wilderness.





PHILIPPE LECOMTE

Having followed in his father's and brother's love for the sea, French diver and underwater photographer Philippe, took to underwater photography in 2006 after having moved to Abu Dhabi in 2003 and now seldom travels without his camera.

www.plongee-passion-photo.over-blog.com



GORDON T SMITH

Gordon has lived and dived in the Middle East region for the past 36 years. He is a frequent visitor to south east Asia, in particular to Indonesia and the Philippines. Nudibranchs and seahorses are his favourite subjects, and he's always ready to dive in the UAE due to the variation in subjects he encounters.



EDITOR & GRAPHIC DESIGNER

ALLY LANDES

Ally is EDA's Project Director, Event Planner and Coordinator, Graphic Designer, Writer, Editor, Photographer and 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

JULIAN MUEHLMEIER

Julian is a Seatrekking Guide and Founder of The Seanomads. His focus is on his guests having the perfect outdoor nature experience. With sustainable development, global and regional thinking at the forefront, Julian's interests also lie in theater and circular fashion.

www.seanomads.de



THE CONTRIBUTORS

Meet the quarterly contributors who share their passions and stories with our readers. Want to contribute?

Email: magazine@emiratesdiving.com

AUDREY NAKAGAWA

Audrey is an enthusiastic writer with Total Marketing Solutions and current intern with Families USA. She is a graduate of James Madison University where she studied Media, Art and Design with a concentration in journalism. She has bylines with The Breeze, JMU's student-run newspaper, The Product Post, and Ecowatch.com where she wrote on topics related to the environment.



DR JUAN DIEGO URRIAGO SUAREZ

Juan is a passionate marine biologist, at the Fujairah Research Centre. He has worked on numerous marine research projects including echinoderm studies, coral translocation, coral fragmentation, coral nurseries, and habitat restoration based on artificial reefs: design, construction, deployment, and monitoring.

www.instagram.com/urriago69



FARHAT JAH

Farhat opened his first dive centre in the Andaman Islands in 1995. In 1998 he moved it to Pemba Tanzania. In 2012, with his wife Francisca, he founded the African and Oriental Travel Company, selling tailor made safaris and unusual dive adventures. When he is not doing his day job, he writes stories about diving, travel, expeditions and aviation. Farhat is a NAUI Instructor trainer, a PADI instructor and a fellow of the Royal Geographical Society.

www.orientafricatravel.com



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





SPIRIT OF THE UNION 2022



IBRAHIM AL-ZU'BI
Co-Founder

As we celebrate the 51st UAE National Day this year, we reflect on the spirit that ties us all together; the Spirit of the Union that enables millions of people to coexist and build lives together. The Spirit of the Union is derived from the vision and leadership of the Late Sheikh Zayed Bin Sultan Al Nahyan, EDA's founder, and now lives on through His Highness Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE and his fellow leaders of the nation's Emirates who are shaping the UAE's future.

In other big news, we would like to announce that EDA's Board of Directors have welcomed Mohamed Faraj Abdulla Jaber as EDA's Health, Safety and Technical Inspector who will be providing support to the UAE Dive Centres from now on.

In this issue, we share so many great ocean stories from so many passionate contributors. You must check out the articles by The SeaNomads, and by XR HUB on their exploratory dive down to 144m.

We've also got cetacean research news from both the Fujairah Research Centre whom are offering volunteer opportunities to join their projects, and the UAE Dolphin Project explain what you can do to help their research if you encounter a whale or dolphin while you're out on the water.

Get some pointers from this issue's diving destinations, and find out what this quarter's product reviews are all about. There's something for everyone.

We're so happy to have been able to start our Cleanup Arabia campaign back up again this year after the Covid hiatus. The event's results speak for themselves, and the diving communities support and involvement has been as strong as ever. We're looking forward to doing much more environmental work in 2023, especially with our Reef Check EcoDiver training now in action. We have so many things to look forward to in 2023.

I would like to wish everyone a happy 51st UAE National Day. I also want to wish you all a Merry Christmas, and a Happy New Year. See you all in the New Year!

Happy reading and safe diving,

Ibrahim Al-Zu'bi

Ibrahim Al-Zu'bi

DIBBA BAY'S FRIEND OF THE SEA AWARD CEREMONY



On the 17th of October, EDA was invited to Dibba Bay's Friend of the Sea Award Ceremony. Friend of the Sea is the leading global certification standard for products and services that respect and protect the marine environment. Dibba Bay is the first farm in the Middle East to grow gourmet oysters and is located on the East Coast of the UAE in Dibba where they grow millions of oysters in the pristine, and nutrient-rich waters of Fujairah.

Ramie Murray, the CEO of Dibba Bay made the opening speech, "Since our founding we've always worked very hard to make sure that we're doing everything we can to protect the environment, and today I'm personally very proud that we've received this third-party certification and verification that what we're doing, we're doing in the right way, and helping our surrounding environment in the process."

One of our main projects we are doing is recycling the shells, so we're not just sending oysters off to market, we're also collecting the empty shells back from the restaurants, and the programme we have is to put the shells back into the ocean to enhance the marine environment. This is to promote general marine growth, and the local oyster species. We're very humbled that we've been recognised by Friend of the Sea."

Ramie introduced Paolo Bray, the Founder and Director of Friend of the Sea who went on to explain that to be a certified Friend of the Sea institution, aquaculture facilities must meet strict sustainable policies, waste management regulations, and social responsibilities. The Friend of the Sea certification covers Dibba Bay's sustainable aquafarming for oysters, covering the *Crassostrea gigas* species. The certification also covers Dibba Bay's packing and export operations with traceability being a key focus.

Friend of the Sea's Sustainable Aquaculture Certification criteria involves an environmental impact assessment which must confirm no impact on critical habitat, compliance with water quality parameters, no use of harmful antifouling nor growth hormones, compliance with water quality management, social accountability, and continuous improvement of waste and energy management.

Ramie also introduced The Fujairah Research Center's Marine Research Specialist, Sabhah Alhmoudi who made a presentation on their work and how they and the Fujairah Environment Authority have assisted Dibba Bay. Rami explains, "It has been very important to have that relationship with the local authorities, to make sure that everything we

are doing is in line with federal law. We have a lot of oversight which we welcome, which is very important to sustainable farming."

The introductions were followed by a tour of the onshore farm facility to show everyone how the oysters are harvested.



DIBBA BAY OYSTERS

www.instagram.com/dibbabay

www.facebook.com/dibbabayoysters

To learn more about Dibba Bay visit:
www.dibbabay.com

END THE LITTER TRAIL

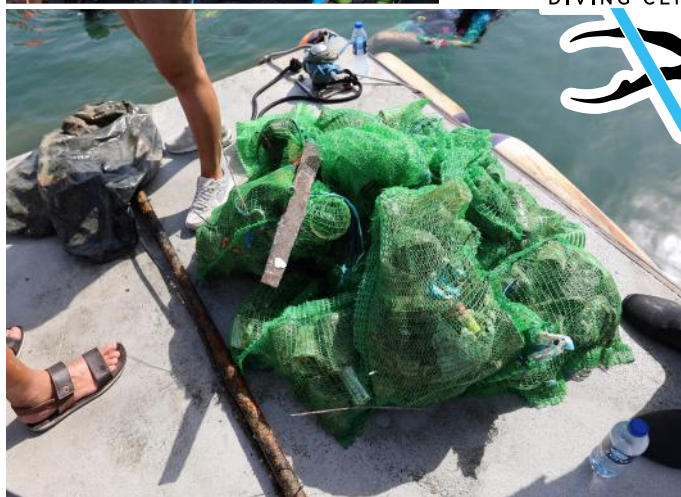
A COMMUNITY SERVICE INITIATIVE BY ROTARACT DUBAI



End The Litter Trail is a campaign founded by the Rotaract Club of Dubai in cooperation with End Plastic Soup in the Netherlands which aimed to clean UAE dive sites, beaches, mountains, and seas as part of the World Cleanup Day which took place on the 17th of September 2022, within 15 countries.

The Bermuda Diving Center partnered with Rotaract Dubai and ran the underwater clean-ups in Umm Suqeim's Port 2, and Kite Beach in Jumeirah.

The event in Dubai had 560 volunteers from different categories such as beach cleaning, hiking and diving. 60 certified divers attended the event and collected more than 300kg of underwater trash.



OIL SPILL LINKED WITH MASS MORTALITY OF SEA SNAKES FROM THE GULF OF OMAN, COAST OF SHARJAH

BY FADI YAGHMOUR



Marine biodiversity has suffered significantly from the impacts of anthropogenic activities including unsustainable exploitation of marine resources, development of coastal habitats, climate change and the release of pollutants into the marine environment. In the United Arab Emirates (UAE), plastics and other forms of marine debris have enjoyed a great deal of well deserved attention by researchers, policy makers and the wider public over the past few years. Yet other forms of marine pollution remain persistent in a region that depends heavily on fossil fuels. The lethal impacts that oil spills have on marine fauna has been extensively documented in the scientific literature. Heavy surface oil can mire and kill organisms that dwell near the surface. As such, seabirds were frequently documented to be affected by poisoning or suffocation in oil. Sea turtles are also documented to suffer greatly from the impacts of oil spills as they may ingest oil, inhale toxic fumes or get coated in sticky viscous oils that restricts their mobility. Oil spills also cause widespread contamination of food items leading animals to become malnourished or chronically poisoned. A great deal of our knowledge regarding these impacts was derived from studies conducted during large and catastrophic oil spills such as Exxon Valdez and Deepwater Horizon. However, as these spills were restricted to the Pacific Ocean, our knowledge on spill related impacts is also restricted to the species that occur there. The global distribution of sea snakes, the most biodiverse group of marine reptiles, is largely limited to the Indo-West Pacific. In a

recent study, published in the scientific journal *Science of The Total Environment*, titled "Oil spill causes mass mortality of sea snakes in the Gulf of Oman", the Environment and Protected Areas Authority of Sharjah (EPAA) reported the first ever assessment of sea snake mortalities caused by an oil spill.

On the evening of the 12th of November 2021 the EPAA received reports from local fishermen of seagulls drenched in oil found afloat in the coastal waters of Kalba. The injured birds were rescued and transported to the EPAA's Breeding Centre of Endangered Arabian Wildlife (BCEAW) where they were provided with veterinary support and treatment. Over the next two days viscous oil and tar balls were observed washed ashore along the coast of Kalba. It is not known whether the pollution source was accidental crude oil spillage or intentional, illegal bilge discharge. During this time, monitoring efforts by the EPAA's Sharjah Strandings Response Program (SSRP) were intensified to where beach surveys were conducted twice daily along the entire Kalba coastline. This escalation continued until the 19th of November when the die-off related to the spill appeared to have ended.

Live strandings observed and rescued during this period underwent veterinary treatment and rehabilitation until they were healthy and fit for release. EPAA veterinarians and scientific researchers examined dead strandings to determine the cause of death and collect biological and toxicological data. Overall, 48

strandings were reported from the 13th to the 19th of November 2021, of which 39 (81.3%) were sea snakes. Of the 39 stranded sea snakes reported, 37 were collected and underwent post-mortem examinations. The investigated sea snakes belong to four different species: yellow-bellied sea snakes, Arabian Gulf coral reef sea snakes, Yellow sea snakes and ornate sea snakes. The majority (84.6%) of sea snakes were observed to have oil covering 75-100% of their bodies. This level of external oiling is enough to immobilise the sea snakes causing them to drown, overheat or starve. Sea snakes are also capable of transcutaneous oxygen uptake, meaning they rely on their skin to breathe which makes external oiling even more hazardous to them. Furthermore, the majority (91.4%) of sea snakes were also observed with oil covering their snouts and eyes, further compromising their ability to breathe. Finally, a large proportion of sea snakes were observed with oil in their mouth (25.8%), esophagus (41.4%) and stomach (34.5%).

It is likely that sea snakes are significantly more susceptible to the hazards of oil inundation in marine environments than previously considered. Furthermore, the abrupt increase in sea snake strandings observed by the SSRP coinciding with the oil spill suggests that these events, even at small scales, may be a significant factor in the morbidity and mortality of sea snakes in the Gulf of Oman. The EPAA is conducting further work to better understand the acute and chronic risks that oil spills and other marine pollutants pose to sea snakes.

OCEAN SISTERS:

PODCASTS FROM OCEAN CONSERVATION & DIVING ENTHUSIASTS



Ocean Sisters is a fun and informative podcast on all things ocean. Co-hosts Chloe Griffin (PADI Instructor MSDT) and Elaine Froggett (Divemaster) talk about a variety of subjects including the latest insights on ocean conservation and well-being, their real-life experiences whilst scuba diving, actionable advice such as boat do's and don'ts, and all female matters.

You'll also hear from guest speakers that are based or have a connection to the UAE. Learn from experts in the diving industry, including:

- Female Diving & Instructor Life, with guest speaker Kathleen Russell, Course Director and Owner of Al Mahara Diving Center.
- Ocean Generation, with guest speaker Jo Ruxton MBE, producer of A Plastic Ocean (award winning Netflix documentary).
- An Introduction to Underwater Photography with guest speaker; Nik Menon, Underwater Photographer enthusiast.
- Fuvahmulah Island, Maldives with guest speaker; Ahmed Inah, Instructor and owner of Pelagic Divers.
- Corporate Social Responsibility with PADI EMEA, with guest speaker; Emma.
- Dubai Voluntary Diving Team, with guest speaker; Rajani Gupta.

Subscribe to Ocean Sisters on Apple podcasts, Spotify or wherever you listen to your podcasts. If you'd like to be a guest speaker or hear about a specific topic, follow us on Instagram: Ocean Sisters in UAE, and send us a direct message.



ABOUT THE EPAA:

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

SOCIAL MEDIA PLATFORMS:

- Instagram: www.instagram.com/epaa_shj
- Facebook: www.facebook.com/epaashj
- Twitter: www.twitter.com/epaa_shj

www.epaashj.ae

AQUA EXPLORERS SCUBA CAMP

A FUN, ACTION-PACKED ADVENTURE!



Aqua Explorers is a welcoming weekly diving club for the whole family where positive action for the environment is encouraged along with a lot of fun. Children from 8 years old will have the chance to gain their 'passport to the ocean' in a safe and encouraging environment, creating family memories and developing a growth mindset.

WHAT TO EXPECT

A fun-filled adventure camp with in-water and dry land activities for all age groups. All scuba equipment is included, however, parents are advised to purchase a 3mm shorty for in-pool training and/or 3mm wetsuit for the open water dives.

8-10 YEARS OLD

Our budding younger junior divers will enjoy a camp like no other; this includes:

- PADI Bubblemaker – a globally recognised and certified intro to diving.
- PADI Seal Team Aqua Missions I-8.
- A mixture of both pool dives and the chance to dive in the ocean!
- Max 4 students per PADI Instructor.
- Ocean-themed arts and crafts activities.
- Membership to our Aqua Explorers Club in the UAE.
- Half a day of activities, running weekly for consistent and gradual growth in confidence.
- Please note children should be competent in the water; this camp requires basic watermanship skills.

10 YEARS OLD +

Our young divers-in-training will experience a camp to remember and become PADI Open Water certified within the week.

- PADI Junior Open Water certified course.
- A mixture of both pool dives and the chance to dive in the ocean!
- Max 4 students per PADI Instructor.
- Free membership to Aqua Explorers Club here in the UAE.
- Half a day of activities, running weekly for consistent and gradual growth in confidence.
- Please note children should be competent in the water; this course requires basic watermanship skills.

Our Educational Workshops also include: FOOD FOR THOUGHT TALKS (ENCOURAGING CARBON LITERACY) LEARNING OBJECTIVES

- How most of our single-use plastic ends up in the ocean.
- How plastics are ingested by the ocean food chain in different ways.
- What impact the polluted food change has on carbon capture.
- How reduced carbon capture affects us as humans, as well as species living in the ocean.
- Pledge to do 3 things that will personally eliminate plastic usage.

THE PLASTIC PREVENTION GAME (ENCOURAGING CARBON LITERACY) WHAT TO EXPECT

- Introduction to the topic and explanation of the ocean ecosystem and the impact of plastics.
- Species are allocated by 4 T-shirt colours - become part of a team of: plankton, jellyfish, turtles or sharks!
- Play a high energy game whilst quickly understanding how plastic impacts every

level of the food chain

- Ending with a pledge to the ocean of how to do more in everyday life to reduce plastic
- Play the second round in 10 mins with plastic pollution (those that are eaten become toxic).
- Debrief what it's like becoming the ocean.
- Pledges go in the plastic junk used in the game. Create a pledge display.



PASSPORT TO THE OCEAN

CHLOE BLUE

A female-led dive club that offers eco-friendly dive packages, PADI courses and fun dive/snorkelling trips. We are based in Dubai at the Jebel Ali Resort and have partner locations in Fujairah and Musandam, Oman.

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THE ENVIRONMENT AGENCY - ABU DHABI SHOWCASES SIGNIFICANT MARINE PROJECTS DURING INTERNATIONAL BOAT SHOW 2022



The Environment Agency – Abu Dhabi (EAD) showcased a series of significant marine life projects during the Abu Dhabi International Boat Show that was held at the Abu Dhabi National Exhibition Centre Marina from the 24th to 27th November 2022.

The Agency had dynamic and interactive screens at the EAD stand to shed light on the Research Vessel, a state-of-the-art ship fitted with the most innovative technology. The 50-metre multipurpose marine conservation and fisheries vessel will use environmentally-friendly technologies to conduct specialised research in the hottest sea in the world – the Arabian Gulf – as part of the UAE's commitment to execute innovative and forward-looking scientific projects.

The Agency also had an interactive touch wall to share information about EAD's turtle rehabilitation project that had sensors, projection mapping, and sound effects. To date EAD has rehabilitated and rescued more than 400 turtles in partnership with The National Aquarium.

To reach out to fishermen to raise their awareness on fishing regulations and laws, EAD shared information about the Recreational Fishing Regulations and the different methods to practise sustainable fishing.

Khansa Al Blouki, Environmental Outreach Director at EAD said, "One of the contributing factors for the success of any visitor attraction in any show is the ability to create an environment that offers the opportunity to create experiences that are memorable. During EAD's participation at the Abu Dhabi International Boat Show, we aimed to create an experience using digital technology for the visitors to learn, explore and enjoy information

about EAD's marine projects."

The Boat Show is an unmissable global opportunity for learning about the latest innovations in boating, fishing, and water sports. It brings together some of the world's best brands and industry specialists, and is the ideal show for marine companies to exhibit and find partnerships to help boost the growth of the booming marine sector:



HOW MUCH DO YOU KNOW ABOUT WHALES AND DOLPHINS IN FUJAIRAH?

FEATURE AND PHOTOGRAPHY **DR JUAN DIEGO URRIAGO SUAREZ** – FUJAIRAH RESEARCH CENTRE



ABOVE: The Common Bottlenose Dolphin (*Tursiops truncatus*). Dorsal fins of Common Bottlenose Dolphins are often unique in shape or markings (as this one's clearly is with its scar) that enable individuals to be recognised and can be used to help study population dynamics.

In 2017, The Fujairah Whale and Dolphin Research Project was started by the Crown Prince of Fujairah's invitation, His Highness Sheikh Mohammed bin Hamad bin Mohammed Al Sharqi, following the stranding of a sperm whale on Fujairah's shores. The sperm whale, and other species, were first recorded and photographed in 1995. Two decades later, it was decided it was time to investigate Fujairah's marine mammal fauna in more detail. In May 2016, Robert Baldwin (director of Five Oceans Environmental Services) was invited by Balazs Buzas (the project's initiator) to visit the Emirate of Fujairah. Since then, Balazs and Robert's team have worked on the surveys done by both vessel and helicopter, 4-5 days per year.

The Fujairah Research Centre Marine Department, and the Fujairah Environment Authority have led the project since 2021. Dr Juan Diego Urriago Suarez is the principal investigator, supported by Maryam Ahmed

Mohamed Obaid Alhefeiti, and Sabhah Ali Obaid Mubarak Alhmoudi. They are local Emiratis from Fujairah and active members of the Marine Department. The Fujairah Whale and Dolphin Research Project's team is generously supported by HH Sheikh Mohammed bin Hamad bin Mohammed Al Sharqi, the Crown Prince of Fujairah. We are grateful for the continuous support by Dr Fouad Lamghari Ridouane, Director of the Fujairah Research Centre, and Aseela Abdullah Moalla, the Director General of the Fujairah Environment Authority.

During each of the four surveys done per year, we dedicate 20 flying-hours in a Bell 212 helicopter; and around 50 vessel-hours. We use two vessels daily, one provided by the Crown Prince of Fujairah, and the other provided by the Port of Fujairah. The focus of the survey is on offshore waters, with the transect starting points positioned approximately 20km from shore in water depths of 80-120m, and the

end points reaching as far as 80km from shore, in water depths of well over 1,000m. Our study area is about 2,000km² along our pre-determined transect lines.

The diversity of dolphin species in the Emirate of Fujairah is astonishing. 12 species of these marine mammals have now been recorded in Fujairah out of the 22 recorded in the Arabian region in total. Among them are three new records for the UAE, the Pantropical Spotted Dolphin (*Stenella attenuata*), the Striped Dolphin (*Stenella coeruleoalba*), and the Rough-Toothed Dolphin (*Steno bredanensis*). During our dolphin survey in November 2022, we spotted the Pantropical Spotted Dolphin again.

The Common Bottlenose Dolphin (*Tursiops truncatus*) and the Indo-Pacific Common Dolphin (*Delphinus delphis tropicalis*) are known to be the most commonly encountered marine mammal species in Fujairah waters and have a distinct preference for the southeastern



ABOVE: The Striped Dolphin (*Stenella coeruleoalba*) who are normally evasive, hung around long enough for us to get some good shots. A mother and her calf can be seen in the bottom image as they playfully jump along the surface.

corner of the oceanic waters, generally in water depths of over 400m. Groups of up to 1,000 individuals have been observed, including juveniles and mother-calf pairs, indicating their breeding status. During our surveys, we have witnessed other dolphin behaviours such as feeding, deep diving, and mating. In the case of the Common Bottlenose Dolphins, individuals approached our research vessel to bow ride. Some dolphin species like the Striped Dolphins are generally evasive and cryptic, but some individuals occasionally approached our research vessel.

Most species are primarily distributed offshore in waters of >500m depths which is a 'Hot Spot' on the continental slope in the southern portion of the survey area where some species such as the Indo-Pacific Common Dolphin were regularly recorded close to shore, including the Fujairah Offshore Anchorage Area. Other cetaceans making occurrences in the Emirate, include the infrequently recorded

ones, such as the Sperm Whale or Cachalot (*Physeter macrocephalus*), the Bryde's Whale (*Balaenoptera brydei*), and the Blue Whale (*Balaenoptera musculus*).

The Fujairah Research Centre started collaborating with UEA Universities for DNA sequencing and genetic analysis of dolphin tissue samples taken during our surveys to confirm the population structures, species identity, taxonomic and population identity of the Common Bottlenose Dolphin.

Dorsal fins of Common Bottlenose Dolphins are often unique in shape or markings that enable individuals to be recognised and can be used to help study population dynamics. In November, the Fujairah Research Centre submitted a scientific paper to an international peer-review journal, entitled, 'Resighting of Common Bottlenose Dolphins in Offshore Waters of Fujairah, UAE, based on Photo-identification Studies.' In summary, several

individuals of the Common Bottlenose Dolphin were identified using their dorsal fin in photo match software (DARWIN). Moreover, many resighted Common Bottlenose Dolphins were also resighted during the study period. Maryam Ahmed Mohamed Obaid Alhefeiti is leading this publication.

The Fujairah Research Centre, in collaboration with Five Oceans Environmental Services, submitted another scientific paper in November on the Leucistic Common Bottlenose Dolphin (*Tursiops truncatus*). We documented this species for the first time from the aerial and vessel-based transect surveys conducted in the offshore waters of Fujairah.

During our surveys, other marine wildlife have been observed, such as sea snakes, Loggerhead Sea Turtles (*Caretta caretta*), Green Sea Turtles (*Chelonia mydas*), and Hawksbill Sea Turtles (*Eretmochelys imbricata*). Also, Whale Sharks (*Rhincodon typus*), Ocean Sunfish (*Mola mola*),



ABOVE: A rare sighting, and an exciting one, of the Risso's Dolphin (*Grampus griseus*).

flying fish (family Exocoetidae), tuna, and other predatory fish have also been observed feeding on bait balls of smaller fish.

Several bridled terns (*Onychoprion anaethetus*), Wilson's Storm Petrels (*Oceanites oceanicus*), Persian Shearwaters (*Puffinus persicus*), Masked Booby (*Sula dactylatra*), Black-headed Gull (*Chroicocephalus ridibundus*), Socotra Cormorant (*Phalacrocorax nigrogularis*), and unidentified Shearwaters are among seabirds observed.

WHAT TO DO WITH SIGHTINGS

Please be advised you are passing through waters recognised as whale habitats. This area is part of the Fujairah Whale and Dolphin Research Project study area. You are requested to maintain a voluntary speed limit of 10 knots during approach to the port, and to keep a continuous watch for whales, dolphins, and other marine wildlife at the surface. Report all sightings on channel 14 to the Port of Fujairah with the following information: numbers of whales/dolphins/other animals sighted, vessel position at time of sighting, distance and bearing to the sighting(s). Maintain a minimum

distance of 500m from marine wildlife if feasible, and await any further advice from the Port control for any additional action to take.

We extend our thanks to Captain Mayed Alameeri and the Port of Fujairah for logistical support including the supply of permits and vessels. We thank Salem Al Zahmi for his support on this project. This project has been successful thanks to the support of scientists, and all the participating volunteers who were involved during the field surveys.

THE FRC'S ONGOING PROJECTS

We welcome the community to volunteer on our weekly whale and dolphin vessel surveys, which is a continuity of our project.

We leave at 7am from the Fujairah International Marine Club, and return around 1pm. Since our departure is so early, we provide free accommodation for up to 3 people in our Marine Research Villa in Fujairah, Al Faseel Area.

We are also reconstructing the skeleton of the stranded sperm whale "bones" that we

have at the Marine Research Villa. This mega-project will start in December 2022, or in January 2023. This mega-project is intended to be performed by students from the Arbor School in Dubai, and will be guided by the Fujairah Research Centre Marine Team, and our partners at The Yas SeaWorld Research and Rescue Centre, Abu Dhabi.

مركز
الفجيرة
للبحوث



Fujairah
Research
Centre

WOULD YOU LIKE TO JOIN OUR PROJECTS?

If you are interested in joining any of these projects, please contact us by email.

Email: info@frc.ae

www.frc.ae

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PADI HELPS SECURE

MUCH-NEEDED PROTECTION FOR SHARKS AT CITES



PADI® (Professional Association of Diving Instructors®) is celebrating a major win in their fight to save sharks. At the 19th meeting of CITES (the Convention on Trade of Endangered Species of Wild Fauna and Flora) in Panama City, government representatives agreed to restrict international trade for all requiem sharks, one of the biggest family of species, all hammerhead sharks and all guitar sharks, adding an extra 60 species to the list of shark species protected by CITES on Appendix II.

This positive outcome follows PADI being asked by the host nation of Panama to provide specialist advice and research to all attending government representatives to help secure support for a critical vote to double the amount of protected shark and ray species. In the lead-up to this important vote, PADI actively mobilised their global community of 128,000 PADI Professionals, 6,600 PADI Dive Centres and Resorts, and over 29 million certified PADI Divers to take part by urging their own local governments to take action at CITES. They asked all ocean torchbearers (whether a diver or not) who are passionately committed to creating positive ocean change to sign the petition that urged governments to vote, "YES".

"The decision to restrict the unsustainable global trade in some of the most threatened species on the planet provides us all with a hope and optimism that we are not too late to end the dramatic declines in the ocean's most iconic, and critical, animals," said Ian Campbell, Associate Director of Policy and Campaigns

for the PADI AWARE Foundation™, which is PADI's global non-profit.

"The listing of requiem sharks, an iconic group of species that includes diver favourites such as the blacktip reef shark, bull shark, and grey reef shark sends a strong signal that healthy populations of these animals are economically important far more than just the trade in their harvested fins, meat and organs."

Shark tourism generates hundreds of millions of dollars globally, contributing to the economies of countries around the world and supporting hundreds of thousands of jobs. Previous studies of the tourism sector indicate shark-based tourism is on track to generate over three-quarters of a billion dollars a year over the next decade.

With the global pandemic having a significant impact on the economies of island nations such as Fiji, the Maldives and the Bahamas, the growth in shark tourism is likely to play a significant role in the financial recovery of countries with healthy shark populations around the world.

"This result, to limit the international trade in shark species that are found at the world's most popular dive spots, will bring a huge economic boost to communities across the globe," says Julio Salvatori, the South America Regional Manager for PADI and technical adviser to the Panamanian government. "The prospect of diving with sharks in their natural environment is a major attraction for the recreational

dive sector, many of which have made their concerns known to the decision-makers. We are optimistic that this can be a turning point for shark populations worldwide."

Recent studies have indicated that sharks – and their close relatives, the rays – are one of the most threatened groups of animals on the planet. Over a third of all species are classed as facing an increased risk of extinction, mainly due to overfishing, habitat loss and unsustainable trade.

"We commend the strong leadership and commitment to conservation shown by the government of Panama, supported by many others, to secure this much-needed trade restriction," continues Campbell. We also realise that this decision is only the start of the recovery for many shark species, and the revenue-generating recreational diving sector is primed to play its role in implementing the commitments made today."

Protecting sharks is a core component of PADI's Blueprint for Ocean Action, with the established goal of reducing the number of sharks and rays facing extinction by 25% in the next decade. To date, PADI has already helped secure protection measures to 51 species of sharks and rays, with today's vote more than doubling that number to a total of 105 species.

To learn more about how to support PADI's continued conservation efforts to save vulnerable marine species like sharks, visit www.padi.com/aware.

THE PINK MASK

STORY BY SLAVA NOOR – WWW.THEPINKMASK.NET

THE HERMIT

Ula tried to squeeze through the gap. It was too narrow, and the torn edges of the cans could cut her skin. That's where the lessons from her crab friends came in handy! Ula burrowed into the sand, then dug her way out from inside the castle. She turned on her flashlight, shining it brightly at the walls and ceiling. She could not see anyone apart from the little crab. Ula pointed her flashlight at the crab. He covered his eyes with a claw, stepped back, tried to hide, but did not manage to and clumsily waddled away, dragging the ball behind him.

Ula sat down, turned off the flashlight, and softly said, "Don't be afraid." The little crab was silent and trembled a little. "My name is Ula, what's yours?"

Silence.

"I have many friends among crabs, we often talk and eat sandwiches together. They're the ones who taught me how to bury myself in the sand so well."

Silence.

"I don't think you're doing very well being alone here." The crab rustled something and muttered, "Bob." "What?", asked Ula. "I'm Bob, the hermit crab." "That's right. Why are you carrying around this torn ball?" "None of your business!" "I'm sorry, I didn't mean to offend you. It just seemed like it was bothering you, but if I was wrong..." "I can't leave this ball."

"You must really love it then!"

"I hate this ball, but I can't leave it simply because I'm stuck in the damn ball!" Bob shouted.

Ula wanted so badly to go up to the poor crab, but what if he got more scared or angrier?

"Bob, I'm so sorry! Listen... I recently helped a turtle get out of an old fisherman's net. Let me try to get you out of the ball. I promise to be careful."

Silence.

Ula waited. Finally, Bob then emerged from the shadows. He moved slowly, crouching on his right claw, and the girl saw that a fishing hook was stuck in it. Ula felt her nose tingle with approaching tears. But there was no time to cry. Luckily, she had her first aid kit with her.

At first Ula tried stretched the ball as hard as she could, and Bob was finally able to get out of it. Then she gently and carefully pulled out the hook and treated the claw

with some antiseptic.

The crab tensed in pain, and in order to distract him Ula asked, "Did you build this castle by yourself?"

"Well... not exactly. The moray eels helped me, we've been friends since childhood."

Ula almost dropped the first aid kit. Moray eels eat crabs. And crayfish. And fish. They can even fight toothy sharks. How can moray eels, named the Flesh Tearer and the Baby Eater, be friends with a crab?

Bob told her that there were all kinds of moray eels. That his friends are as much of a Flesh Tearer and Baby Eater as he is a Trash Monster. And that his friends aren't mean or dumb. It's just the way they look.

They actually have a lot of knowledge. Alberto (aka the Baby Eater) reads philosophical books and writes articles on the history of art. And Roberto (so called the Flesh Tearer) loves fairy tales by Andersen and he's a polyglot who speaks seven languages, he even speaks whale.



"But then where is the real Trash Monster and why did you build this castle?", Ula asked confused.

"It all started when I was too small for my old shell. We hermit crabs live in personal shells. Mine was so beautiful and comfortable, but I grew out of it and was left without a home. I started looking for a new home, but all the decent shells were occupied. A lobster acquaintance said he knew hermits who settled in plastic cups, and one even borrowed a

scrap of a plastic pipe. I thought I could give it a try too.

We came here. There was just a pile of trash that had been swept up by the current. So I started trying on what could be my new home. That's how I got into this ball. I got in, but I couldn't get out. The worst part, while trying to get out of the ball, I got caught by that hook. My moray friends could not help, they are too big.

I felt both hurt and ashamed! I imagined how the other hermits

in beautiful shells would poke their claws at me and laugh at the fool I was in that ugly ball. And then I decided to build a shelter, to hide, to distance myself from everyone. That's how this "castle" came to be. Then Alberto and Roberto made up scary new names for themselves and spread the rumour about the terrifying Trash Monster."

Bob went quiet and then added, "All the crabs who had settled in plastic cups or in tin cans... they died."

A NEW HOME FOR BOB

The magic shell vibrated. TigRRR must be really worried back at the surface! And that's when Ula got an idea how to help Bob.

"Land, land, I am Sea, over!", she shouted.

"What?" was all TigRRR asked.

"It's okay, it's not a castle, it's a shelter. The hermit crab, Bob lives here, he's good, and he needs a new home. Could you ask our crab friends if I could give him the shell they gave me as a gift?"

"Bob who? Why does he need the shell, what shelter? I don't understand!", said TigRRR.

"TigRRR, I'll tell you everything as soon as I get back, but for now just ask the crabs. They'll understand!"

The crabs did understand. And they agreed with Ula.

Ula took out the beautiful shell and put it in front of Bob. Even in the semi-darkness of the castle you could see how

beautiful and cozy it was. Spirally, twisted, and smooth, with white and orange spots.

"Here, this is for you. It's a new house. Will it fit?"

The crab looked at Ula, then at the shell, then back at Ula.

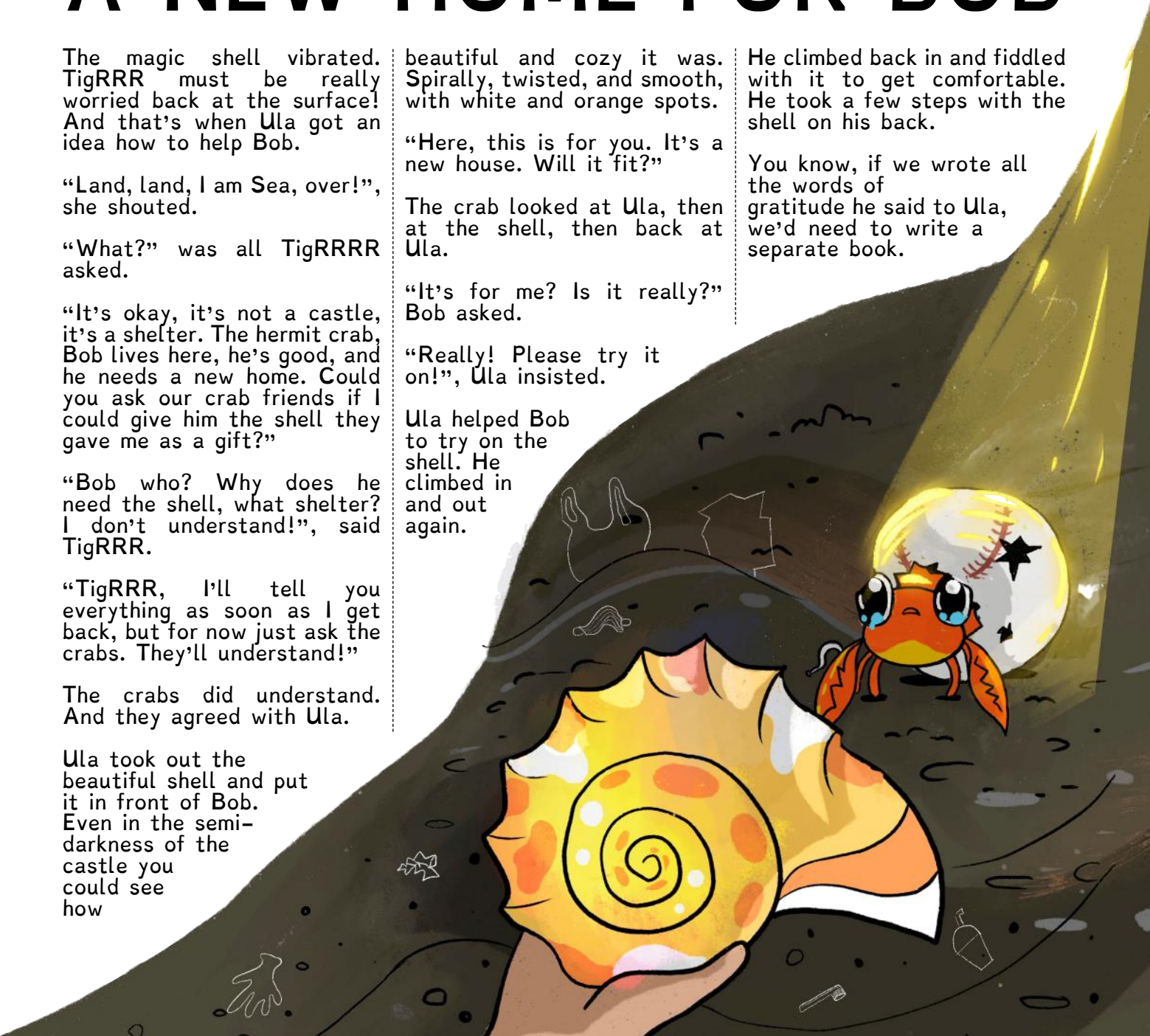
"It's for me? Is it really?" Bob asked.

"Really! Please try it on!", Ula insisted.

Ula helped Bob to try on the shell. He climbed in and out again.

He climbed back in and fiddled with it to get comfortable. He took a few steps with the shell on his back.

You know, if we wrote all the words of gratitude he said to Ula, we'd need to write a separate book.



WHERE IS THE TRASH MONSTER?

When Ula and Bob came out of the castle, Rita was having a heated discussion with Alberto and Roberto about which underwater language sounded better.

Then they saw Ula and Bob sporting his brand new shell. As always, Rita was the first to shout out, "I knew it! I told you right away that the human girl would defeat the Trash Monster and save us all! You defeated him, didn't you?"

Rita's enthusiastic shout was so strong that Trash Monster's castle wobbled, crumbled, and became what it really was - a big pile of trash.

"The Trash Monster wasn't there, but we met Bob," said Ula. "He was in trouble, but he's okay now. Bob, this is Rita."

Bob looked at her shyly and mumbled, "Hi".

You should have seen how happy the moray eels were, what a merry dance they did around Ula and Bob. Roberto said "Thank you" to the girl in all seven languages, and in whale too, and Alberto rubbed against Bob's new shell and kept repeating, "My friend, I'm so glad, so glad!"

"Wait a minute!" shouted Rita, and everyone noticed that she was not happy at all, on the contrary, she



was almost in tears. "But then where is the real Trash Monster? Who poisons the ocean and piles up mountains of garbage here, who scatters nets and traps? Where do we look for him? If you haven't defeated anyone, does that mean the Trash Monster is still alive and will continue to terrorise us? What should we do? How can we live like this?"

"I know who the real Trash

Monster is", said Ula. "You do not have to look for him in the sea, in fact he lives on land. Indeed he is very big, with many arms and many heads. It's us humans. You're right, Rita, we must do something! But what?"

So Ula called TigRRR and her crab friends, and Alberto quickly swam to call Brünnhilde, and they began to think all together. They thought and they thought, and they came up with the idea to start the Big Cleanup.

They would take out all the garbage that Ula had entangled in the net. The mountain of garbage that was previously a "castle" was all going to go, and all the plastic bags, cans and nets that covered the ocean bottom and poisoned all life in the sea.

Who would clean it up? You're about to find out.



THE BIG CLEANUP



On the following Saturday, her classmates, children from other schools, and their parents all met at Ula's favourite beach. It turned out that there were quite a few divers among them.

People didn't waste any time and they started picking up trash in the shallow water. The divers, along with Ula, swam further and deeper out. Using a net they recovered the trash from the former "castle". They also lifted old tyres and old fishermen's nets, and fish traps from the bottom. Back on the shore they loaded it all into containers to be sorted for recycling.

Ula lead the group of divers underwater and also helped on the shore. Here and there she flashed a pink mask and a pink bathing suit. She worked hard, but managed to spot Bob and his moray eel friends under one of the coral reefs.

The next day at school, Ula made a presentation for her biology class. She drew pictures, collected photos, and made slides all night long. In her presentation, Ula showed what was going on in the coastal waters, that the sea's bottom was littered with cola cans, old nets, tons of plastic; turtles had died from eating plastic bags; crabs were dying in plastic cups; bleached coral reefs were being killed by warming waters.

She also then showed other things - how beautiful the underwater world was, how diverse and colourful the sea flora was, how interesting and amazing the sea creatures were. She told the story of Rita the turtle, and Bob the hermit crab. She showed portraits of Alberto and Roberto, the moray eels, and even Brünnhilde, the whale.

Ula really wanted to talk about TigRRR the cat, but he did not allow it, he preferred

his privacy and wanted no unnecessary human attention. So Ula only talked about the sea creatures.

Some students thought it was just a fairy tale, so Ula showed them the pink mask, and all doubts were dispelled. In the end, she asked who wanted to take part in the Big Cleanup - and everyone did!

That evening, the classmates told their parents about the Big Cleanup, and the parents told their friends.

Ula's mother posted her daughter's presentation on the Internet, and Ula made a video about the Big Cleanup and shared it on all the social networks and invited everyone to participate.



The moray eels waved their tails at her, and Bob waved his claw. Ula did not see Rita, but heard her say, "I knew this human girl would help us! Yes, yes, she is the one who defeated the Trash Monster!"

Back from the shore, the children kept calling her:

"Ula, hello!"

"Ula, can I help you?"

"Ula, can we put the plastic bags in that container?"

"Ula, can I see the mask?"

"Ula, can we take a selfie?"

"Look how many supportive friends you have!" Her Mum was so happy and very proud of her daughter.

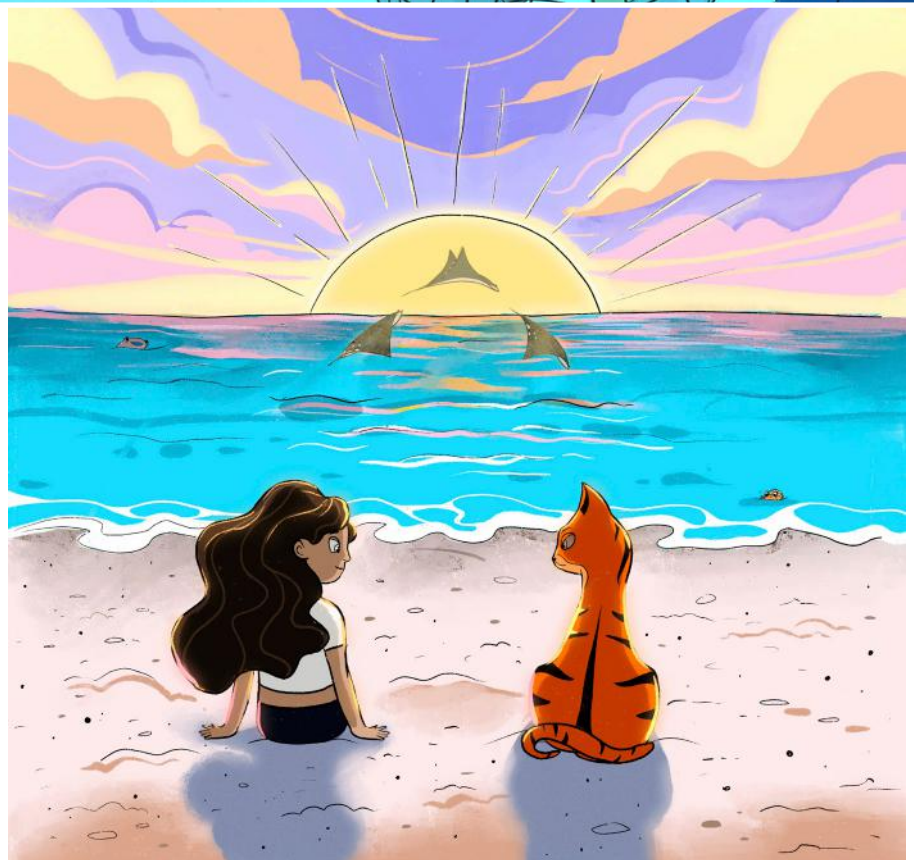


Ula's Dad was pulling out another net of trash with other divers.

After the work was done, participants gathered to share a big lunch, chat to each other, and made new friends. Ula walked to the water's edge to give her crab friends some treats. She stood listening to the sound of the waves. A big orange cat with cheerful stripes rubbed against her legs and meowed approvingly. Ula was without her mask, but she still understood what TigRRRR had said, "I knew you'd recognise the real Trash Monster. The pink mask was not wrong."

"Ulaaaa, come join us!", shouted all her classmates.

Ula petted the cat, smiled, and ran towards her friends.



ILLUSTRATIONS BY MADINA KAZANTAYEVA

MY DEEP DIVE

DURING MY JUNIOR ADVANCED OPEN WATER

BY **TISYA PANIGRAHI** – GRADE 7 STUDENT OF RAFFLES WORLD ACADEMY, DUBAI



Being underwater is like being in another world, especially when you are 70 feet deep. When I got my Junior Open Water diving license, I decided that my next goal would be to get the Junior Advanced Open Water diving license. Since that moment, I had patiently waited two years until my 12th birthday.

I started my course on my birthday, the 8th of June. My family was rushing to get into the car for our two-hour long drive to Fujairah to get me to the best coral reefs in the country. I was going to do two dives that day; my deep dive, and my navigational dive which were both mandatory to acquire certification. I was especially excited for my deep dive because it gave me the opportunity to be a more qualified diver than an open water diver. I found it quite amusing that I would be more qualified than my 46-year-old father in terms of diving. I would be going to depths up to 21 metres, but my father was limited to 18 metres.

I had my laptop with me in the car, rushing to finish one of the online learning courses that was supposed to tell me everything I needed to know along with the tests that were in the course. I had not finished two of the courses the night before, so I had no choice but to do them en route.

My dive was set in the morning, so we had to reach the dive centre by 9 O'clock. Once we were there, I went in and got all my gear, and then hopped onto the boat to head to our first dive site, Martini Rock. This dive was going to be my deep dive, so I was a bit nervous and a bit excited because I had never been this deep before. While the instructor briefed all the divers on the boat, we got all our gear on and proceeded to enter the water. I back rolled in and began to search for the descent line before descending. Slowly, we went deeper and deeper, and eventually I crossed my previous maximum depth of 12 metres. I was distracted by all the pretty fish and corals even though the visibility was not the best at 5-6 metres, but nonetheless, I had lots of fun which is the main goal of diving.

Eventually, I felt a tap on my shoulder from my instructor and he pointed to the dive computer fastened to my wrist. I had a look and realised I was at 20.8 metres! Once I understood how deep I was, I began to get a better sense of my surroundings. Could I feel more pressure? Am I taking in more air? Has my No stop time changed? It was a strange feeling, because I felt the same as before.

On a mission to find a way to indicate how

deep I was without the help of my computer, I looked up and was blinded by the bright white light coming from the sun, which was surrounded by green murky water. It was not what I had expected from a deep dive, I thought I would have difficulty breathing or feel a lot more pressure, but it was just the same. If I dived deeper, would I feel more effects? That was beyond my limits.

Instead of fearing the deep, I now wanted to do deep dives for the rest of the dives in my course. I was trying to challenge myself, but I reminded myself that the difference between impressing someone or not, is life or death. You may not be trained to manage such depths, so never exceed your limits.

As I surfaced after finishing the dive, I noticed I had a headache caused by the mask. This had not happened to me before so I was confused. But then it hit me, as the pressure increases, the air compresses and becomes denser. So, the air in the mask might have compressed and clamped down harder than usual, which was the reason for my headache. Before my next dive, I had to pick up a looser fitting mask from the dive shop so it would not happen again. Luckily for my first deep dive to 70 feet, the only problem was my mask.



Reef Check

UNITED ARAB EMIRATES



Join the Reef Check

ECODIVER CERTIFICATION COURSE

LEARN TO CONDUCT REEF CHECK SURVEYS TO COLLECT DATA ON REEF HEALTH, AND HELP ASSESS CLIMATE CHANGE IMPACTS

When you join a Reef Check EcoDiver Training Course, 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.



EMAIL: reefcheck@emiratesdiving.com **WEBSITE:** www.emiratesdiving.com/events/reef-check

EDA IS A NON-PROFIT NGO ACCREDITED BY UNEP AS AN INTERNATIONAL ENVIRONMENTAL ORGANISATION

ROLLING OUT THE FIRST REEF CHECK ECODIVER TRAINING FOR EDA MEMBERS

FEATURE **RANIA SHAWKI MOSTAFA**



ABOUT REEF CHECK

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 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.

By dividing the divers in 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. 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.

THE TRAINING

The training takes place over 4 sessions/days:

- There are three classroom sessions to cover. 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 substrates, such as corals and sponges.
- One day consists of one underwater exam, and three classroom exams.

INCLUDED

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

QUALIFICATION

To join the Reef Check training, the following is required:

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

TRAINING SCHEDULE:

- 3-4 virtual classroom sessions on weekdays (6:30pm-9pm latest) and a theory test.

- 1/2 day practice dive and practical exam either in Dubai, or Fujairah.

HAVE YOU DONE REEF CHECK BEFORE?

If you were previously trained in Reef Check and would like a refresher to join one of our upcoming surveys, please reach out to us.



Reef Check
UNITED ARAB EMIRATES

TAKE THE REEF CHECK CERTIFICATION COURSE

Reef Check Certification Course for Valid EDA Members: AED800

(To renew or obtain EDA membership, go to: www.emiratesdiving.com/membership-form)

Diver Costs to Pay Separately

Equipment Rental: AED40

Added Fun Dive: AED90

Monthly Reef Check Surveys

For certified Reef Check Divers: AED100

If you would like to join our upcoming sessions, please email Rania at:

reefcheck@emiratesdiving.com

For more information, please visit:

www.reefcheck.org

www.emiratesdiving.com/events/reefcheck

MALAYSIANS FOR A CLEANER MALAYSIA

BY REEF CHECK MALAYSIA



It has been a busy quarter for our team in Malaysia. However, the highlight of our work this quarter has to be the International Coastal Clean-up (ICC) Day 2022. After the pandemic, this year our ICC is back on the beaches.

The official ICC day for Malaysia is September 10; however, ICC went on throughout the month of September. Reef Check Malaysia is the official organiser of ICC in Malaysia and has been so for the past few years.

In all, 9,316 volunteers joined the campaign with 9,252 volunteers cleaning up on land and 64 divers doing underwater clean-ups. A

total of 25,514kg of trash was collected over 396km of coastlines around Malaysia.

The top three items found were, unsurprisingly, cigarette butts at 55,100 pieces, 44,706 plastic bottles and 34,673 plastic or foam pieces smaller than 2.5cm – also known as microplastics.

We are grateful to our main sponsor, TechnipFMC who have made it their goal to support ICC this year to take greater environmental responsibility amongst the employees, particularly on proper waste management. TechnipFMC also encourages employees to contribute to the community they work and live in.

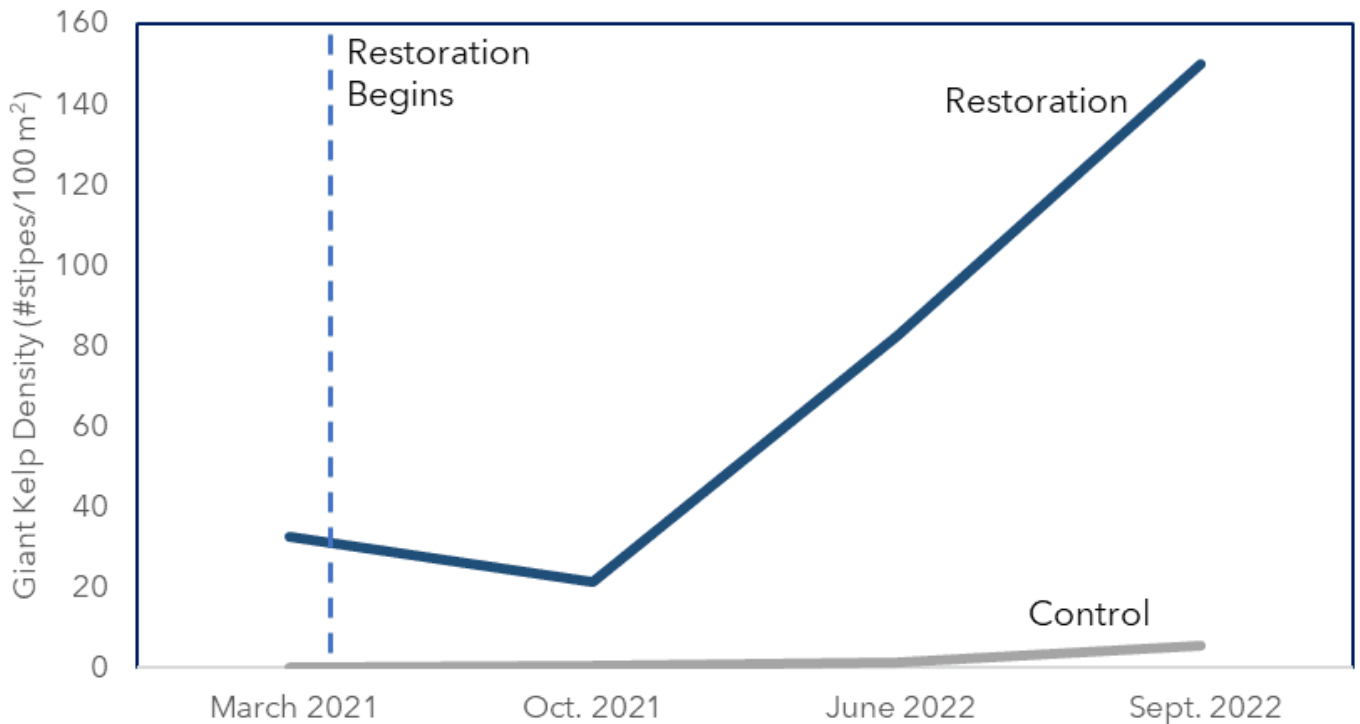
The TechnipFMC team alongside their families joined in the clean-up at two beaches in Melaka and Johor. In just one day, they removed 1,405kg of trash!

The hashtag #ICCMY2022 was used this year to track and share everyone's efforts on social media. Moreover, the Ocean Mall initiative was launched during this year's event to change consumerist trends into conservation trends. Clean-up volunteers, especially divers conducting underwater clean-ups, will go "shopping" for trash and post their finds on social media using the #OceanMall and #ICCMY2022 hashtags.

VOLUNTEER DIVERS

SUCCESSFULLY RESTORE KELP AT TANKERS REEF

Giant Kelp



For the past two years, volunteer recreational scuba divers organised by the Giant Kelp Restoration Project (G2KR) have been culling sea urchins at a demonstration site in Monterey in an effort to restore the area's once lush kelp forests. The effort has been monitored by Reef Check using citizen science divers in partnership with G2KR, California Department of Fish & Wildlife, Ocean Protection Council, and the Monterey Bay National Marine Sanctuary.

According to the latest Reef Check data, urchin densities dropped from over 800 urchins per 100m² in April of 2021 to less than 100 urchins per 100m² by June of 2022. The density of giant kelp increased roughly five fold from 33 stipes per 100m² in April of 2021 to 150 per 100m² in September of 2022. In a nearby control area, in which urchins were not removed, no noticeable change was observed.

Purple sea urchins are native species of California's kelp forests, but following the loss of kelp during the 2015/16 Marine Heatwave and the loss of the sunflower seastar – a key urchin predator – their populations have dramatically increased. These voracious herbivores are able to devour kelp and turn lush kelp forests into "urchin barrens", areas that contain urchins, bare rock, and a much

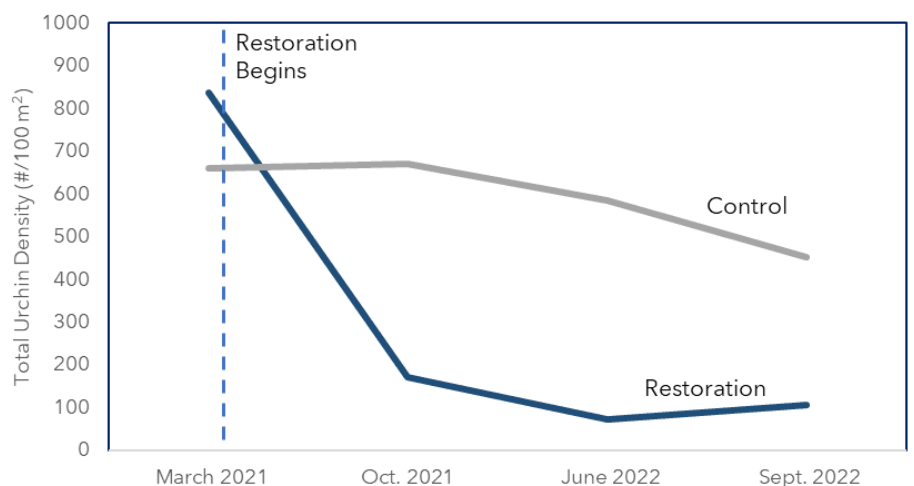
lower abundance and diversity of the myriad species that inhabit kelp forests.

In early 2021 the California Fish & Game Commission enacted a rule change allowing the unlimited take of sea urchins at Tankers Reef in Monterey, located just east of the commercial pier and offshore of Del Monte beach. Since that time, trained recreational divers with G2KR have worked in that area culling urchins by

smashing them with hammers.

Urchin density was dramatically reduced by the fall of 2021, but kelp didn't start growing until the start of the spring 2022 growing season. Over the summer, Reef Check divers have continued to observe increases in kelp. Reef Check staff and volunteers will continue to conduct ongoing monitoring to assess the success and health of the reef.

Total Urchins







CLEANUP ARABIA 2022

THE EAST COAST, DIBBA, FUJAIRAH



ABOVE: Members enjoying a well earned lunch buffet at Le Meridien's Baywatch Lawn. RIGHT: 5 year old Leen after receiving her plush toy turtle from Dr Juan Diego Urriago.

FIRST CLEANUP ARABIA SINCE COVID

We want to thank everyone who registered to participate in Cleanup Arabia on the 5th of November this year. What a fantastic group of eco-warriors!

We were a total of 104 participants and we collected a total of 796kg of rubbish between the beach clean-up, and the 9 dive site locations. It was such a fun day with the bonus of cleaning up our marine environment. It was great catching up with everyone at the lunch that took place at Le Meridien Al Aqah Beach Resort after all the individual group clean-ups. Thank you to the Fujairah Environment Authority for all the support to the event, and to the Fujairah Research Centre, and Dr Juan Diego Urriago for doing a presentation on turtle rescues, especially now with the cooler season coming in when we'll be seeing our marine turtles reaching our shores in need of some TLC.

Thank you to Freestyle Divers, Al Boom Diving, Divers Down UAE, Extreme Water Sports, Goblin Diving Center, and XR Hub for running all the dive clean-ups. We couldn't have done it without you.

OUR YOUNGEST BEACH PARTICIPANT

We also want to give a big shout out to 5 year old Leen Khammash who was our youngest participant to take part in the beach clean-up. Well done Leen, you were a star!

She received her own plush toy turtle from the Fujairah Research Centre which was presented to her by Dr Juan Diego Urriago.

THE BEACH CLEAN-UP

Out of the 53 registered to take part in the beach clean-up (25 registered were kids), 12 showed up and got stuck in. 2 of those were our youngest members, 5 year old Leen, and her toddler brother, Omar Khammash who watched us with his young enthusiasm.

The Al Aqah Beach clean-up was very different this year. In previous years we have always accumulated mounds of large plastic waste, but the beach had this time been combed of the big stuff. Some larger items were found in the rock crevices at the other end of the beach and had long been trapped in the gaps due to many plastics crumbling at the touch. The rest of the beach was covered in every direction with hoards of plastic and metal bottle caps, broken glass, and endless amounts of cigarette butts. We also picked up 3 syringes, AA batteries, cotton buds, and the all-new menace, disposable e-cigarettes amongst all the other items collected.

It's a lot tougher picking up the small stuff, but even with such a small team, we managed to collect 30kg and fill 4 rubbish bags within 3 hours. We only managed to clean a very small surface area between us, but it made such an obvious difference from when we had started. We need to stop treating our beaches like

ashtrays and rubbish dumps. We are protecting our marine life, birds, and ourselves against all of these harmful material things that do not belong in the outdoors.

OUR YOUNGEST CUA DIVER

12 year old Tisya Panigrahi (pictured with her buddy, her Dad, Priyadarshree Panigrahi) was the youngest diver at Cleanup Arabia this year as a Junior Advanced diver.



THE CLEAN SWELL APP

For anyone who often goes to the beach and does regular clean-ups while there, our clean-up partner, the Ocean Conservancy has an App called Clean Swell which you can download to your phones for free so you can continue to upload all the rubbish collections to their database. It's a great activity to do with friends and family.

EVENT ORGANISER:



CLEAN-UP PARTNER:





ABOVE: EDA members and EDA's staff members, Mehboob and Mueeb (right) all enjoying a well earned lunch buffet.



BEACH CLEAN-UP DIBBA, FUJAIRAH	
Al Aqah Beach 12 Adults, 1 Child	
MOST LIKELY TO FIND ITEMS	TOTAL
Grocery Bags (plastic)	3
Beverage Bottles (glass)	28
Beverage Bottles (plastic)	56
Beverage Cans	17
Bottle Caps (metal)	2,114
Bottle Caps (plastic)	1,996
Cigarette Butts	2,603
Cups, Plates (foam)	16
Cups, Plates (paper)	35
Cups, Plates (plastic)	37
Straws/Stirrers (plastic)	18
Utensils (plastic)	66
PERSONAL HYGIENE	
Cotton Bud Sticks (swabs)	5
Gloves & Masks (PPE)	3
Syringes	3
ILLEGAL DUMPING	
Construction Materials	1
OTHER ITEMS/DEBRIS	
Clothing	3
E-cigarettes	2
Electronic Waste (phones, batteries)	6
Footwear (shoes/slippers)	4
Tobacco Products (lighters, wrap)	28
Toys	3
Other Plastic Waste	6
Other Waste (metal, paper, etc)	13
GRAND TOTAL OF ITEMS	7,066
TOTAL BAGS COLLECTED	4
TOTAL WEIGHT (KG)	30



PARTNERS:

هيئة الفجيرة للبيئة
FUJAIRAH ENVIRONMENT AUTHORITY

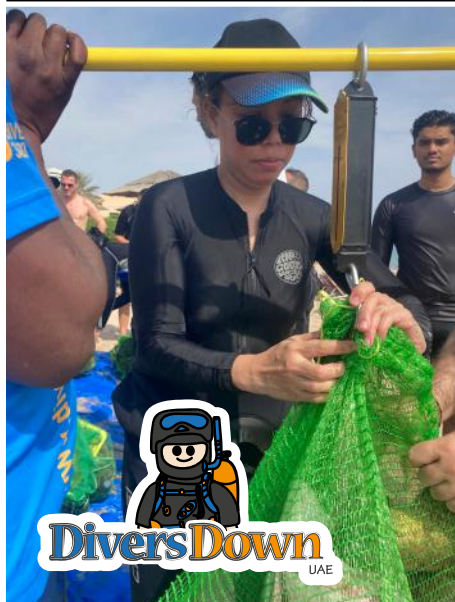


UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
& ENVIRONMENT



ماجد الفطيم
MAJID AL FUTTAIM

DIVERS DOWN TEAM	
Dadhna Harbour 18 Divers	
MOST LIKELY TO FIND ITEMS	TOTAL
Grocery Bags (plastic)	86
Beverage Bottles (plastic)	76
Beverage Cans	28
Beverage Sachets/Pouches	12
Bottle Caps (metal)	1
Cups, Plates (plastic)	113
Food Containers (plastic)	58
Food Wrappers (candy, chips, etc)	1
FISHING & BOATING	
Line, Nets, Traps, Ropes, etc.	53
PACKAGING MATERIAL	
Foam Packaging	1
ILLEGAL DUMPING	
Construction Materials	16
Tyres	2
OTHER ITEMS/DEBRIS	
Clothing	14
Electronic Waste (phones, batteries)	10
Footwear (shoes/slippers)	3
Tobacoo Products (lighters, wrap)	5
Other Waste (metal, paper, etc)	15
GRAND TOTAL OF ITEMS	494
TOTAL BAGS COLLECTED	25
TOTAL WEIGHT (KG)	122

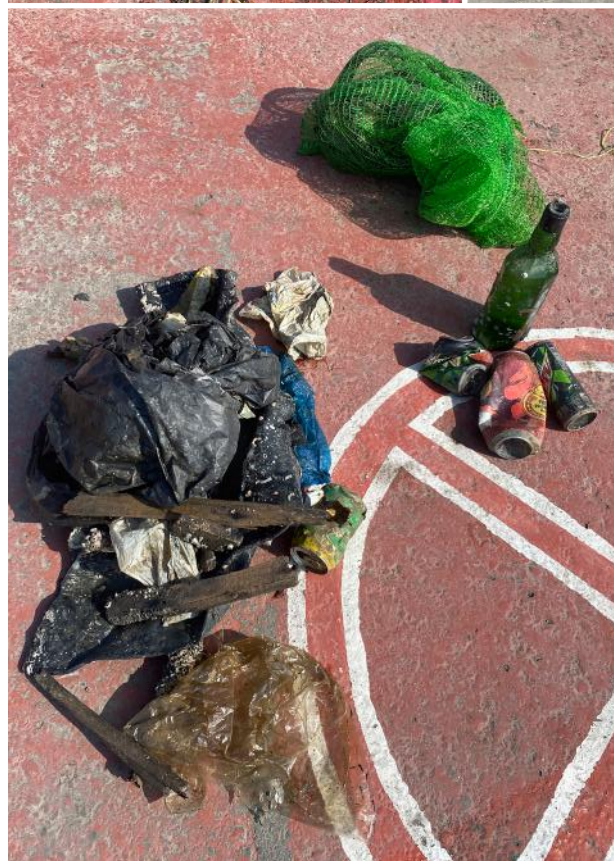




GOBLIN DIVING CENTER TEAM	
Al Bidiyah Harbour 10 Divers	
MOST LIKELY TO FIND ITEMS	TOTAL
Grocery Bags (plastic)	19
Other Bags (plastic)	23
Beverage Bottles (glass)	38
Beverage Bottles (plastic)	12
Beverage Cans	39
Bottle Caps (metal)	2
Bottle Caps (plastic)	3
Food Wrappers (candy, chips, etc)	5
Straws/Stirrers (plastic)	5
FISHING & BOATING	
Line, Nets, Traps, Ropes, etc.	75
PACKAGING MATERIAL	
Other Plastic Bottles (oil, bleach, etc)	5
PERSONAL HYGIENE	
Gloves & Masks (PPE)	13
OTHER ITEMS/DEBRIS	
Clothing	17
E-cigarettes	6
Electronic Waste (phones, batteries)	6
Footwear (shoes/slippers)	2
Paper Bags	2
Tobacco Products (lighters, wrap)	6
GRAND TOTAL OF ITEMS	278
TOTAL BAGS COLLECTED	36
TOTAL WEIGHT (KG)	288



XR HUB TEAM	
Deep Reef, & Fujairah International Marine Club Breakwater 17 Divers	
MOST LIKELY TO FIND ITEMS	TOTAL
Grocery Bags (plastic)	2
Other Bags (plastic)	1
Beverage Bottles (glass)	12
Beverage Bottles (plastic)	3
FISHING & BOATING	
Line, Nets, Traps, Ropes, etc.	13
OTHER ITEMS/DEBRIS	
Clothing	1
GRAND TOTAL OF ITEMS	32
TOTAL BAGS COLLECTED	22
TOTAL WEIGHT (KG)	96



EXTREME WATER SPORTS TEAM	
Al Lulueya Port 17 Divers	
MOST LIKELY TO FIND ITEMS	TOTAL
Grocery Bags (plastic)	10
Other Bags (plastic)	10
Beverage Bottles (glass)	50
Beverage Bottles (plastic)	150
Beverage Cans	50
Bottle Caps (metal)	50
Cups, Plates (paper)	30
Food Containers (plastic)	50
FISHING & BOATING	
Line, Nets, Traps, Ropes, etc.	50
PACKAGING MATERIAL	
Other Plastic Bottles (oil, bleach, etc)	20
PERSONAL HYGIENE	
Gloves & Masks (PPE)	3
OTHER ITEMS NOT ON THE LIST	
Bicycle	2
Shopping Trolley	1
GRAND TOTAL OF ITEMS	532
TOTAL BAGS COLLECTED	10
TOTAL WEIGHT (KG)	200



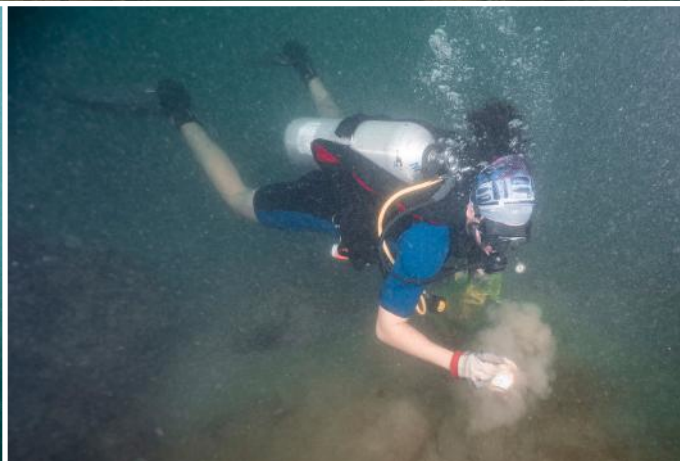
AL BOOM DIVING TEAM	
Artifical Reef, Snoopy Island, & Le Meridien Shore Dive 20 Divers	
MOST LIKELY TO FIND ITEMS	TOTAL
Other Bags (plastic)	25
Beverage Bottles (plastic)	10
Beverage Cans	2
Beverage Sachets/Pouches	8
Bottle Caps (plastic)	4
Cups, Plates (foam)	3
Cups, Plates (paper)	1
Cups, Plates (plastic)	24
Lids (plastic)	2
FISHING & BOATING	
Line, Nets, Traps, Ropes, etc.	7
Foam Dock Pieces	4
PACKAGING MATERIAL	
Other Plastic Bottles (oil, bleach, etc)	3
PERSONAL HYGIENE	
Gloves & Masks (PPE)	1
ILLEGAL DUMPING	
Tyres	1
OTHER ITEMS/DEBRIS	
Footwear (shoes/slippers)	2
Paper Bags	1
Other Plastic Waste	1
GRAND TOTAL OF ITEMS	99
TOTAL BAGS COLLECTED	4
TOTAL WEIGHT (KG)	41



FREESTYLE DIVERS TEAM	
Dibba Port 8 Divers	
MOST LIKELY TO FIND ITEMS	TOTAL
Grocery Bags (plastic)	3
Other Bags (plastic)	1
Beverage Bottles (plastic)	10
Beverage Cans	1
Food Wrappers (candy, chips, etc)	1
FISHING & BOATING	
Line, Nets, Traps, Ropes, etc.	5
PERSONAL HYGIENE	
Cotton Bud Sticks (swabs)	1
OTHER ITEMS/DEBRIS	
Other Waste (metal, paper, etc)	3
OTHER ITEMS NOT LISTED	
Anchor	1
GRAND TOTAL OF ITEMS	26
TOTAL BAGS COLLECTED	5
TOTAL WEIGHT (KG)	19



Underwater Photos by Mishaal Ashok





OCEAN PLASTIC: WHAT YOU NEED TO KNOW

FEATURE **AUDREY NAKAGAWA**

Oceans make up 71% of our Earth. If the sea isn't healthy and thriving, the majority of our planet isn't. Ocean plastics are a major threat to the health and well-being of all living species on Earth.

COVER PHOTO: Fish swim near a plastic fork and a bottle at the Samandag Cevlik Akcay diving site off the coast of Samandag, in Hatay province of Turkey, by Sebnem Coskun / Anadolu Agency / Getty Images.



TOP 5 TRASH ITEMS FOUND IN THE OCEAN



1.

CIGARETTE BUTTS



2.

PLASTIC BOTTLES



3.

FOOD WRAPPERS



4.

PLASTIC BAGS



5.

STRAWS/STIRRERS



WHAT IS OCEAN BOUND PLASTIC?

Ocean bound plastic is plastic waste that is headed toward our oceans. The term "ocean bound plastic" was popularised by Jenna Jambeck, Ph.D., a professor from the University of Georgia. In 2015, she and a team of researchers estimated the amount of plastic waste entering the ocean from land.

Addressing ocean bound plastic is a key element to ocean conservation. Around 80% of plastic in the ocean can be sourced back to ocean bound plastic. Plastics that end up near bodies of water such as rivers, are at risk of ending up in the ocean. Other plastic can reach the sea through sewage systems or storms.

For example, in 2011, after the 2011 Tōhoku tsunami and earthquake hit Japan, around 5 million tons of debris ended up in the ocean. Some of the debris sank while some ended up on the US west coast. Additionally, trash and plastic can come from ships or offshore platforms. However, decades ago, countries

dumped their waste directly into the sea. In the US this was outlawed in 1988 in the Ocean Dumping Ban Act of 1988.

Plastic waste is a huge threat to our Earth, and diverting ocean bound plastic is one way we can do better to help the environment.

HOW MUCH PLASTIC IS IN THE OCEAN?

Each year, despite conservation efforts, 8 million tons of plastic reaches our oceans to meet the 150 million metric tons of plastic that already exists in marine environments. According to the Smithsonian, as of 2016, we produce around 335 million metric tons of plastic each year. Half of this plastic is single-use. Of the plastic we use globally, only around 9% of it gets properly recycled.

To create a mental picture of just how much plastic ends up in our oceans, imagine a garbage truck the size of New York City depositing its garbage into the ocean every minute of every day for a whole year. If this

doesn't frighten you enough, the amount of plastic that will be produced and consumed is supposed to double over the course of the next ten years. If nothing is done to address plastic consumption, and the aftermath, there could be over 250 million metric tons of plastic in our oceans in ten years.

Even if you don't live on a coast, the plastic you throw away can still end up in the ocean. According to the World Wildlife Fund, plastic ends up in the ocean when it's thrown away instead of recycled, when it's littered on land, and when products we use are flushed down the drain or toilet. Additionally, cosmetic or cleaning products that contain parabens or microplastic beads can be washed into the ocean.

WHAT TYPE OF PLASTIC IS IN THE OCEAN?

Plastic is not biodegradable, and it doesn't decompose. Many plastics are made only to be used one time, where they are then thrown out; they're known as single-use plastics.



LEFT: This Critically Endangered Hawksbill Sea Turtle (*Eretmochelys imbricata*) is entangled in discarded fishing nets aka 'Ghost nets'. Placebo365 / iStock Unreleased / Getty Images; **RIGHT:** Employees from 4Ocean clean Bali's beaches from plastic. Jonas Gratzner / LightRocket / Getty Images.

During the 2017 International Coastal Cleanup, the top kinds of plastics that were collected included wrappers, bottles, grocery bags, take-out containers – and the infamous plastic straws. These types of plastics and others combine into a category scientists call “microplastics.” According to the National Ocean Service, microplastics are “the multi-coloured pieces of plastic that can be found in a handful of sand on the beach or in the ocean.”

Around 12% of plastic is incinerated – leaving 80% to end up in landfills. A 2014 study found that there are around 244,000 metric tons of plastic floating in our oceans. Out of the 244,000 tons found in the ocean, around 79,000 tons can be found in the Great Pacific Garbage Patch, a mass of floating debris that's twice the size of Texas.

Reducing our individual plastic footprint is important. However, most plastic pollution comes from large corporations. Corporations need to address their production processes, waste management, and how their operation can have an impact on the environment. Large corporations address their mass production of single-use plastics by shifting the responsibility of sustainable disposal onto the consumer.

According to Greenpeace.org, some of the brands that contribute to a large amount of plastic waste include Coca-Cola, PepsiCo, Nestlé, Unilever, and Colgate-Palmolive. The soft drink industry in particular creates tons of plastic waste. In 2016, Coca-Cola produced over 110 billion single-use plastic bottles.

THE PROBLEMS WITH OCEAN PLASTIC

Plastics floating and polluting the ocean only scratches at the surface of issues that it causes – it impacts all of marine life, people, and Earth's climate.

MARINE LIFE

Animals are impacted by the plastic we use and dispose of. Ocean plastic has already affected 267 species, and 86% of sea turtles. They can suffocate, drown, or get entangled in plastic, or even ingest it. Some species such

as birds, fish, turtles, and whales can mistake plastic for prey, according to the International Union for Conservation of Nature. When marine life ingests plastic, they can die of starvation because their stomachs are filled with plastic debris. Marine life can be cut by plastic, and also receive internal injuries. Seabirds are known for feeding on the ocean's surface, making them more likely to ingest floating plastic debris. Adult seabirds go to feed their young, and their chicks feed on this plastic: One study from 1997, conducted by Albatross Biology and Conservation, found that around 98% of chicks sampled had plastic in them, and the amount of plastic has been increasing over time.

Additionally, plastic debris can promote the spread of invasive organisms, further hurting marine ecosystems; floating plastics get carried out to sea through ocean currents.

FOOD AND HEALTH

Plastic debris doesn't only harm the ocean's wildlife – it's affecting the human food chain, too. Microscopic plastic has been found in various foods and beverages, including water, beer, and salt. A 2008 Pacific Gyre voyage found that fish ingest plastic debris. Algalita researchers caught 672 fish, and 35% of the fish had eaten plastic pieces.

CLIMATE CHANGE

In a report released by the Yale Climate Connections, Claire Arkin, the communications coordinator for the Global Alliance for Incinerator Alternatives said, “Plastic pollution is not just an oceans issue. It's a climate issue and it's a human health issue.”

As of 2019, 4% to 8% of global oil consumption is linked to plastics, according to the World Economic Forum. If this persists, by 2050, plastics will account for 20% of oil consumption. Plastic, as a petroleum product, is inextricably linked to the fossil fuel industry: the extraction and transportation of fossil fuels releases carbon into the atmosphere, contributing further to the warming of our planet. Additionally, when plastic waste is incinerated, the process releases more carbon dioxide into the atmosphere.

THE HUMAN IMPACT

Plastic reaching the ocean is largely due to human consumption. Companies that use plastic packaging, and oil companies, are part of the problem when it comes to plastic accumulating in our oceans. Individual littering of plastic is another contributor, as well as the improper disposal or accidental losing of fishing gear in the ocean.

IMPROPER DISPOSAL OF FISHING GEAR

According to a report from Greenpeace.org, fishing gear is the largest contributor to ocean plastic pollution. Commercial fishing gear including nets, lines, pots, and traps gets discarded into the ocean. The lost gear weighs the same as 55,000 double-decker buses, according to The Guardian.

Abandoned fishing gear, also known as “ghost gear,” has the potential to trap marine life. In 2015, an 80-foot blue whale was caught in an abandoned fishing line. Not only does lost fishing gear make up a significant portion of all ocean plastic – around 10% – but it's also the deadliest to marine life, including coral, sessile animals, and vegetation.

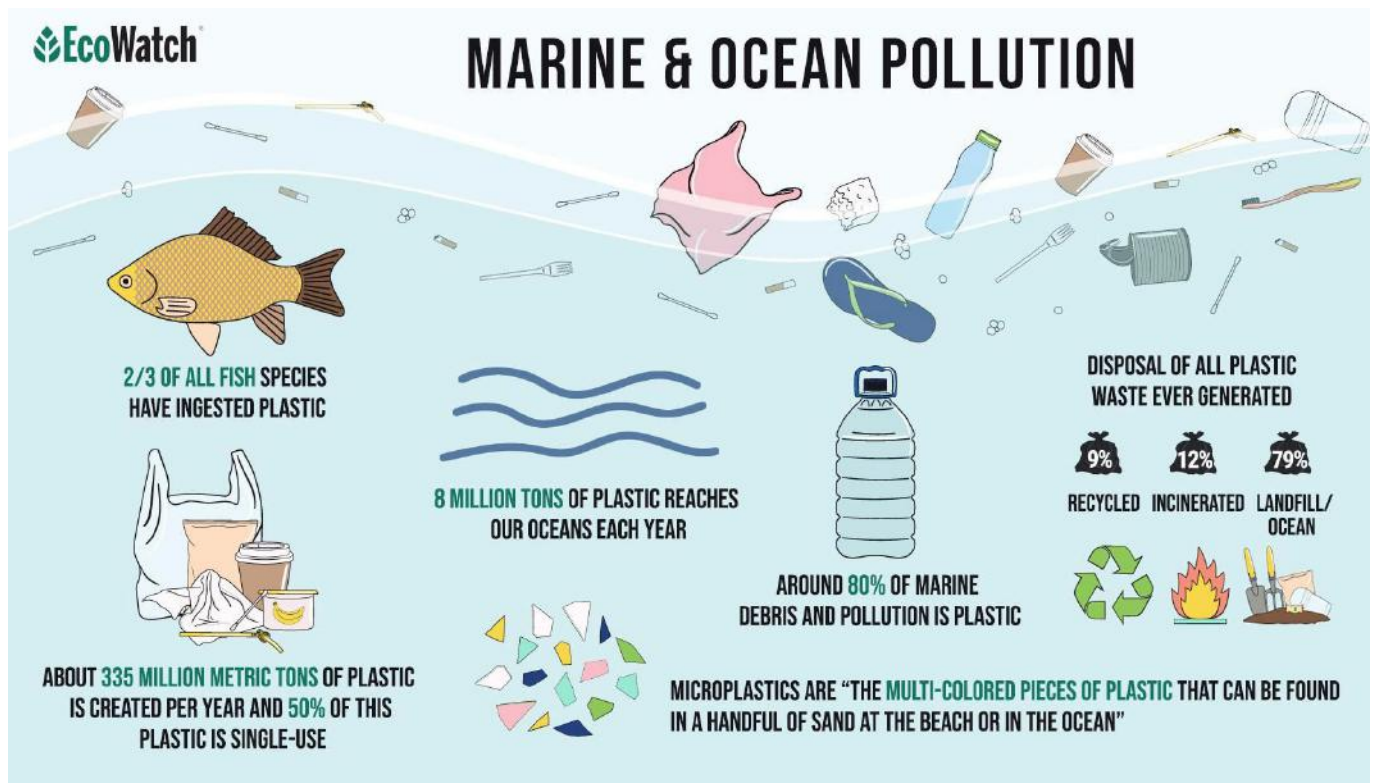
Abandoned gillnets have caused the vaquita porpoise to near extinction, in the upper Gulf of California and Mexico; around 10 vaquita porpoises remain.

In addition to environmental impacts, ghost gear can affect the economy negatively. Some studies estimate that around 90% of the species caught in abandoned gear are commercially valued.

SOLUTIONS TO MINIMISING GHOST GEAR

Although the statistics may seem grim, there are ways to prevent fishing gear from ending up in the sea and harming marine life.

One way to prevent ghost gear from entering our oceans is through recycling. Fishermen should return no longer useful traps and nets to a port, rather than discarding the materials into the ocean. There are ports in Massachusetts, Oregon, and Rhode Island that offer recycling programmes for these; more



recycling facilities at ports could help minimise littered fishing gear.

The use of biodegradable fishing nets is on the rise. According to a study published in *Animal Conservation*, there are encouraging tests that show the utility and effectiveness biodegradable nets may have. A net made of polybutylene succinate and polybutylene adipate-co-terephthalate showed promising results when compared to traditional nets used for fishing. The study showed that these biodegradable nets started to decompose after two years.

Clean-ups are another way to get abandoned fishing gear out of the ocean. There are organisations that specialise in retrieving discarded nets from the ocean. The Ghost Fishing Foundation has scuba divers retrieve floating fishing gear. Occasionally, the foundation will use cranes to pull out large pieces of netting.

LITTERING

Around 80% of marine debris and pollution is plastic, according to Pew Research. Marine litter mostly stems from unsustainable methods of production, as well as high consumption rates, and a lack of solid waste management infrastructure. Most of the plastic litter on Earth and in our oceans can be linked back to just a small number of multinational corporations.

According to an EPA report, "every bit of plastic ever made still exists." The Plastic Disclosure Project estimated that 33% of all manufactured plastic is only used once. In 2018, only 8.7% of plastic was recycled.

Although individuals should do their part to keep our planet and oceans clean, a small number of multinational corporations are to blame for the majority of littered plastic.

WHAT IS BEING DONE TO HELP?

An elementary concept to positively impacting the environment is the buzz phrase, "reduce, reuse, recycle." What this phrase fails to consider is that what will make the largest impact in helping our environment is to hold large corporations accountable. According to Greenpeace.org, recycling alone will never solve the plastic and pollution crisis our society is facing.

ORGANISATIONS

Many organisations are addressing the ongoing and ever-growing issue of ocean pollution. For example, The Ocean Cleanup, a non-profit aimed at ridding the ocean of plastic, is developing advanced technologies that are contributing to the largest ocean cleanup in history. The non-profit's goal is to clean-up 90% of floating ocean plastic pollution.

Plastic Oceans International is another organisation that produces films and digital content in order to promote "a global movement to rethink plastic." They also engage and teach students about the effects of plastic pollution and how they can contribute to ocean conservation.

Plastic Bank aims to not only stop ocean plastic but improve the lives of people who live in the poorest countries around the globe. The organisation builds recycling ecosystems and processes the materials, so they can then be reintroduced to the economy through the

global manufacturing supply chain.

One organisation, the Plastic Soup Foundation, aims not only to remove plastic from our oceans but also prevent plastic from reaching the sea in the first place. When it was founded, the organisation had a heavy focus on protecting marine life, but they have expanded their priorities and aim to educate people on the potentially harmful effects marine plastic has on human health.

LEGISLATION

Some legislation helps to protect the oceans, and minimise plastic production and consumption. In the US, eight states have banned the use of single-use plastic bags, and more are hoping to in the coming years, including Connecticut and Virginia. Washington, DC implemented a ban on plastic straws on the 1st of January 2019.

The Marine Debris Research, Prevention, and Reduction Act established programmes in tandem with the National Oceanic and Atmospheric Administration and the United States Coast Guard. The programmes help to determine sources of marine debris and how to reduce and prevent it.

Policies such as The Shore Protection Act, established in the US in 1988, help to prevent the illegal dumping of waste off the coast. In 1967, a supertanker named Torrey Canyon spilled nearly 120,000 tons of oil into the ocean; it was the world's first major oil tank disaster. Because of this incident, the Act to Prevent Pollution from Ships, passed in the US, most recently has been amended to regulate air pollution. It also regulates and limits the amount

of nitrogen oxide levels, as well as requiring ships to use fuel with low sulfur content.

While these laws help to reduce pollution in our oceans, none of the laws listed are a cure-all, and many of them haven't been amended in decades. Some conservation organisations are fighting for more rigorous laws, regulations, and policies to keep our oceans plastic-free.

WHAT CAN YOU DO?

Although large corporations are responsible for a majority of plastic waste ending up in the oceans, there are still things to be done on an individual level to help keep our oceans clean.

REDUCE, REUSE & RECYCLE

Something everyone can do to contribute to the fight against ocean plastic pollution is to resist and reduce the use of single-use plastics. From plastic bags and bottles, to plastic utensils, reducing your use of these plastics is a relatively easy step in limiting your plastic footprint.

When grocery shopping, bring your own reusable grocery bags. These bags are widely available and will last you a long time. Instead of using thin plastic produce bags, opt for reusable produce bags as well. Implementing the use of these reusable products will make you a more sustainable grocery shopper. There are incentives for altering your plastic consumption as well. At Target, for each reusable grocery bag you use, you get a 5 cent discount.

In recent years, Starbucks has made the switch to strawless drinking lids for their cold beverages. However, if you enjoy drinking out of straws, or want to prevent teeth staining, try using metal or reusable straws. They're widely available and easy to clean, and you can use them hundreds of times. Before the pandemic, Starbucks also started implementing reusable cups and tumblers. This way, when you make your coffee run, you don't have to use any single-use plastic. When you bring your own cup, you get a 10-cent discount. The programme should continue when health authorities deem it's safe to do so.

Other major chains have similar programmes where you can bring your own cup or tumbler to be filled, including Dunkin', Panera Bread, Einstein Bros. Bagels, Caribou Coffee, Peet's Coffee, and more.

Another ocean contaminant is microbeads and parabens. These are found in cosmetic products such as face washes, toothpaste, and body washes. If you look at the ingredient list and see "polyethylene or "polypropylene," the product contains harmful microbeads, and you should avoid it.

When you grab some food to go, many restaurants will put your food in styrofoam containers, and then throw it in a plastic bag, and then go even further by supplying a bunch of paper napkins and plastic utensils. You

can buy reusable utensils that are meant for travelling so you can skip the plastic utensils altogether.

A more creative way to limit the amount of plastic you use is to buy in bulk. Single-serving foods multiply waste. When you're grocery shopping, opt for a large tub of yogurt, instead of many small, single-serving yogurts. Buy trail mix that comes in one container, rather than many individually wrapped little ones. Buying products that you routinely use and consume in bulk can make a big difference.

When you forget your reusable bag or cup and have to use single-use plastic, you can help the environment and the oceans by recycling it properly. Be sure to be in the know about what types of plastics can be recycled in your community. If you're unsure of what you can and cannot recycle in your town, check out Earth911's recycling directory.

ENGAGE IN CLEAN-UPS

Another tangible way to help is by physically removing plastic from the ocean and beaches by participating in a clean-up. If there are no clean-ups in your community, organise your own activities. There are also larger clean-up events such as the International Coastal Cleanup that you can be a part of. Whether it's with an organisation or your friends and family, participating in a clean-up is a simple way to engage and help collect plastic waste from marine communities.

DONATE

There are a variety of organisations that aim to reduce the amount of plastic in our oceans, in creative, technologically advanced ways. Many of these organisations are non-profits and rely heavily on donations to continue to do important environmental work. Making a donation, even if it's small, will help these

organisations to continue to clean-up and conserve our oceans.

TAKEAWAY

Plastic debris floating in our oceans doesn't just affect the marine wildlife and plant species – it affects all of us. If action isn't taken now, there will be catastrophic consequences.

Plastic already kills over 100 million ocean animals each year; this number will only increase as time goes on.

Fish are being over-harvested already, but with many fish species dying off, and more fish consuming plastic, the fishing industry as we know it may not survive if incessant ocean pollution continues. This affects the entire food chain and will affect many fishermen's livelihoods all over the world.

Ocean pollution is a huge threat to the overall biodiversity of our oceans. For example, coral reefs' DNA can be altered from ocean pollution. Many fish and marine life rely on coral reefs for survival. If fish can no longer live in coral reefs, they won't gather in the same areas, affecting the land wildlife on the shore who fish for food. If the land animals cannot feed on fish, they may venture into new hunting territories, putting them at risk of being attacked by unfamiliar predators, which can then lead to extinction.

The impact of ocean plastic extends beyond marine life. If marine animals are affected, land animals will be affected and humans will be affected. The pollution of the oceans sets off a domino effect on the greater environment.

Oceans make up 71% of our Earth. If the sea isn't healthy and thriving, the majority of our planet isn't. Ocean plastics are a major threat to the health and well-being of all living species on Earth.



ABOVE: Greenpeace activists assembled two life-size reproductions of two whales that emerge from a sea invaded by disposable plastic waste in the centre of Rome to denounce how our seas and the species living in them are in grave danger due to plastic pollution in 2018. Stefano Montesi / Getty Images.



SEATREKKING

THE MOVEMENT OF BECOMING ONE WITH THE OCEAN

FEATURE **JULIAN MUEHLMEIER** – THE SEANOMADS

Seatrekking is a lifestyle and philosophy for me that brings you back to the really important things in life. It combines the coolest topics of a sport and activity, but also gives you this holistic view on yourself in this world, and what role you play in it. We often forget this.





It is 3 in the afternoon on an island of Croatia. We have been doing the only thing we did not want to do for the whole day: staring at our phones, sleeping, and somehow killing time. In the early morning our little energetic group had planned to start off on an open water Seatrekking trail to another smaller uninhabited island some kilometres away. But a storm was stuck just above us which we have been following through the colourful satellite weather movements and different forecasts on our screens for hours, just waiting to find hope for a window opening without lightning to cross over safely, and with the right wind direction. Everyone had been looking forward to this trip for weeks, which I guess, explained the level of silent frustration while sitting in a small harbour cafe from which we could divine our target wrapped with rain in the distance.

All our equipment was packed, and our gear ready. There were two options: wait until tomorrow, (which would have crushed our plans) or start at around 4, where we expected less rain, and no lightning. So we were obviously very keen to head off and prepared everything to finally jump into the sea and start our Seatrekking trail.

You might ask, what exactly are these people doing, and what is Seatrekking? Well, Seatrekking is a new and unique nature experience. Through this new sport we

explore coastal regions in and around the sea for several days. We spend most of our time in the water and move by snorkelling, freediving and flowdiving (which I will explain later). Or by hiking on land, right along the coast. We spend the nights on beaches under the open sky, and cook on a campfire.

All necessary things, such as food, sleeping bags, mattresses and dry clothes, are all packed in floating streampacks which can be blown up and pulled along with a long elastic leash fixed to your leg. You can move freely, dive, and have everything you need with you for a few days in nature. It is free travelling, or "trekking" in the ocean – it's just you and the sea.

Maybe it sounds extreme, but Seatrekking is actually something for everyone as long as you are not afraid of water. There are trails for beginners to advanced, and to professional levels which differ regarding distance, trail area, whether close to the shore or out in open sea, with weather, currents, and other natural forces and aspects all taken into account.

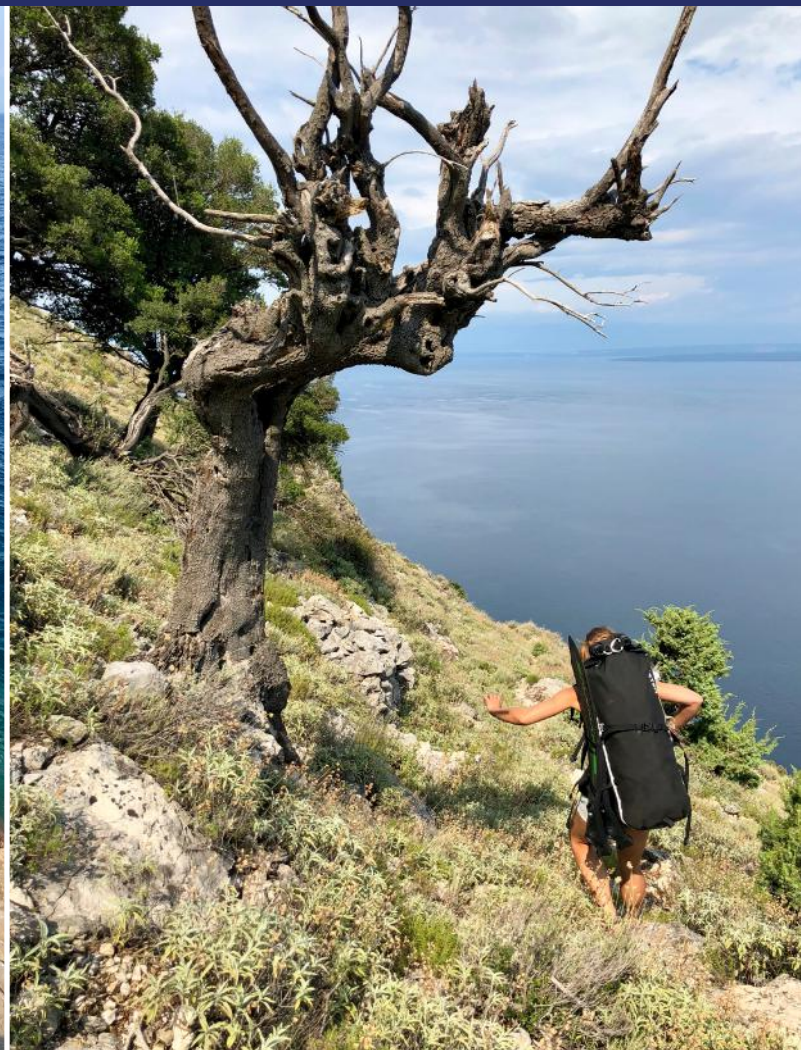
From the rocky beach, while we squeeze ourselves into our wetsuits, put on our freediving fins and weights, masks and snorkels, the sky opens from time to time and lets some sun rays through to shine over the flat ocean surface where little waves dance away. We finally blow up our streampacks and immerse

ourselves in the still grey and dark water – happy to be back in the sea.

Everything is quiet, the crystal clear visibility and light blue colour you normally see has disappeared. We move steadily along the coast over seagrass fields fenced by broken rock boulders with only a few fish around while the sea bed deepens evenly to the left until we reach the tip of the bay from where we head off into the blue.

That moment when you suddenly no longer see the bottom anymore for the next few hours is always a special feeling. Of course we feel more secure with the "earth" still visible, but immersing yourself into the blue planet and its forces while travelling long distances, links to so many new sensations and emotions.

After a while, I found my rhythm in my movements of flowdiving. It felt like it was the most natural thing to do, by gliding through the deep water. Flowdiving is the technique to cover long distances in the water inspired by dolphins, where you dive down a few metres under the surface, then shortly break the surface with the snorkel to breathe before immediately going back down again. It takes some training and breathing exercises to perfect, but it is very effective to move from A to B – of course since evolution introduced it. The marine colour of the deep is the nicest



blue that exists for me and really calms me down. We bring our heads up from the ocean, pull the streampacks towards us, rest and moisten our dry throats from breathing through the snorkel with some drinking water. Our little group is just in the middle, between the main island and our small isle. Our diving flags on the floating bags flutter in the wind which has picked up a little, while the sun comes through more often. If the direction of the wind changes just a little, we could end up in the middle of the Adriatic Sea. The wind and its currents are so much stronger than our muscles. That in mind, we keep on swimming and adapt our "trail" direction regularly and move on, while the isle with its coastline slowly grows bigger.

From time to time, we dive down until the leash is stretched to its end (around 15m), surrounded by blue and the sun rays that cut the water. There are no fish around – a seemingly empty blue water where we only see some little jellyfish hovering in space.

After a few hours, we arrive at the shore of the island. My legs are not yet ready to walk through the shallow water and carry my heavy body again. We help each other take the bags out of the wavy shore, sit down on the beach, and we're full of endorphins and happy that the weather has let us manage this stage of the day. We arrived at the very northern tip of the

slim island which is very flat in the north, with some mountains further south. It has a classic Mediterranean meagreness in flora, and some seagulls circle above us. I let my gaze wander over to the starting point on the one side, and then to the other of the open Adriatic Sea. It's such a great feeling of freedom and satisfaction being out in nature.

People are fascinated by movement, nomadism and supporting the awareness for nature. Seatrekking combines this. What also draws us to this sport is the feeling of pure freedom, because you are focussed so much on the moment at all times. You carry all the equipment and food you need, dive down, hold your breath, and explore the coastal cliffs and beaches. We get to visit wild and beautiful places which you normally wouldn't be able to get to.

Having this break from society, switching off our mobile phones and only enjoying the time with friends in nature for several days, is unique. When is that possible in our busy everyday lives?

Furthermore, Seatrekking is not about performance, holding your breath long enough, going the deepest or fastest. It is about the pure nature of the experience. It's about how fast and deep you want to go.

On that same evening, we enjoyed an amazing sunset while we cooked our food and setup

the camp next to the shore. During the next few days, we moved south along the coastline with amazing sunshine and a calm sea. We explored the underwater world and dove down, gliding over white sand and deep green seagrass. It seemed more wild and balanced around here in comparison to closer to shore where people's influence is obviously visible. Of course we know the responsibility that gives us, we have to be extremely careful, how and where we move. All Seatrekkers follow the "Seatrekking Code" which is based on 7 guide rules. For example, reduce yourself, leave no trace, hide and see, respect nature and animals, travel in small groups, learn from the animals, and be safe. We do not want cause any disturbances and want to be seen as little as possible, moving quietly and respectfully, travelling with the most limited CO₂ emissions as possible, and being open to the locals which we meet on our trails from time to time.

On one afternoon, we arrived at a beautiful wide bay which could have been somewhere in the Caribbean. A few sailing boats were anchored there, and sadly there was some rubbish in the water and on the beach, evident of human activity. Since we sometimes feel like pirates, we were happy to find a little "pirate shelter" built from drift wood which was good cover from the sun and became our little home for that night.





One dive spot is still very present in my mind. Almost at the most southern part of the isle, a steep cliff characterises the landscape above and below the water's surface. Combined with some little terraces of seagrass and massive rock boulders, the underwater world seems like a perfect Japanese garden but with a lot of life and movement. We had the most amazing dives there and felt like dolphins playing and gliding in the 3D space of water. Our goal is to stay at least 50-60% of our time underwater freediving, really getting in the flow of aesthetic movement in the water. Down at 20 metres, one member of our group interacted with a beautiful eagle ray, which was the only larger animal we met on that trail. We didn't even see an octopus, which is a classic in Croatia. When moving for such a long time in the sea, you realise first hand what trouble our oceans are in. It often makes me sad but also pushes me to make change to my lifestyle even more – that's the least I can do.

My brother and I guide people and organise Seatrekking tours and try to use this experience to raise awareness for the dramatic state of the sea. It is this exposure to pure nature and seeing yourself that we discover who we really are and what role we want to play in that game. When wrestling with nature, you have this scary yet amazing realisation of your own cosmic insignificance. It calms me down

and keeps me grounded long after the trail is over, regularly redirecting my course in life – focussing on the important things.

On our last day, we crossed the island on land with a little hike. Poseidon was gentle to us and the currents pushed us in the direction back to the main island from where we had started. There was a beautiful sun, the deep blue, and perfect conditions for us to venture. On the last day we found the perfect pace. We arrived back to civilization next to the little cozy harbour. We are exhausted, but happy. We carry this nice balanced feeling with us for another week in our everyday lives. I think of that trail from time to time, and how much I love this movement of becoming a "sea nomad".

Seatrekking takes you out of your comfort zone but never to the real limits. It is a lifestyle and philosophy for me that brings you back to the really important things in life. It combines the coolest topics of a sport and activity, but also gives you this holistic view on yourself in this world, and what role you play in it. We often forget this.

We were three in our Croatian expedition: Bernhard Wache (www.bernhardwache.com), who led our team over the sea and started the Seatrekking movement, and myself, and my brother Luca Muehlmeier, who are the founders of SeaNomads.

The SeaNomads

ABOUT THE SEANOMADS

Our vision is to help people respect and protect nature by curiously exploring and experiencing it. We want to reconnect with mother nature.

Seatrekking is the best way to combine fun and responsibility, to appreciate and to preserve our environment even more.

This sport creates awareness for the essential things in life. It's an experience to have with friends, to interact with nature, switch off your mobile phones, and concentrate on your own awareness and just relax. Also realising how few things we need to feel happiness.

Tel: +49 176 2335 8736

E-mail: info@seanomads.de

 www.instagram.com/the.seanomads

 www.facebook.com/SeaNomads.Travel

www.seanomads.de

SOUNDS UNDER THE SEA: A GLIMPSE INTO THE SECRET LIVES OF DOLPHINS

FEATURE **ADA NATOLI & BRYANA COPE** – UAE DOLPHIN PROJECT INITIATIVE & ZAYED UNIVERSITY

The UAE Dolphin Project aims to gather more data to better understand the frequency of the three regular species found in these waters: the Indo-Pacific bottlenose dolphin, the Indian Ocean humpback dolphin, and the elusive Indo-Pacific finless porpoise.

COVER PHOTO: Fig 2. Indo-Pacific bottlenose dolphins are often spotted in Dubai waters in big groups feeding on shoals of fish. They utilise click frequencies similar to those produced by the Indian Ocean humpback dolphins. Scientists are working towards distinguishing between the two species' different click trains.







ABOVE & OPPOSITE: Fig 1. F-Pods deployed in Dubai waters. These simple, self contained but sturdy devices, can be deployed up to 100m depths. The plastic tube contains the batteries and all the technical parts to support the recording on a small SD card that when inserted, initiates the recording. **OPPOSITE BOTTOM PAGE:** Fig 3. Indian Ocean humpback dolphins close to Jebel Ali are recognisable for their characteristic hump supporting the small dorsal fin. They generally travel in small groups and favour waters very close to the coastline. Their population structure, and home range is still unknown.

HOW THE UAE DOLPHIN PROJECT INITIATIVE MONITORS ECHOLOCATION SOUNDS TO DETECT THE PRESENCE OF DOLPHINS AND PORPOISES

Whales, dolphins and porpoises – like all marine mammals – descend from terrestrial ancestors that decided to return to the water about 50 million years ago. They live their whole life in a water environment, and to achieve this, they have adapted to the advantages, and overcome the disadvantages that a liquid realm provides.

With different degrees, all species rely on strong social structures, individual bonds, and in some species – such as killer whales – solid family ties. This is one of the main pillars for their success in survival in such a vast environment as the open ocean. Cooperation amongst individuals maximises feeding success and ensures finding a partner to successfully reproduce with. It does not stop here!

Scientists have documented how knowledge is transferred from one generation to the next in many of the whale and dolphin populations studied. Examples of this knowledge can

be found in specific hunting techniques to a certain habitat, or the knowledge of feeding and breeding ground locations, and migratory routes. These are all taught by the adults to their young; a process that resembles what is generally called, “culture” (see Rendell & Whitehead, 2001 for more information).

To sustain this type of social system, it is essential that individuals keep in touch at all times, and this is not easy to do in a water environment. Light does not penetrate long distances in water; and in some cases, such as murky waters or below a certain depth, not at all! So visual contact is not an option. On the other hand, sound travels much faster in water than air, and this is what cetaceans have utilised to their benefit.

Scientists have now proven that the low frequency sounds utilised by whales can travel across oceans for thousands of kilometres, and that's how they manage to keep in touch across oceans, and periodically re-aggregate in breeding and feeding grounds whilst roaming the globe.

Toothed whales, such as the killer whales, sperm whales, dolphins, and porpoises use higher frequency sounds. These sounds are divided into two types: whistles and clicks. Whistles are known to be used mainly for communication. Interestingly, recent research on bottlenose dolphins have discovered that there are specific sounds to identify characteristics of the environment, but more astonishingly, to identify individuals, what we basically call names!

Clicks instead are utilised to echolocate. Echolocation is also used by bats on land and is the process by which the animal sends a train of sounds (clicks) and with the echo received, it can analyse and scan the surrounding area to identify prey and hunt that prey down.

Clicks can be of a higher frequency than what our ears can detect. In some cases, like those produced by the deep divers such as the sperm whales and beaked whales, they can be very powerful to the extent that they utilise them to stun prey. Clicks and whistles are species specific and now scientists can tease





ABOVE: Fig 4. Three Indo-Pacific finless porpoises observed swimming tightly together. Due to their small size and the lack of dorsal fin, it is extremely difficult to detect them at sea. The lack of dorsal fin also precludes to utilise mark recapture techniques, such as Photo-Identification to estimate population size. Photo-Identification uses the dorsal fin features to identify individual dolphins. Finless porpoises produce clicks at a higher frequency than those produced by dolphins, and therefore their presence can easily be detected by the F-Pods.

most of them apart. With the advent of new technology, relatively cheap and with longer battery lives, passive acoustic monitoring devices have been developed. These devices, selectively record frequencies in the range used by the animals, and pick up the click trains and patterns of sounds produced by them. They can then be used to monitor the presence of species in an area.

The advantage is that they provide continuous 24/7 monitoring of the area, which is impossible to achieve with a normal survey! The disadvantage is that clicks are in high frequency, therefore they don't travel far and can only be surveyed in a limited range around them (about a 1-2km radius). To cover a bigger area, more than 1 device is needed.

Since November 2021, the UAE Dolphin Project, with the support of Zayed University, Atlantis the Palm, and F3 Marine, deployed two passive acoustic monitoring devices called F-Pods, kindly provided by Chelonia Limited Wildlife Acoustic Monitoring (www.chelonia.co.uk/fpod_home_page.htm).

F-Pods (full waveform capture pods) can detect clicks from dolphins, porpoises and small whales, above 17kHz. These are preprogrammed and fully automated devices that can recognise the trains of echolocation sounds the animals produce (Fig. 1). The devices have two different sonar detectors that detect and filter out boat sonar noises. This enables them to pull out the distinct click trains of cetaceans. Each F-Pod can be deployed for 4-6 months and only needs to be retrieved once the batteries run out and to download the data recorded. Data is easily downloaded and can be immediately analysed with a dedicated app.

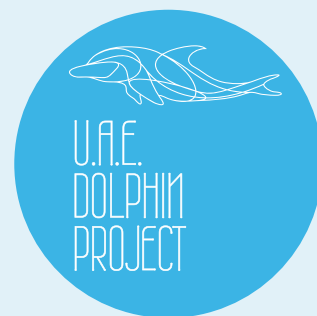
By using these devices along with the ongoing Dubai dolphin survey, the UAE Dolphin Project aims to gather more data to better understand the frequency of the three regular species found in these waters: the Indo-Pacific bottlenose dolphin (Fig. 2), the Indian Ocean humpback dolphin (Fig. 3), and the elusive Indo-Pacific finless porpoise (Fig. 4). Especially for the latter species which is difficult to observe due to its small size and lack of dorsal fin. Passive

acoustic monitoring is a great asset to better understand their occurrence. The F-Pods are located in areas where there have been many sightings recorded, from the survey, and from the public. With the use of these devices, we can get a better idea of when and how frequently dolphins and porpoises are present.

In the first year of deployment, we have successfully recorded the presence of dolphins several times at one location, and the team is about to retrieve the devices once again.

The project is aiming to increase the number of devices to cover a larger area and gain a better assessment of dolphin occurrences. Funding for two new devices has been secured and we are in the process of identifying the new locations.

If you are interested in supporting the conservation of these species in UAE waters, and you would like to support the acquisition of a new F-Pod, please get in touch with us! All our details can be found in the info box on the opposite page.



REPORT YOUR SIGHTINGS!

WHAT TO DO TO HELP:

If you encounter a whale or a dolphin, collecting information is extremely useful to us.

- 1) Take videos or photos (if you can). You are there in that moment so you are the scientist. Only you can make a difference. Every image of any quality is better than nothing and will help experts to confirm the species. If you can take photographs and videos when you are on the side of a whale or dolphins so the fins are clearly visible, it can 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 hopefully reach the site and gather more information.
- 3) Take note of the date, time, and approximate location – if GPS is not available, a dot on google maps works great! Also report how many individuals you see.

- 4) Share your data with us:

www.uaedolphinproject.org

 www.facebook.com/UAEDolphinProject

 www.instagram.com/uaedolphinproject

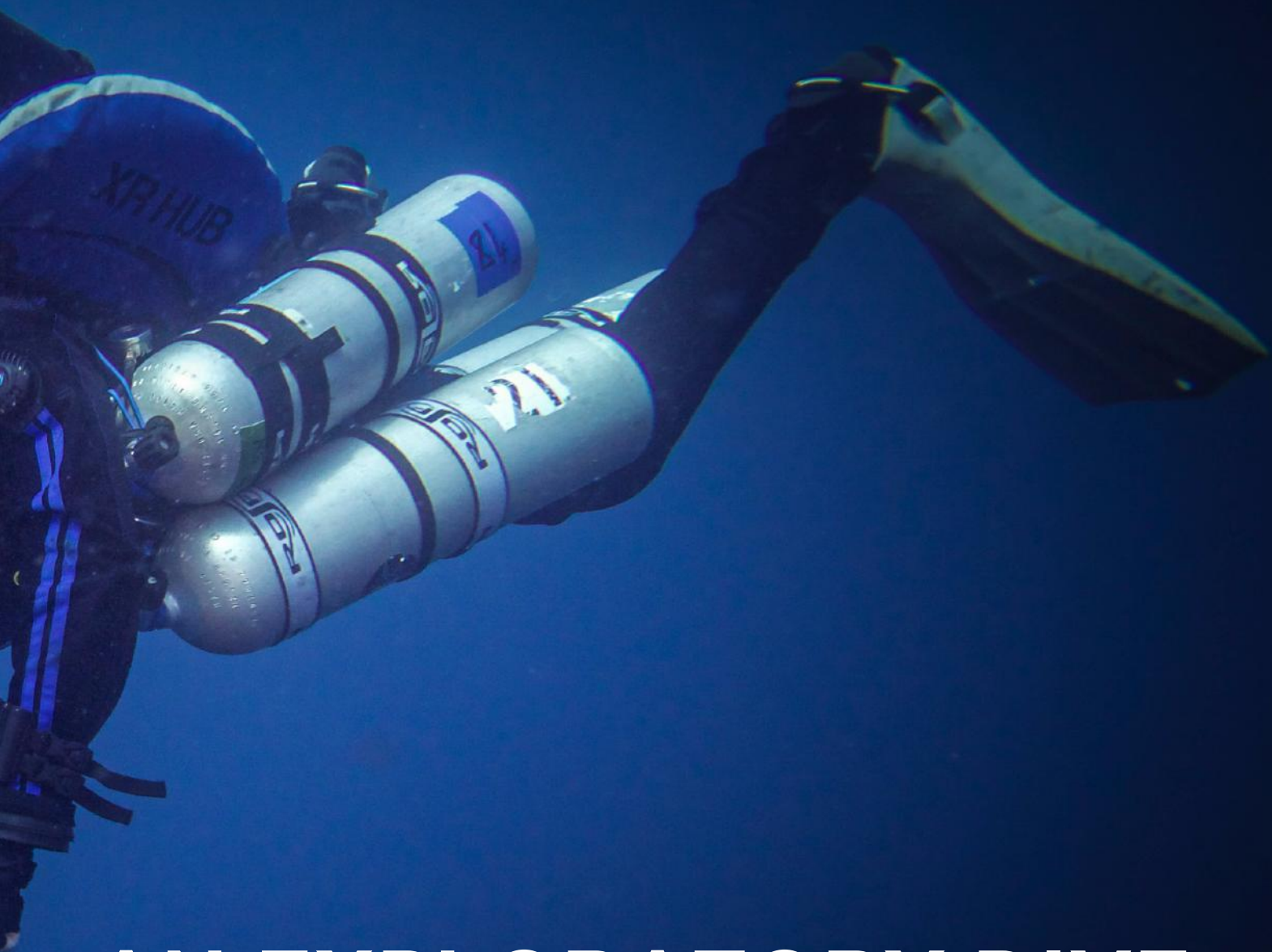
 +971 56 671 7164

 +971 50 955 1742 or +971 56 671 7164

ABOVE: Ada getting ready to deploy one of the F-Pods.



SEACRAFT
MADE TO EXPLORE



AN EXPLORATORY DIVE DOWN TO 144M OF THE ARABIAN SEA

FEATURE **SIMON NADIM** – XR HUB DIVE CENTER

The dive to 144m depths was the deepest dive ever conducted in the UAE and the Gulf region, resulting in a 7h 45mins runtime. However, this dive was not driven by breaking depth limits, but by our passion to explore.

COVER PHOTO: Simon starting his descent. Photo by Khaled Alobaidli.



ABOVE & BELOW LEFT: The Abu Dhabi Civil Defense technical diving team on the left are the first team in the UAE to be trained to dive to 100m. They are, Saif Al Shehhi, Faisal Al Hammadi, Jasem Al Hammadi, Khalid Alobaidli, and Ahmed Al Harthy. They followed Simon, the lead diver during his decompression stops and provided hydration as needed. The team were an essential safety support and were ready to intervene in an emergency. The XR HUB staff team on the right, provided all the boat support; and a look at the dive profile. Photos by Christophe Chellapermal. **BELOW LEFT:** The sonar reading. Photo by Mehr Dumont. **OPPOSITE PAGE:** Simon with his CCR at the surface. Photo by Khaled Alobaidli.

WHO WE ARE AND WHAT WE DO

XR HUB is a dive centre located at the Fujairah International Marine Club in Fujairah City focused on technical diving education, and deep wreck expeditions. XR stands for Extended Range diving, ie allowing the divers from all levels to further extend their diving range. There are many ways to accomplish this, ranging from workshops where a student can learn how to decrease gas consumption by improving buoyancy and finning techniques, to more advanced technical courses where we teach diving up to 100m depths, technical wreck penetration, and cave diving. Additionally, we cover a wide range of diving systems, ranging from Open Circuit Scuba (OC) double tank

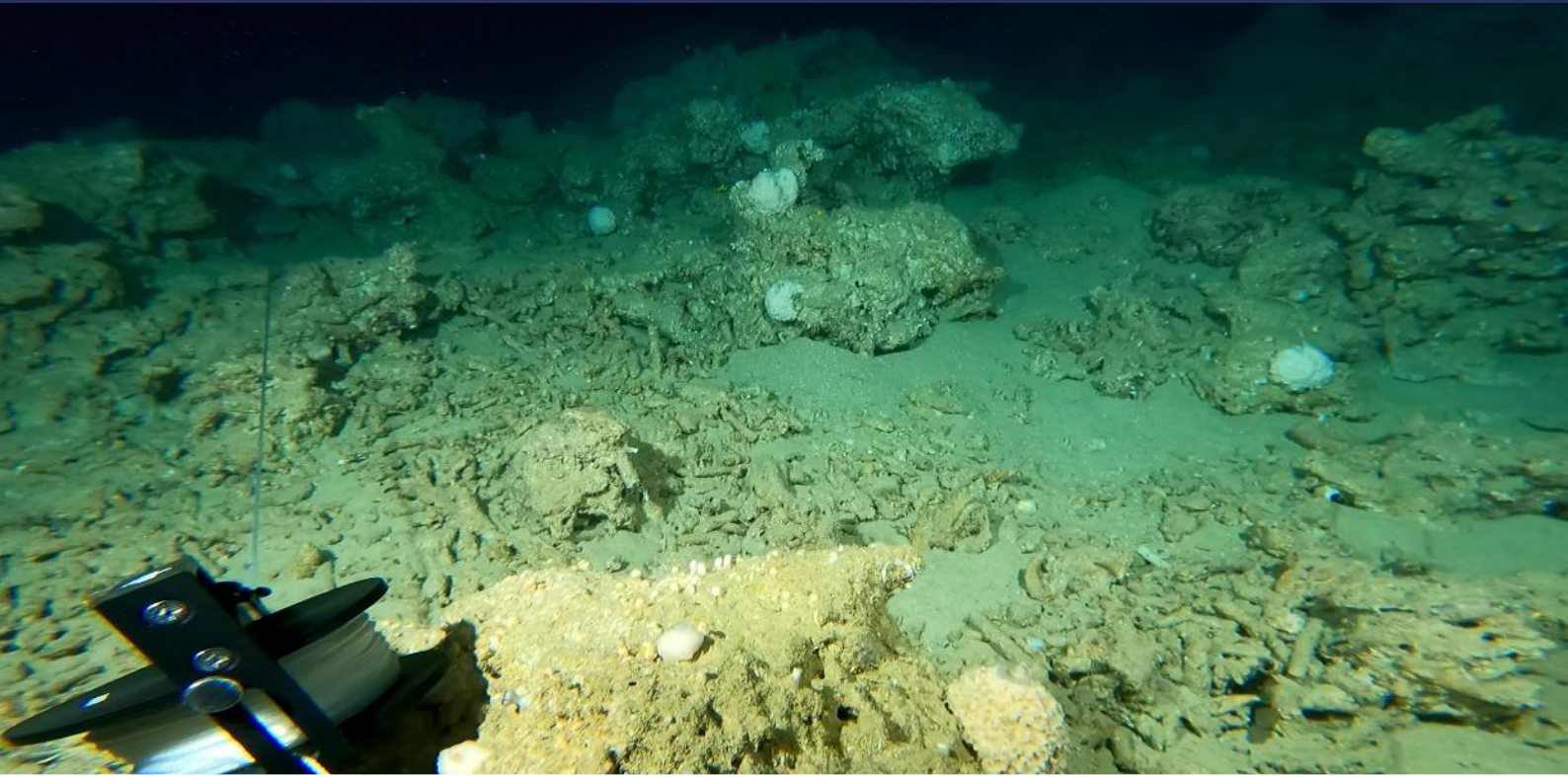
or sidemount, to Close Circuit Rebreather (CCR), including ISC TIBURON/MEG, rEvo hccr, JJccr, and Triton mccr.

Simon Nadim is the founder of XR HUB and a hypoxic trimix instructor trainer (100m depths), specialised in rebreather training, sidemount wreck and cave exploration with more than 10,000 logged dives, with the deepest ones reaching 215m depths.

Fujairah is a hidden gem for technical diving within the region, as it provides several unique shipwreck dive sites situated at depths ranging from 40m to 107m. Some of the bucket list dive sites include the following:

- **Ines** – Laying between 55m and 70m, a 120m long oil tanker split into two parts of approximately the same length. The distance between the two is around 300m. The second part of the wreck was found by an XR HUB expedition led by Simon Nadim in 2019. Both sites are rich with marine life, with possible sightings of Mola Mola (Sun fish), Marble sting rays, and bull sharks.
- **Anita** – Oil field service vessel laying at 90m.
- **Well Stimulation Vessel** – This is a new wreck discovered by XR HUB in 2021. She lies at 100m depths and is approximately 60m long.
- **U-boat 533** – The Famous German submarine was sank during World War II, and lays at a depth of 107m.





ABOVE: Lots of dead corals observed along the bottom. **BELOW:** Intriguing topography and marine life was captured. Photos by Simon Nadim.

THE 144M DEEP DIVE HOW IT ALL BEGAN

Approximately one year ago, Simon was approached by local fishermen who informed him about an unusual topography spotted on their sonar, suspecting it to be a wreck. Intrigued by the news, XR HUB organised a more detailed survey of the location, which further showed that the sea bottom depth varied around 10m in height, following a prismatic shape. This particular topography suggested a potential shipwreck, or a reef could be located at the site, therefore it was decided to organise an expedition dive.

DIVE PREPARATION

Exploring these depths is very challenging, especially if it is a new site where the diver doesn't know what to expect. The Arabian Sea bottom conditions are usually unpredictable, as the direction of deep currents can significantly vary along the water column, with the heaviest currents often being beyond 80m depths. When conducting dives deeper than 70m, we always use high-end underwater scooters (DPVs) to minimise effort and workload, thus avoiding both hypercapnia, and major inert gas loading increase. Another major hazard we could face, is entanglement with many fishermen lines

which are often stuck on wrecks and rocky bottoms, therefore efficient cutting tools and proper underwater lights are required.

Diving to extreme depths requires the use of a closed-circuit rebreather (CCR) which has many advantages:

- The diver can be submersed up to 8 hours.
- The diver carries fewer tanks compared to traditional open circuit configurations.
- A rebreather is a gas mixing station carried by the diver on his back which always provides optimum gas for the current depth, thus minimising decompression obligations.



ABOVE: Arch with coral. **BELOW:** More views of the topography and marine life captured within the 20 minutes of exploration. Photos by Simon Nadim.

Expedition technical diving is an equipment intensive discipline. Great care must be taken in the selection and preparation of the equipment. At least two days are required to prepare the gases, assemble all the equipment, and do all the necessary testing.

As the main target of the expedition was to identify what lies at the bottom and record it on video, 4 GoPro cameras were used with Isotta underwater camera housings.

Long hours were spent to prepare the decompression obligations using specialised

software and different emergency scenarios.

Equipment preparation and dive planning are essential; however, it is also critical to have a proper support diver team and crew to conduct such endeavours.

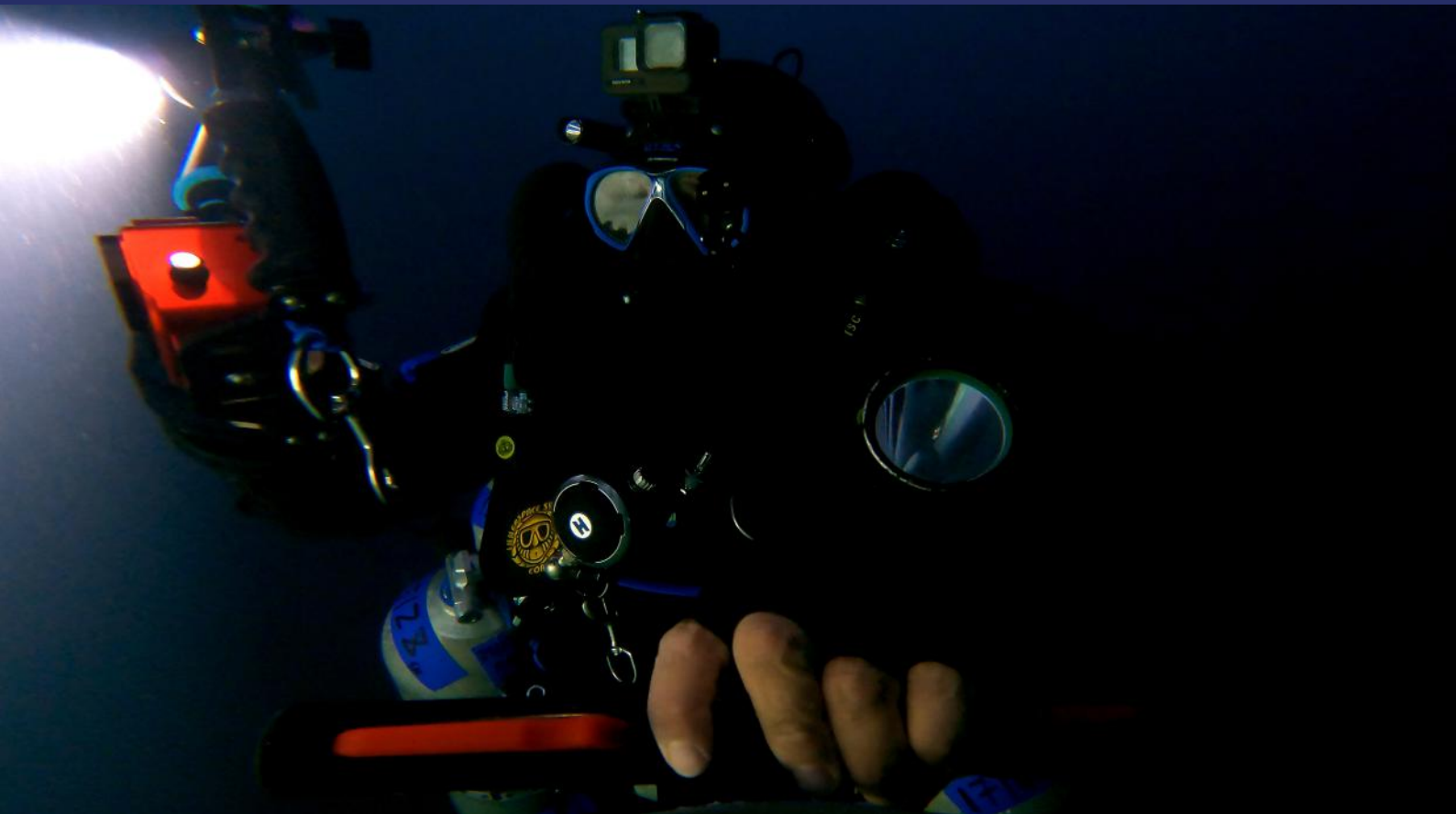
We had the honour to be supported by the Abu Dhabi Civil Defence Team, previously trained at XR HUB and prepared to conduct technical dives to 100m depths. The support team ensured that all the necessary gas tanks were placed on the line at the required depths. They followed the lead diver during his

decompression stops, and provided hydration as required.

THE EXPEDITION DIVE

According to the schedule, the dive was supposed to commence at 9am, therefore the departure from the marina was at 6am. The sea conditions were ideal with a flat sea and nearly no currents at the surface.

After arriving on site, the most critical step was to successfully drop the anchor at the right spot at the bottom, which can be very challenging due to the long distance down to



ABOVE: Simon filming down at 142m. Self Portrait. **OPPOSITE PAGE ABOVE:** Simon starting his descent. Photo by Khaled Alobaidli. **BELOW L-R:** The water temperature reading at 100m; The water temperature reading down at 140m.

the seabed, and variable current conditions along the way. The first drop was made at point zero, however, due to deep currents, the anchor landed about 200m away from the target site. After an extensive analysis of the sea conditions and another two attempts, the anchor landed about 30m away from the target point.

The support team jumped in the water as soon as the anchor line was secured. They installed six bail-out gas tanks on the line between 6m and 30m, which were then ready for the main diver to use in case of an emergency.

Around 10am, Simon started his dive which lasted 7h 45mins. This included 20 minutes at the bottom, and 7 hours of decompression obligation which is the price to pay for venturing to those extreme depths.

The descent had to be carried out at a fast pace in order to minimise on-gassing during this phase of the dive. It took 5 minutes to reach the bottom at 144m. There was a noticeable temperature drop to 21°C after a thermocline at 30m. However, after reaching the bottom, the temperature surprisingly increased again.

The Tiburon rebreather performed perfectly, providing excellent breathing function.

After reaching the bottom, the next phase was to conduct a search by connecting a reel to the anchor (ascent) line, and scooting in the estimated dive site direction. Simon used a Searcraft DPV for this purpose, which

can tow a diver at 90m/min at full speed. It took less than a minute to arrive at the target zone.

DIVE SITE ANALYSIS BY SIMON

My first thought was that I had landed on Mars. The site was an underwater hill with around 10m of steep elevation composed of very strange rock formations. Even though my first impression was that it was going to be a quick dive, after a short survey, I decided to do a reel tie-off and focus on filming the site. I maximised my bottom time to be able to get more footage of the location and try to understand more of what I was seeing.

As I was going over more details of the area, I was intrigued by the marine life found at this depth, including smaller fish, corals, as well as barracudas. There were several areas with consistent clouds of silt as well. I suspected this to be caused by the movements of the reef fish, however, after revisiting the areas a few times throughout the dive, the same phenomenon kept occurring at specific locations.

Another unusual characteristic of the site was that the water temperature at the bottom was between 24-25°C, whereas it was only 21°C at depths shallower than 130m.

After reaching the turning point of the dive time, I left the site with many questions. What is the nature of the marine life at the site? Why had the temperature increased at the bottom? Could it be a location of former or current thermal springs?

Post dive, we reviewed our findings with a marine biologist who advised the site is likely the remainder of a formerly much healthier deep-sea reef. They further observed that the damage of the corals on the reef appeared to have been caused by mechanical action, rather than following a natural cycle. Unfortunately, this suggests human induced damage, likely from deep sea fishing and heavy ship anchorage.

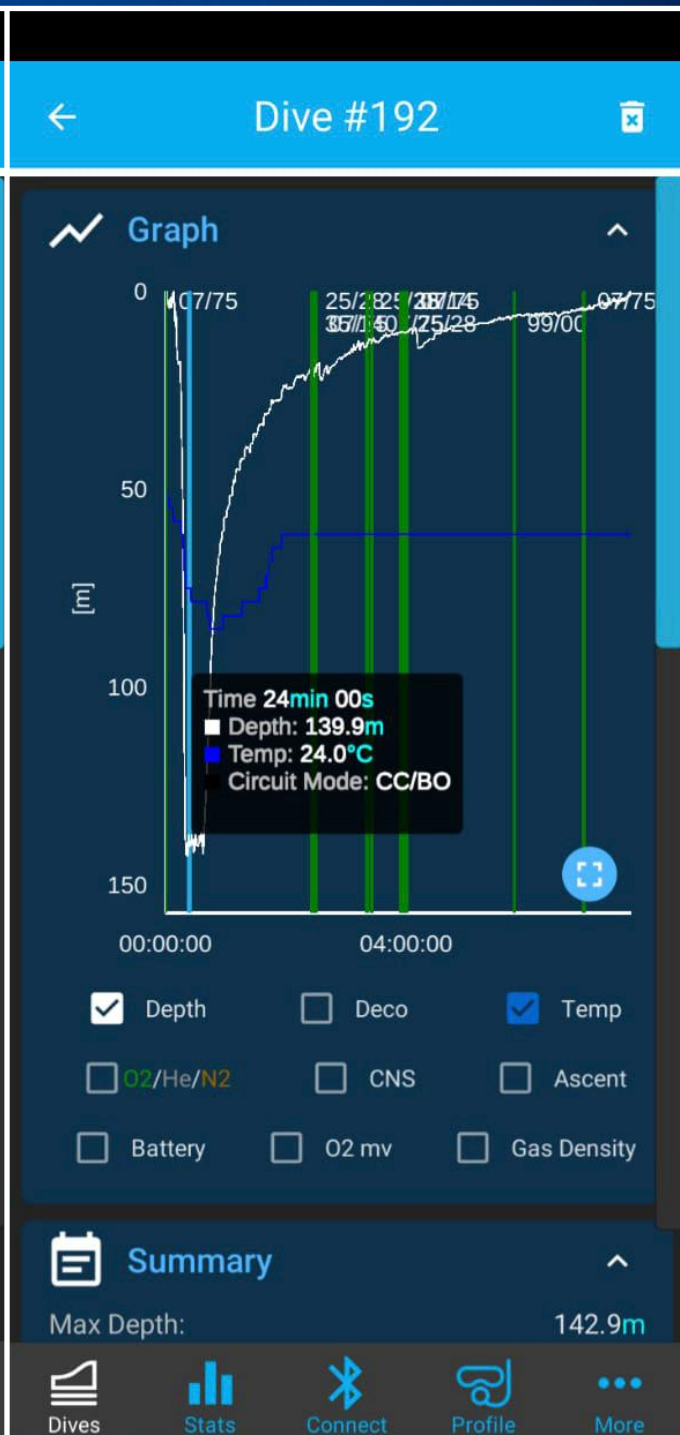
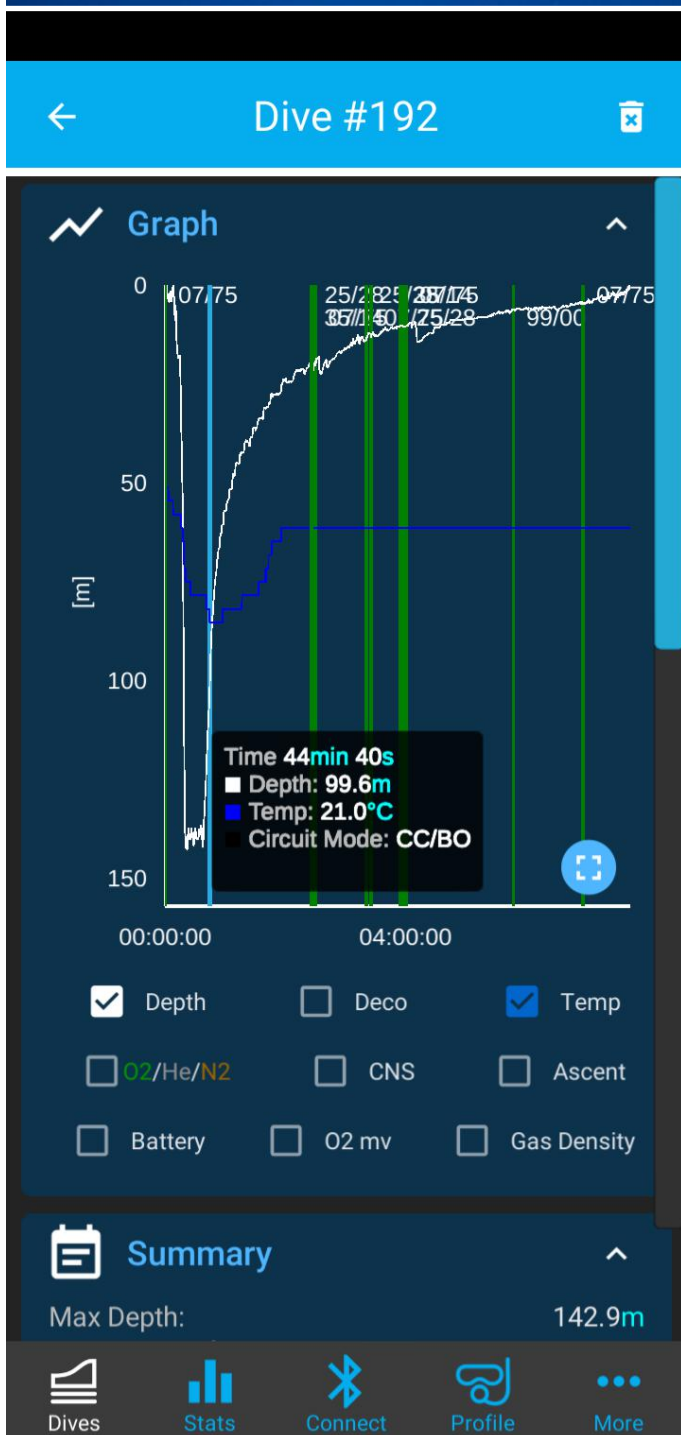
Presently, we are still busy collaborating with Marine Biologists to identify all the marine species spotted on the reef. Furthermore, we are talking to Geologists to gain a better understanding about the topography and to investigate if there are any unusual features to the site.

THE FUTURE

The dive to 144m depths was the deepest dive ever conducted in the UAE and the Gulf region, resulting in a 7h 45mins runtime. However, this dive was not driven by breaking depth limits, but by our passion to explore.

It uncovered a very interesting dive site, but also raised a lot of questions. At a time where vast areas of shallow coral reefs are endangered due to overfishing and global warming, it is observed that human impacts reach even greater depths, which is why explorations such as these play an important role in raising awareness.

Stay tuned on XR HUB's news through the EDA magazine for research updates and future explorations.

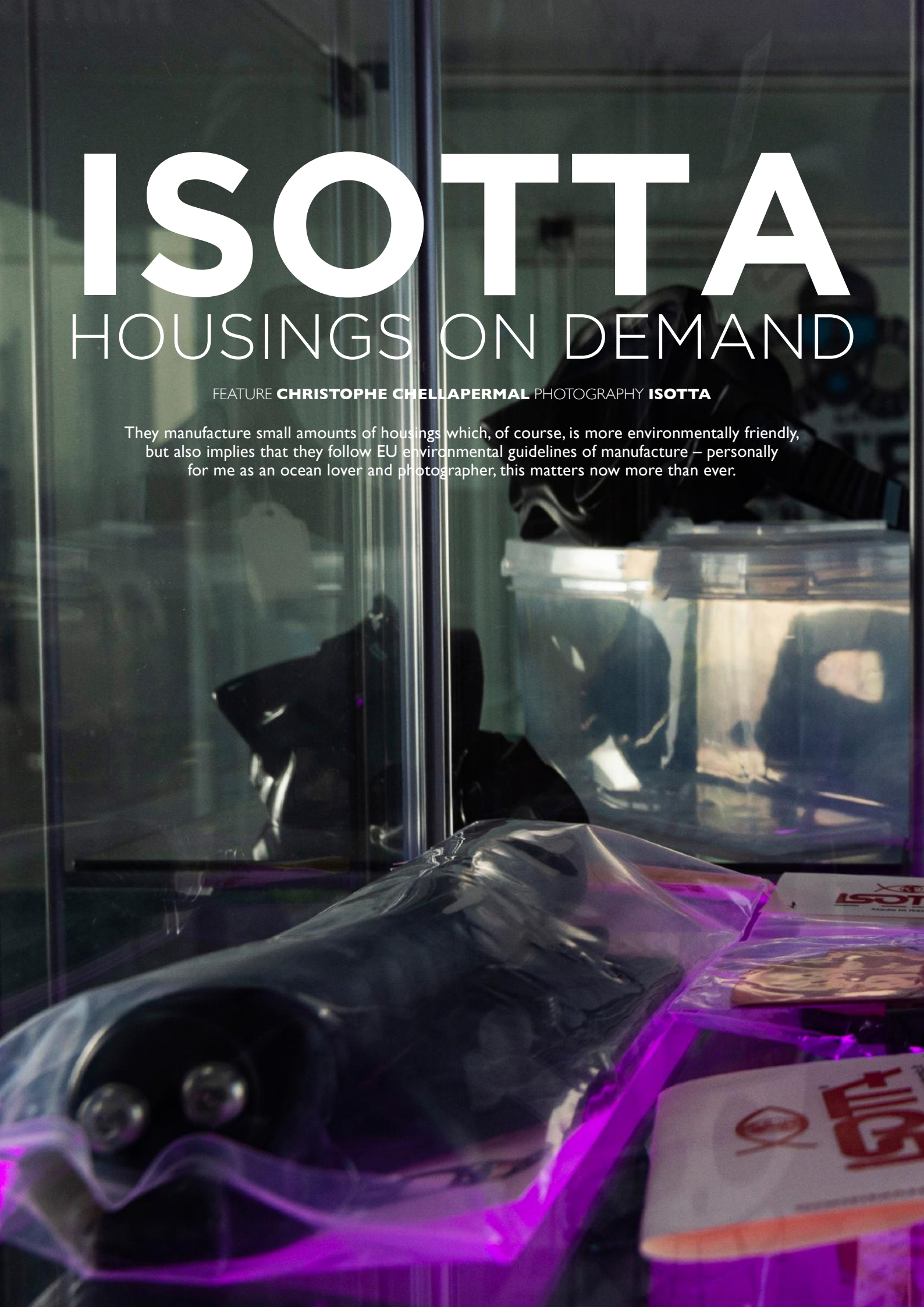


ISOTTA

HOUSINGS ON DEMAND

FEATURE **CHRISTOPHE CHELLAPERMA** PHOTOGRAPHY **ISOTTA**

They manufacture small amounts of housings which, of course, is more environmentally friendly, but also implies that they follow EU environmental guidelines of manufacture – personally for me as an ocean lover and photographer, this matters now more than ever.





Housing for
**Go-Pro HERO9/
HERO10/HERO11
Black**

(Cod. 3226)

Custodia per
**Go-Pro HERO9/
HERO10/HERO11
Black**

(Cod. 3226)



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Follow us on   





For many years, the choices for underwater photography and video housings available in the UAE has been very limited. This may not be the case for much longer – we got our hands on a few different models of Isotta housings to review, including the GH4, the Zcam E1, the rx100ii, and the GoPro 9/10/11. This was a great opportunity to understand and review the functions and assess the pros and cons of using Isotta housings.

Isotta is an Italian family brand with a base close by to Venice known for its trademark red aluminium housings. They are rated to 200 metres and come with double o-rings for safety of mind. Isotta has a wide selection of housings ranging from Mirrorless, DSLR, Compact to GoPro housings. This means that there is a housing for a breadth of photographers, catering to various budgets. When making the decision to buy a housing for a camera, the first thing that must be considered is the investment it represents. Any decent quality housing comes at a price and through experience, I have learned that with underwater photography, you generally get what you pay for. This, however, does not apply for an artisan brand like Isotta.

Despite having so many available options, Isotta remains more affordable than most of its competitors as they have simplified and streamlined the mechanisms inside the housings, while keeping them fully functional and maintaining the quality of the aluminium products. The result is that the designs are minimalistic and user friendly. It didn't matter which housing I chose to use, in both cases – shooting photography or video, the housing was super simple to set up. The fact that every port or extension tube, and the back door have two o-rings, adds a watertight seal when closing the housings. All the housings are equipped with moisture alarms, but no vacuum leak system. This can be purchased from a third-party manufacturer like the sentinel alarms and can be installed directly by the user. Most of the recent housing models have an m16 plug where you may screw in your vacuum valve. It would be nice for Isotta to build their own system for this, but the possibility of adding this additional functionality to ease your mind does still exist. Another potential negative point with the Isotta housing line is that, for the eyepiece they do not build 45 and 180-degree eye pieces but,

there is a workaround, you can instead fit an excellent, and I will add, affordable, eye piece built by Inon.

Isotta offers various ports for SLRs and mirrorless with the possibility of adding an excellent quality crystal port for wideangle photography in 3.3, 4.5, 6, or 8 inches. They do not offer wet lenses, even though, currently the trend is that everyone is leaning towards wet lenses. The popular combination lens is a very cheap lens combined with Nauticam WACP or WWL1. While most preach that these lenses are the future because they offer a very narrow focusing distance, and maintain sharpness in corners, you can still achieve a similar result by carefully selecting your wideangle lens and using a good quality dome. Many fisheye lenses offer short focusing distances such as the Canon 8-15mm or the Tokina 10-17mm. I truly see wet lenses as a trend that will come to pass. What is important, is a dome of good quality and width that allows for light to reach your lens. Isotta offers an extensive chart of lenses for every brand, but there is no real guide on the site so you must rely entirely on the experience of gurus',



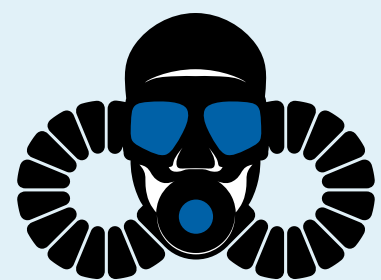
or invest the time to do some research on the internet. In any case, if you are going to invest in an underwater system, this is advisable no matter which housing you finally purchase.

There are very few brands offering aluminium housings for action cameras such as the GoPro and this is one of the reasons, I found Isotta so compelling. The GoPro camera is known for its ease of use, and the latest GoPro 11 offers the possibility to shoot in 10-bit colour in 4k or 5.3k up to 60fps with the hypersmooth 5.00. This means you have a rock-solid stabilisation, and the 10-bit colouring gives good room for colour grading in post-production. Combined with the Isotta, you are sure your camera won't flood as you not only benefit from the double o-ring and aluminium housing, but the shutter release is nicely located and is of better quality than what you find on any other plastic housing. You have a screen at the back and next to the lens. Isotta does offer a specific tray and good man handles that are convenient when filming underwater; the latter being practical for technical divers. Isotta also offers magenta and orange filters that can be used to restore colour in shallow depth when

combined with at least 10,000 lumen video lights, and with blue filters you can get some interesting results.

After having owned various other housing brands, it has always been hard to move on to another housing system. Simply because the housing costs more, and it was harder to sell a more expensive used housing. This ultimately means that when moving to Isotta, it is generally easier to keep updating your system. Isotta does have a good range of cameras to offer – but because they are a small artisanal family company and because they do not have a production line – they are selective about the models they choose to make housings for.

They produce the housings on demand and some housings can take up to two months to produce. This does imply that they manufacture small amounts of housings which, of course, is more environmentally friendly, but also implies that they follow EU environmental guidelines of manufacture – personally for me as an ocean lover and photographer; this matters now more than ever.



XR HUB
D I V E C E N T E R

FOR MORE INFO:

To learn more about Isotta in the UAE, contact XR Hub Dive Center.

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www.isotecnica.it



FULL FACE MASKS

WILL THEY BE THE NEW STANDARD?

FEATURE **AHMED NABIL** PHOTOGRAPHY **OCEAN REEF**

The beauty about diving with a full face mask is that you have a lot more than a mask and a regulator. You have the space and ability to add and integrate accessories to your breathing and visual apparatus.



Scuba diving is a unique sport where a diver's body and equipment should become one entity that works effectively and comfortably underwater. Masks are of no exception in the equation. "A mask can make or break your dive". As a dive instructor, it is one of the very common comments that I give or hear amongst divers.

The diving community has been enriched with a variety of colours, shapes and features with all kinds of diving gear. Yet, there is one piece of equipment that hasn't received enough attention, the full face masks. While a full face mask is known and a common item for commercial divers, it remains unexplored equipment for recreational divers. Surprisingly there are full face mask speciality courses at most dive centres! I decided to choose a full face mask for my next equipment review.

There are two major designs for full face masks. The first is with an integrated second stage regulator, and the second is just a mask with a feature allowing the diver to install/fix his own second stage regulator to the mask.

I voted for the first option as there would be no chance for mis-installation, or a seal leakage.

The beauty about diving with a full face mask is that you have a lot more than a mask and a regulator. You have the space and ability to add and integrate accessories to your breathing and visual apparatus.

Ocean Reef has been a pioneer in this field, offering all kinds of sport and professional lines. They cover diving and snorkelling activities.

I had the privilege to get my hands on an Ocean Reef mask, model Neptune Space Extender which is the newest Integrated diving mask system at Ocean Reef. It is the mask for the avid diver, advanced adventurer and diving professional. The extender is a feature to be added to the full face mask frame, it allows a mounting area for light fixtures, GoPros, other cameras, and accessories.

From first sight, the mask looks like an astronaut's helmet. Full of excitement, I couldn't stop myself from testing it. It takes

some getting used to in installing it, compared to a regular mask. The full face mask has 6 straps, compared to just the one on a regular mask. It took a couple of attempts to fit and remove it with ease. After a few minutes, the problem was sorted. Surprisingly, putting it on becomes much easier, and taking it off took no time at all. Similar to any new equipment, you need to get to know it before it becomes familiar. Next, I had to fine tune the nostril block pins to make equalisation easier underwater which was easily done in a couple of minutes.

Ocean Reef offers two options, to breathe from your air cylinder reserved for underwater diving, or just open the surface air valve (SAV) and breathe normally.

I tested both features and both were okay. Amazingly there was no mask fogging! It is the most common complaint from all divers that the mask fogs while swimming at the surface. With full face masks, that problem does not exist. The solution is in the built-in design and fresh air flow that allows no



NEW DEDICATED
EXTENDER FRAME DESIGN

NEW VISOR

NEW SURFACE
AIR VALVE

NEW ORINASAL
POCKET

NEW 2ND STAGE

NEW DIVE/PRE-DIVE
LEVER

NEW ONE-HAND
QUICK-RELEASE HANDLE

NEW QUICK-RELEASE
TABS

NEW IMPACT
RESISTANT DESIGN



WHY DIVE AN IDM? ENABLES NOSE BREATHING

- Experience natural breathing.

JAW FATIGUE

- Nothing to bite on.
- Frees mouth to communicate, drink.

FOGGING

- No fogging thanks to the air circulation system.
- No product treatment needed.

MASK PRESSURE

- Automatic pressure equalisation at each inspiration thanks to the integrated breathing apparatus.

FLOODING

- Breathing inside the mask automatically purges water through the draining/exhalation valve. When voluntarily flooding the mask, a couple purges of the second stage button completely clears the water from the mask.

OCEAN REEF MASK, MODEL NEPTUNE SPACE EXTENDER

A few features to mention:

- Cold water certified, balanced, on demand, integrated regulator.
- Polycarbonate visor (siloxane double coated for scratch resistance).
- Directional exhaust valve (4 positions). Very helpful for underwater photographers/videographers.
- Dive/pre dive switch.
- Lifetime warranty!
- Includes the Extender Kit (frame + accessories).
- Surface Air Valve (SAV) included.

REGULATION CHARACTERISTICS

- Pneumatically balanced second stage provides consistent ease of breath at any tank pressure.
- Adjustment knob provides the diver with the requested amount of air flow under all circumstances.
- Dive/pre dive lever (Venturi) helps avoid surface free flow in harsh conditions.
- CE certification in accordance with 89/686/CEE directives under UNI EN250 standard rules for underwater activities, including low temperatures (<50°F or <10°C).

3D EQUALISATION SYSTEM

- Patented design.
- 3 way directional adjustment system: up/down, wide/narrow, close/far. Made for maximum comfort and nose breathing.
- Pushing the mask towards the face when needed causes the plugs to create a nasal seal.

AIR CIRCULATION

- Air circulation is achieved with an orinasal pocket so that CO₂ build-up is not mixed with fresh air.
- One-way circulation keeps mask clear.

SURFACE AIR VALVE

- Easy to grab, sturdy design.
- Large air vents.
- Allows IDM divers to breath ambient air when at the surface.

DIRECTIONAL EXHAUST & DRAINING VALVE

- Large, one way valves drain any water and air in the mask during exhalation.
- Purging the regulator will drain water even faster.
- Directional exhaust valve orients the bubbles away when needed.
- Position options are left, right, both sides and closed.

water mist to gather on the lens. To give a boost to our test, I decided to backward roll with the SAV kept open, and voilà. I was expecting some flooding to challenge my diving skills. Surprisingly again, the water that leaked into the mask just gathered at the bottom of the mask, below my chin. I kept breathing normally and no water burned my eyes or hindered my breath. Two points scored so far. To move on, I just closed the SAV. How do you deal with residual water in the mask? similar to any regular mask clearing skill, I just pushed gently on the top frame while exhaling. Divers, please ensure closing the SAV before jumping into the water. It was absolutely amazing to breathe normally from the nose and mouth, and it's so comfortable.

Once we started our descent, I felt like an astronaut in space. The dive went smoothly and was just pure fun. In terms of equalisation, if you are a frenzel diver; you will never need to touch your mask. For valsalva divers, you just need to lift the mask gently up to block your nostrils and gently blow, as you would regularly do. No water escaped inside the

mask during the entire dive, nor did I need to defog it at all.

The air consumption was not much different than my standard rate, maybe a few bars more were exhausted as the inner volume of the full face mask is larger compared to a standard mask. In total, I did not notice much.

Once we ascended to the surface, we waited for the boat to jump in. Again, you have the option to keep breathing from the mask and avoid getting water in your eyes, or just remove it to breathe normally as you would with a regular mask.

When we got back into the boat, I had to disconnect it from the regulator hose and place it back in its bag to keep it safe. Similar to any diving mask, lenses can easily get scratched, or accidentally broken if a cylinder or other heavy items weren't properly secured.

Overall, it was an excellent experience to try a full face mask. It's definitely had me think, will it become the new standard?



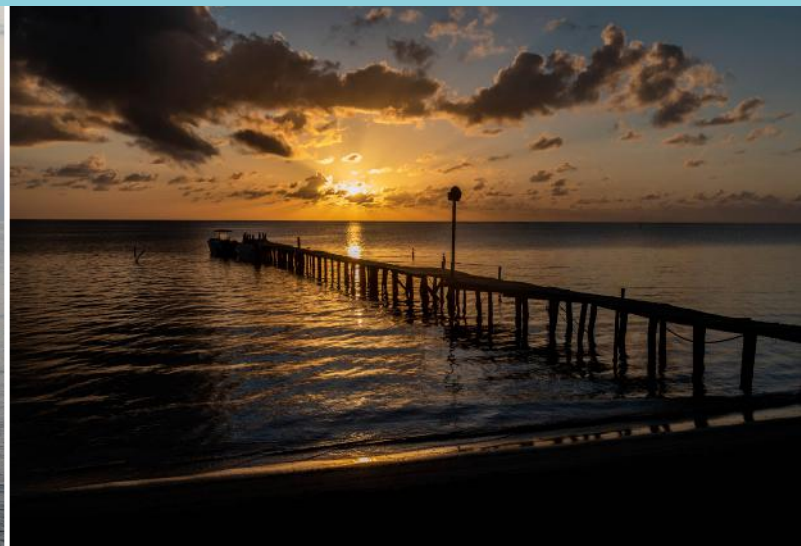
MEXICO'S CARIBBEAN COAST

FEATURE AND PHOTOGRAPHY **FARHAT JAH** – WWW.ORIENTAFRICATRAVEL.COM

With only 155 species of fish, it is easy to describe the Caribbean Sea as 'limited' – but what makes Xcalak so special is the underwater scenery and the fact that we were subjected to schools of larger fish on every dive.

COVER PHOTO: Playa Del Carmen was boiling with fish.





ABOVE L-R: Sunday afternoon in Xcalak; Sunrise at XTC Dive Centre; Exiting the water at XTC; and Speeding home back to XTC Dive Centre.

The Yucatán Peninsula must be the most heavily visited part of Mexico. Planes from around the world land almost continuously at Cancun International Airport. The sandy beaches of the Caribbean are lined with hundreds of large concrete hotels. After a gap of a decade, Farhat Jah went back to a lesser visited village to see what had changed, and to find something new.

The Yucatán Peninsula is also home to the northern tip of the Meso American reef. Sometimes known as the 'Belize Barrier Reef', this is the second largest barrier reef system in the world after the Great Barrier Reef in Australia. Divers come in the hundreds to the island of Cozumel Island and the beach resorts of Playa del Carmen. Nothing I had heard about the Yucatán made me want to visit it. My mind was changed by an American doctor named Mike Alt. 15 years ago, when I lived on a beach in Tanzania, he walked into my Dive Centre and asked if he might dive. Every evening we would sit under the stars with a bottle of red and stare out to sea, where he would tell me about diving the Meso-American Reef. He lived in a tiny, very small village, named Xcalak. When he finally left to

go back to Mexico, he invited me to visit him.

"Come and see me. I'll pick you up from Cancun" he said.

A year later, after working the annual DEMA Dive show in the USA, Francisca (Cisca) and I made the journey down to Cancun Airport. Mike was as good as his word and collected us at Cancun Airport. After stocking up on what seemed a lot of supplies, we drove for 5.5 hours until we hit Xcalak, the last village in Mexico before reaching the maritime frontier with Belize. Mike lived a simple life. He had a house, a boat, and a crew member. Every day he took us out onto the reef and we would snorkel with eagle rays, tarpon, and jack fish. When we needed to dive, we went to the small but well run diving centre called XTC. Owned by an erudite and enthusiastic Mexican diver named Javier Salas. Every day we jumped onto one of his fibreglass boats, zoomed out through the reef and dropped into the crystal clear water to see tarpon, barracuda and schools of angelfish. It was an idyllic interlude to a stressful life. All too soon, it was time to fly back to Africa, and our journey was at an end. Mike drove us

the 5.5 hours back to Cancun, stopping at a few desolate pyramids along the way in the jungle of Muyil. The mosquitos bit us as we staggered around, pushing the creepers away from the path. After a night in a very modest hotel in Cancun, we took a pre-dawn taxi to the airport and took off into the darkness.

But as life goes: Mike moved away from the village of Xcalak, and we sold our Diving Centre in Africa. As our tour company grew, we found ourselves in New Guinea, Indonesia, St Helena, and the Antarctic. Almost a decade later, in-between dives in Turkey, I was deep in conversation with Paul Bailey (one of our more loyal divers).

"I'd like to visit Mexico" he said.

"What, with the millions of tourists?"

"No, somewhere quiet and perhaps with the chance to see a cenote".

"I'll have a look", I told him, and the next tour idea was born.

THE YUCATÁN REVISITED

It turned out that XTC had survived Covid, albeit in a more slimmed down manner. Javier was as enthusiastic a diver as he had ever been and was ecstatic about our plan. As usual, once



ABOVE: It's rare to see hard coral in this shape in Xcalak.

I started organising this trip, others wanted to join and pretty soon there were six divers in our group, arriving at Cancun Airport from various parts of the world. The last diver arrived on a British Airways B777 at 5pm and we congregated in a reasonable 3 star hotel in the town of Playa Del Carmen.

The next morning, a comfortable air-conditioned Volkswagen minibus arrived complete with two drivers to take us to Xcalak. As soon as we left Playa we were surrounded by a mass of impenetrable green. The road narrowed soon after we passed the historic pyramids of Tulum. And then pretty soon it was just us on the road, passing through tiny villages with the occasional shop and a cluster of yapping dogs. Luiz, our professional driver, weaved in and out of the articulated lorries going south towards Chiapas and Mexico City.

At the village of Limones, we stopped to stretch our legs. This was where we left the main highway, and headed towards the Caribbean Sea at Mahahual. We then turned south on a new road that was only three decades old and crossed large areas of mangrove swamp while driving on stretches of raised tarmac. This

mangrove swamp was what had kept Xcalak so isolated for so many years.

At the southern end of the mangrove swamp, the tarmac ran out. Here, we turned north and crawled over a dusty track. Minutes later we arrived at the XTC Dive Centre. This dive centre was managed by Veronica (Vero), a highly organised instructor from Italy. We unloaded our gear, filled in a few forms and then we had to find our accommodation. Due to an administrative error, our accommodation arrangements were a mess. Single rooms became shared and doubles, and rather than all of us being together in the same place, we were split up. Francisca and I had to stay in a room at XTC Dive Centre, the others in cabins in the village. There was no point in complaining about it, so we agreed to meet later and find somewhere to eat.

THE VILLAGE OF XCALAK IN 2022

Xcalak had changed very little in a decade. The settlement was made up of a small strip of wooden houses by the sea, many of them on stilts. The reason for this was abundantly clear; above ground level the mosquitoes seemed to dissipate. A couple of kiosks served as shops,

and in the centre, people parked their identical white fibreglass boats plying for fly fishing or the snorkelling trade. Who their customers were was a mystery to me as the village was almost empty of tourists.

There were only three places to eat: Silvia's restaurant, Costa De Cocos Lodge, and the XTC Café. That first night we tried Silvia's, which was a very basic affair, a converted house with plastic chairs and tables in a dusty carpark. Every dish cost \$10, no matter what was actually in it. I ordered fish tacos and we all had a couple of beers. We sat in the humid still air, waving away the mosquitoes until a child appeared with a pair of coils. The strong poisonous smell wafted around our ankles and the mosquitos instantly decided to move elsewhere. As we walked back through the village to the dive centre, a breeze picked up and we cooled down.

The word Xcalak means "cuts" in Mayan. The barrier reef came close in to the shore and had two channels, or 'cuts', that allowed fishermen to access the deep Caribbean Sea without having to go far from shore. Captain Paquero our XTC dive captain, opened up the throttles



ABOVE: Cisca hovering over the colourful coral reef. **BOTTOM L-R:** The reefs are full of lobsters; A lone barracuda swimming past; Angel fish hiding in the coral covered rock.

on the twin outboards and we roared through the gap and out into the Caribbean. We were on our first dive trip of the week. Minutes later, we stopped and Vero gave us the all clear to dive. We dropped into the blue water. The visibility was incredible, and we swam around carefully for somewhere to “land”. The bottom was, I estimated, at 55 metres. So we swam west at 18 metres depth towards land, until at a slightly more comfortable 35 metres we dropped onto the reef. After photographing some of the outer points, we worked our way slowly shallower around enormous barrel sponges. The occasional pompano would come over the top of the reef and look at us warily before swimming away slowly. We were diving on air, and we soon found ourselves having to swim further west “uphill” to avoid decompression. We ended at a relaxed 13

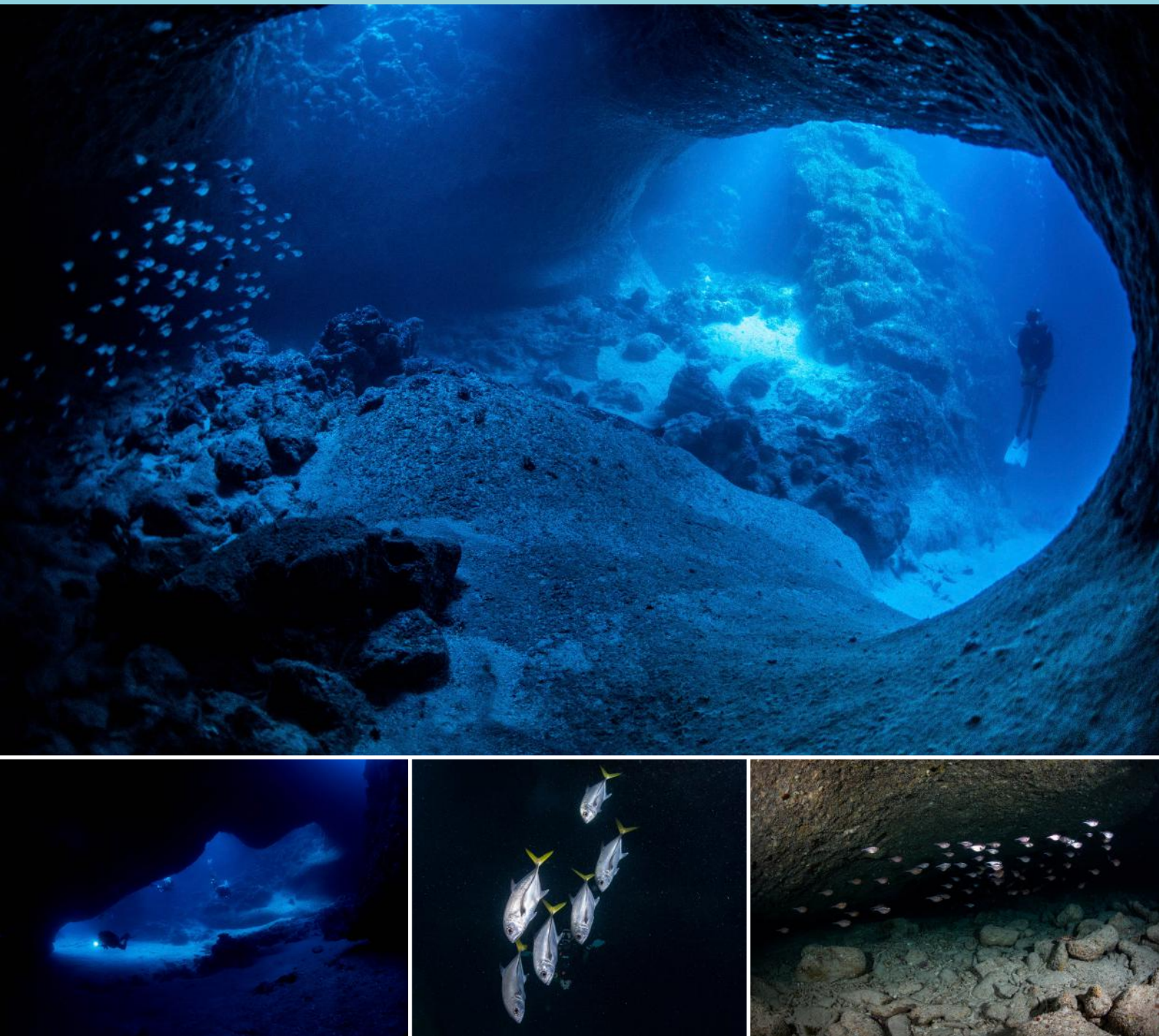
metres, swimming between coral heads. It had been an excellent first dive.

THE MESO AMERICAN REEF WITH BARRACUDAS ON EVERY DIVE

Over the coming days, we were not blessed with good visibility. The wind had picked up and the resulting waves made every site south of Xcalak a little green. The outer walls were better, and the inner shallow reefs were quite sandy. Added to this, the reefs off Mexico were an odd shade of brown and yellow, the only vibrant colour was added by the sponges which were bright yellow or red, but these were generally only visible when reaching deeper than 20m. With only 155 species of fish, it is easy to describe the Caribbean Sea as “limited” – but what makes Xcalak so special is the underwater scenery and the fact that

we were subjected to schools of larger fish on every dive. Horse-eye jacks, yellowtail jacks, schools of tarpon, and enormous lobsters were a daily encounter. On the outer reefs, we would often see large potato groupers. Finally, no matter how shallow or deep a dive, we were nearly always guaranteed a visit from a large great barracuda. These fish would come and inspect us. Sometimes they would hang around a metre away, and sometimes they would gently swim away only to return within a few minutes.

My favourite dive site was “La Chimenea” or “the chimney”. We sped south towards the border of Belize, and half a mile offshore, opposite the Mexican Naval Station, we rolled in and found the outer reef. After a few metres of swimming south, we came



ABOVE: Looking back into the cathedral. **BOTTOM L-R:** The group enters the cathedral at la chimenea; Startled horse-eye jacks swim past; The narrow exit from the chimenea.

across underwater pinnacles at the mouth of a hidden cavern. We swam around them and entered a main chamber, which Vero called "the cathedral". The centre had collapsed allowing light to pour in, making it quite eerie. I decided to enter the cavern close to the ceiling at 22 metres and disturbed a small school of rather indignant jackfish. They swirled around me seemingly more annoyed than worried – before tiring and wandering off into the deep.

Ignoring the departing jacks, I squeezed through under some rocks and found a horizontal passage with light at the back. I gently worked my way into the light which became a 2m wide vertical shaft that led to the surface. I looked back but nobody had followed me, so I turned around and squeezed my way back to "the cathedral".

Cisca was waiting and after a couple more photographs, we swam out together. We found ourselves on the reef wall at 30 metres. There was no current, I had plenty of air and so we meandered along the reef only to be met by this dive site's resident great barracuda. This fish swam right up to my lens scaring the living daylights out of me.

Doing a safety stop on top of the main reef system was a wonderful experience. The soft brown coral waved in the surge as we hung on the SMB line. After a while, we surfaced. Captain Paquero, the ever smiling skipper took our fins and we climbed into the vessel.

As soon as the divers were all back, we motored to a Creek that was the mouth of the Bacalar Chico River. This was the border

between Belize, and we were searching for Manatees (*Trichechus*). We chugged gently into the mangroves before switching off and drifting in the muddy water. We were unlucky and ran out of time, but it was a great excuse for some peace and quiet in the green paradise of a mangrove creek. Paquero started the engines and we motored slowly past a wrecked fishing boat, and on towards the mouth of the river. I wanted to lean over and grab a twig to say that I had a Belizean leaf in my hand, but Captain Paquero had sensibly kept us exactly between the two nations.

"La Policia Belize" he said in Spanish. "Problem".

HOB NA, OUR DEEP AND FINAL DIVE

Vero found us somewhere new to dive every



ABOVE: Colour on the reef at Posa Rica. **OPPOSITE PAGE:** A glimpse of a nurse shark as she passes by along the narrow channel.

day. There were finger reefs, steep walls, or a series of long swimthroughs. We sighted nurse sharks, enormous stingrays, and on one occasion we had an eagle ray play with us for about 10 minutes.

On our final day, I asked Vero if we might dive the site of Hob Na, located 15km north of the dive centre. This was the northernmost of XTC's dive sites. It took about 40 minutes to exit the reef, head north and find the dive site. After the previous few days of green 20m visibility, we were once again mesmerised by the crystal clear deep blue water's of Hob Na. We swam gently as a group towards the Mexican coast until some reef shapes appeared. I pointed to them, and as one, we swam forward and dropped. It would have been easy to hit 70m here, but we stayed at a conservative 34m and hung there. We made our way up to 28m on top of the furthest reef finger. While I was happily photographing

an enormous barrel sponge, a rather large nurse shark shot down the narrow channel between the fingers, right under my nose. I snatched a photograph and then she was gone. She had been resting under some rocks and gave us the stinky eye while she leisurely swam off in search of a place to rest.

The problem with this dive site, was that its most vibrant part was definitely below 25m, where the fish sat in the current. It was also the most colourful and full of sponges. Even by using 32% Nitrox, we ran out of bottom time. We ascended to 16m and ran out of reef, so we ascended to our safety stop and ended the dive.

"Do you want to dive something different?" asked our Captain.

"Sure", Vero replied. So he drove us to a site 5km south of Hob Na.

"Jump in here", he said.

It was quite fun to do a dive that none of us had ever done before.

"Same rules as before" Vero said, "we dive a multi level profile".

We entered the water at Santa Giulia Reef. The dive was similar to Hob Na in that the visibility was excellent. We dived on fingers of reef, hopping from one to another; but the marine life was different in that we had more reef fish. We tried to dive shallow but ran out of reef at 18m and again had to ascend to our safety stop.

After our last dive, we washed our dive gear, hung it up to dry, and had the ubiquitous Margarita in the XTC Café. The strong sun dried our kit very quickly and we packed up for the five hour ride north.





ABOVE L-R: The pyramid in Muyil; The sea was boiling with fish in every nook and cranny; A bull shark seen in the distance.

DISTANT BULL SHARKS IN PLAYA

On this occasion, Luiz did not stop. He simply belted north up the highway until the very small settlement of Muyil. I wanted to see the desolate pyramids in the jungle one more time. A decade had changed a lot. Gravel paths cut through the jungle and now linked the small ruins. The good thing was that there were absolutely no mosquitos. What we did see, were the occasional coach load of scantily clad tourists who took photographs of themselves draped over the pyramids, possibly for Instagram?

We carried on to Playa and checked into the same hotel. Here we were in the hands of Paul Flower, the area manager of Dressel Divers. Dressel Divers is an enormous dive factory, churning hundreds of divers into the water all over the Caribbean every day. The difference between Dressel and Vero's relaxed, but professional style, could not have been more stark. But Dressel Divers worked really well.

We turned up, got briefed, and jumped on a trimaran. We motored out in front of the line

of deluxe hotels and dropped into the water. It was as clear as Hob Na, but this time we stayed at 22m. We were looking for Bull Sharks. We drifted in a strong current between two deep reefs and kept a look out both left and right. After 10 minutes, a bull shark appeared far below us. 10 minutes later, a much larger example swam lazily over the reef and right underneath us, giving us an excellent if not slightly distant (10m) view of this magnificent creature. Towards the end of the dive, a final shark chased around the top of the reef, but the dark silhouette over dark coral was hard to see. We surfaced completely energised by seeing Bull Sharks for the first time. I was not too disappointed that we had not seen 20 of them.

Our second dive was a 16m sandy reef dive. I expected the worst, but was blown away by the sheer number of snappers and wrasses. Under every overhang, the sea was literally boiling with fish. We did not miss the barracuda of Xcalak as we had so much else to see. I was quite taken aback by how rich the marine life was only a few hundred metres from the bustling town.

FRESH WATER CENOTE DIVING

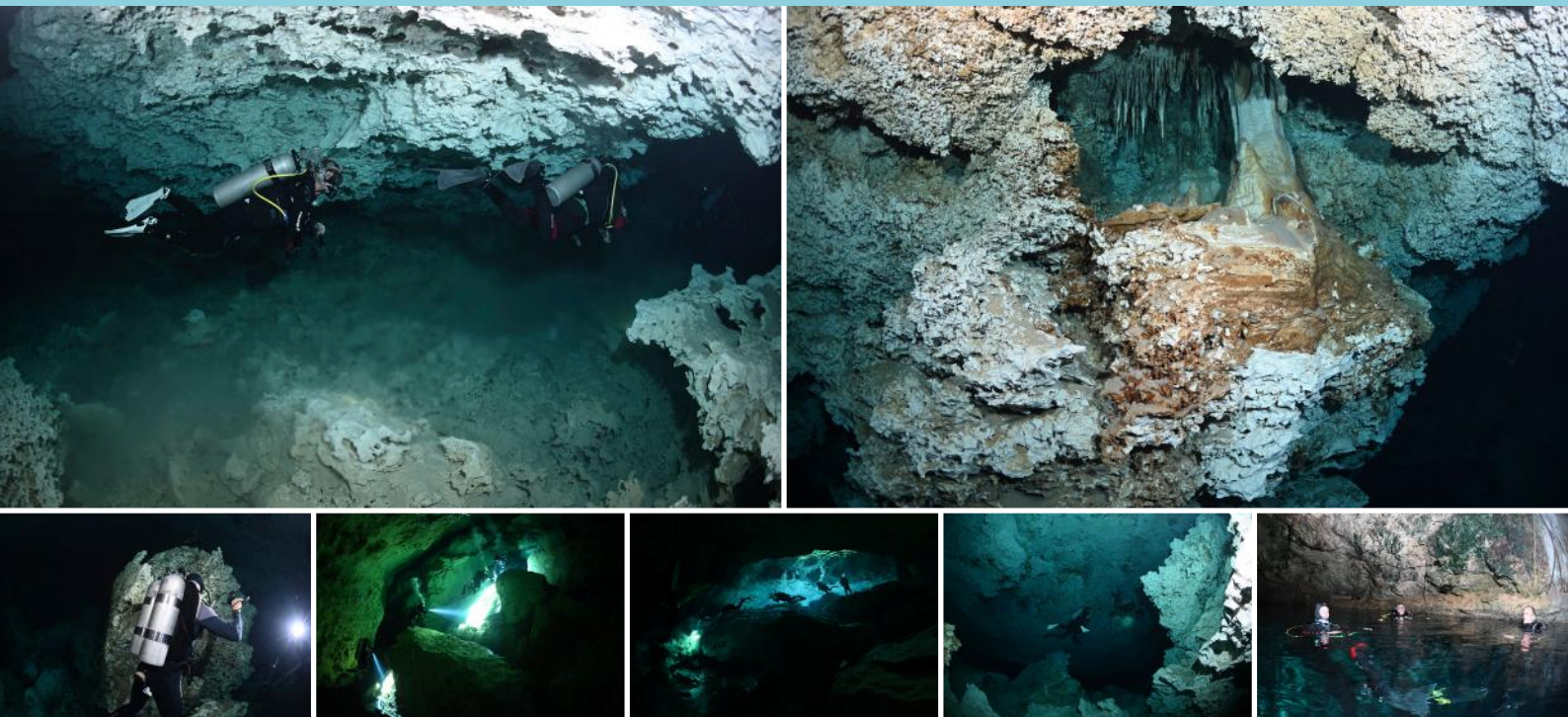
Our final venture was the dives in the Cenotes in the Yucatán Jungle. We assembled at another Dressel Divers facility and were met by a 6ft 4 German Viking. Olaf Fischer had been a technical cave instructor for Dressel Divers for 13 years. He spoke excellent English and Spanish, as well as his native German. Whatever language he was speaking, he spoke deliberately and quietly. After 5 minutes, it was apparent that he had a very dry sense of humour; and we all warmed to him instantly.

For the first time on the trip, we loaded our gear into pickup trucks, climbed in and drove off. Olaf gave us his briefing on the drive.

"I used to be quite claustrophobic", I explained. "I'm much better, but please be aware. Do you want me behind you?"

Olaf looked in his rear view mirror at me, and slowly spoke, "No, go at the back, its easy diving."

During his briefing he said, "anyone can call the dive at any time. You do not have to give me



ABOVE: The spectacular dives of the Yucatan's Cenotes.

a reason. If you do, we all go out, and then the remainder go back in. But if you call the dive, you will not be doing the next one".

Cisca piped up, "Well, at least we know we all fit through the cave systems — as long as we all simply follow you we will all fit, for sure."

Seemingly deep in the jungle, we parked near the entry to the Cenote. These were underwater rivers linked by tunnels where sometimes the sea water ingressed.

We put our equipment together and gently lowered ourselves into the water. We descended down a narrow shaft to 8m. There was absolutely no light except that which was provided by our own torches. I turned around and looked up where I could see the surface and another group of divers descending. We turned left and continued along another narrow channel, perhaps 1.5m high, and 4m wide.

Below us was the permanent line of the cavern system. This was my first time in what felt very much like a cave. I was uncomfortable, and ploughed through my air. I was determined not to end the dive and ruin it for the others, but we seemed to be going deeper and deeper into a series of tunnels. After 10 minutes, the tunnel opened up into a much larger tunnel, 5m high, and 6m wide where I could see other divers ascending to a pool in front of me. Finally, I relaxed. This was indeed not a cave dive, but a series of tunnels linking cenotes of air pockets and pools.

My previous anxiety had however taken a toll on my air. I had chewed through 33% of my gas. I tried to signal to Olaf and explain through hand signals. He calmly took us up into the cenote that I had seen from below.

"I'm fine", I said rather embarrassedly. "I chewed through my air, but I'm fine now. My consumption has dramatically reduced though."

"It's no problem", responded Olaf. "We'll do a quick tour here, and go back".

I was mortified, I had reduced my buddies' half hour dive to a mere 20 minutes, but Olaf knew what he was doing. We swam around the second cenote and he pointed out stalactites before heading back through the tunnel. We took a further 20 minutes to return, and I never finished the second third part of my air. He had read me perfectly. This was also the last problem I had in a cenote.

It is hard to describe Cenote diving. We would do one, come back, change equipment and then do another dive almost immediately. There was no significant depth to worry about decompression. No matter how much like a cave it looked, we were never more than 60 linear metres from escape. This could be 50 metres of tunnel and 10 metres to the surface, or simply 10 metres of cavern and 8 metres up. Sometimes we could see the surface, but for 90% of the dive, it felt like we were in a cave.

The diving itself was a mixture of swimming through narrow passages, where we felt we were moving from A to B, until Olaf pointed out an item of interest. Each diver would then signal the diver behind them what to look at. Then we would enter massive chambers lit up by other divers' lights. Here we would find stalactites, a halocline, fossils caught in the rock stratae, or even catfish. Often we would see other tunnels that led into cave systems. Most cenote dives were "out and back" dives. Olaf took great care to bring us around on a different path within the larger caverns and

point out different objects on the return.

"The fossils I pointed out are around 5 million years old" he said laconically after a dive.

Some of the tunnels had signs saying, 'Do not enter, danger of death.' We were happy enough with our cavern experience and had no desire to go down them. It was made very clear to us that if anyone entered a tunnel that was not on our route, and survived, that would be their last dive with Dressel Divers. There would be no refund.

That night, Paul Flower found time in his incredibly busy schedule to have dinner with us. Francisca and I joined him and his wife Michi in a superb Argentine steak house. In Playa, the greatest issue we had was choosing from all the restaurants. Newly converted and slightly emboldened, I asked him about Cenote diving.

Paul opened up a map of our latest dive on his phone. "If you turn left at the end", Paul pointed at the map, "you enter a cave system and you can swim almost as far as Playa."

"But... that's about 20km?" I said incredulously.

"I've been down that cave system following the line, and eventually my "out gas" has expired, and I've had to turn back."

He paused, sipped his Malbec and thought for a while, "It's really very hard to explain how addictive cave diving really is. Its constant exploration" he concluded.

In spite of my recent conversion, I wasn't so sure I was convinced, but the beauty of the cave systems that even we, as recreational divers were able to access, was quite literally unbelievable.





SHORE DIVING

AT TULAMBEN, BALI, INDONESIA

FEATURE AND PHOTOGRAPHY **GORDON T SMITH**

Shore diving here requires some level of fitness and balance, as well as good hard-soled dive boots. My dive guide “Big Wayan” does not wear dive boots at all, but he’s a local and his feet are like leather.

COVER PHOTO: *Hypselodoris* sp. laying eggs.



ABOVE L-R: Mosaic Boxer Crab with eggs (*Lybia tessilata*); Zanzibar Shrimp (*Dasycares zanzibarica*); Harlequin Shrimp (*Hymenocera elegans*); Long Nose Rock Shrimp (*Leander plumosus*); and Hinge Beak Shrimp (*Rhynchocinetidae* sp.).

After my previous trip to Tulamben in May 2022, I planned to return to Villa Alba once again, COVID and Mt. Agung permitting, with some friends who are also keen muck divers, plus a couple more who expressed interest.

We were eight, which declined to five, then increased again to six as the final number, and it turned out perfectly in the end. The last-minute addition was my main buddy's nephew, who was still a new diver with only around 25 dives, and not a photographer.

Over the course of eight diving days, I witnessed a fairly reasonable open water diver become an excellent one, something you don't see everyday. His aunt was very proud of him.

There are a couple of points that anyone contemplating diving the Tulamben area of Bali, should take into account.

1. Tulamben is around a three-hour drive from Denpasar Airport where all international and domestic travellers arrive and depart.
2. Shore diving here requires some level of fitness and balance, as well as good hard-soled dive boots. My dive guide "Big Wayan" does not wear dive boots at all, but he's a local and his feet are like leather.
3. Tulamben is well away from the "madding crowd" thankfully, no shopping malls etc, so once there, it's peaceful and tranquil, but you have to remember to bring anything you need with you, in particular favourite snacks, etc.

My buddy and I took the Emirates flight direct to Denpasar (DPS) from Dubai (DXB), which is a nine-hour flight, departing at 02:30 from DXB and arriving at 15:30 at DPS.

My previous trip to Bali had been via North Sulawesi back in April/May of this year, and

with the opening up of Indonesia to tourists, there had been several changes to the rules and regulations regarding COVID. Today it's almost back to normal, but there are still some things to take into account, such as vaccination status and the downloading of the Indonesian App "PeduliLindungi" where you have to upload your vaccination certificates.

Fortunately, I had done all of that last March as had one of our group who had accompanied me on my North Sulawesi part of the trip back in April. The others all had their vaccination certificates approved after they returned from Bali.

Bali had just opened up to the world, and the timing of the EK flight was not very good! DPS was extremely busy, with four queues to negotiate:

1. Health Check, where an official had to ensure that you were vaccinated.



ABOVE L-R: Long Arm Octopus (*Abdopus* sp); Frogfish 1 (*Antennarius pictus*); *Wunderpus photogenicus*; Frogfish 2 (*Antennarius pictus*); Ornat Ghost Pipefish (*Solenostomus paradoxus*); Nudibranch (*Eubranchus* sp); Crinoid Shrimp (*Laomenes* sp); and Frogfish (*Antennarius pictus*).

2. Visa on Arrival (VoA), where you paid for your visa
3. Immigration desk, where you had your passport stamped.
4. Then after collecting your bags another queue for customs.

This whole process took around three and a half hours, then we had a three-hour drive to Tulamben still to go.

My buddy's nephew had arrived earlier and had got through in around 30 minutes from a flight via Taiwan, lucky him. The other three of our group had arrived the day before having flown from Melbourne, Australia as well as San Francisco via Jakarta and New York via Singapore. They had stayed in a hotel near the airport overnight and driven up to Tulamben that morning.

We met my buddy's nephew, who had been

patiently waiting in the baggage hall for us and once clear of all officialdom, we met the driver from Villa Alba, where we were staying. The three-hour drive had us arrive at around 10pm, having grabbed some snacks at a petrol station on the way there to sustain us until we had a decent meal at Villa Alba.

After food and a cold brew with the New Yorker, who was the only one of the other three still awake, we crashed out in our respective rooms for a well-deserved sleep.

The next morning, I was up early initially to assemble my camera equipment and sort out my dive gear. Our plan was to meet at 09:00 for the first dive on the house reef, after breakfast of course, which for most of us consisted of banana pancakes, watermelon juice and Balinese coffee, all for the price of \$2.

We had three guides, "Big Wayan", "Small

Wayan", and another guide called, Tama. On day three, my buddy's nephew was given a separate guide, Kamara, and did other dives from the rest of us since he was not taking photographs. Also, he was experimenting with different gear configurations too. Villa Alba is also a tech diving operation, and during the course of the week he doubled his dive count to 50 dives and was using a Back Plate/Wing (BP/W) configuration with a single tank.

For most of the dives, I used my 105mm lens with a +10 wet diopter, but had also changed to use my 60mm lens for a couple of dives. On day seven I had some strobe issues and changed to my back-up strobes that had saved me during my last trip back in May.

In total, I did 22 dives over eight days at the following locations:

1. Villa Alba House Reef
2. Seraya Secrets



ABOVE L-R: *Glossodoris cinta*; *Mexichromis multiberculata*; *Goniobranchus collingwoodi*; Sheep Nudi (*Costosiella* sp); *Mexichromis mariei*; Nudibranch to be identified; Sheep nudi with eggs (*Costosiella* sp); *Mexichromis trilineata* with eggs; *Gymnodoris* sp; Pair of *Costosiella* sp; *Goniobranchus* sp; and *Hypseldoris maridadilus* laying eggs.

3. Pura Gerombong
4. Melasti
5. Bulakan
6. Sidem
7. Liberty Slope
8. Batu Niti
9. Batu Ringi
10. Drop Off

Getting to and from these dives is by a small pick-up truck. Everyone piles into the back with the tanks and gear and off we go. Maximum distance is about a 15 minute drive. The dive gear is then assembled at the dive site, and occasionally carried to the waters' edge by local ladies before we put it on to enter the water. It's a real concierge service.

Melasti generally has a strong current, and this was true for the two dives we did there,

but this is where you are guaranteed "sheep nudis" (*Costosiella* sp) as well as the "donut nudis" (*Doto greenamyri*), and still remains one of my favourite sites along with Bulakan, where the entry/exit is not the easiest, but it's certainly worth it as the critters there can be awesome.

"Muck sticks" prove very useful for anchoring oneself into the black volcanic sand whilst diving in these conditions. Finning whilst trying to photograph some of these critters results in silting out other divers, and the flutter kick is discouraged in favour of the frog kick in order to avoid just that.

The Villa Alba house reef, is not all muck either, and has some good wide-angle photo opportunities. For easier logistics, this is where I did all of my five night dives.

I skipped the USAT Liberty Wreck, preferring to dive the slope next to it, for two reasons:

1. I was only set up for macro.
2. Everyone wants to dive the Liberty Wreck and there were dozens of people there, several of whom appeared to be doing a DSD on the wreck.

The large Bumphead Parrotfish are also gone from this wreck, which is sad. It is rumoured that during the height of the COVID lockdowns, these fish had been caught and used to feed the locals.

Alas, all good things come to an end, and it was time for us to return home. We took some detours on our way to DPS to visit a temple and view the terraced rice fields before arriving at the airport and heading onwards to our respective destinations.



ABOVE L-R: Terraced rice fields; *Phyllidia ocellata*; *Chelidonura hirundinina*; and in the back of the truck heading off to the dive site. **BELOW:** Steamboat dinner.

This was my fifth trip to Bali and my fourth staying at Villa Alba which is situated at the foot of Mt. Agung, a dormant volcano that occasionally causes disruption, but has fortunately not caused any issues since 2017.

Accommodation is limited to 10 rooms at the dive centre, however they do have other accommodation off site.

Meals are very well priced and delicious, although choice may vary depending upon what the local market offers. Highly recommended, are the banana pancakes for breakfast, and if with a group of people, a steamboat night is an absolute must.

I miss the "Salamat Pagi" greeting every morning and look forward to returning again in April/May 2023.





An aerial photograph of the Mauritius coastline. The sky is blue with scattered white clouds. The ocean is a deep blue, with a lighter turquoise area near the shore. In the foreground, a small town with white buildings and green trees is visible. The water is filled with numerous sailboats of various sizes. In the distance, a large, dark, rocky island is visible on the left side of the frame.

MAURITIUS

A SHORT TRIP TO PARADISE

FEATURE AND PHOTOGRAPHY **PHILIPPE LECOMTE** TRANSLATED FROM FRENCH **ALLY LANDES**

The underwater fauna is fantastic, isolated in the middle of the Indian Ocean,
you will encounter a wide variety of fish species.



ABOVE: The rare Lacey Scorpionfish (*Rhinoptera aphanes*). **OPPOSITE PAGE:** There are a number of subjects for macro photography also, such as this striking Pale Dwarfgoby (*Trimma anaima*).

PLANNING THE TRIP

Summer made its annual appearance and my need to travel was strong. After several months of being stuck in isolation due to health reasons, it was finally time to pack my bags for a well-deserved vacation.

With the world finally having opened up again, I did my research into which destinations were low risk concerning Covid and what steps were needed to travel. Although it's a destination I had already visited 6 years prior, I had decided to head back to Mauritius which can easily be reached with a direct flight from Dubai, or a flight from Abu Dhabi via the Seychelles.

It only takes 6.5 hours to fly to Mauritius from Dubai, and it is in the same time zone as the UAE. The island is located in the southern hemisphere, east of Madagascar, in the middle of the Indian Ocean.

There is a very pleasant climate all year round with temperate water temperatures of 25°C and clear visibility in beautiful deep blue waters. The cyclone season is in February-March, but they are very rare.

The east coast sees much more rain than the west coast, and it's windier. The west coast is more protected from showers and the

prevailing winds because the mountains block the clouds.

THE DIVE CENTRE

My previous trip had introduced me to Gerald Rambert. Gerald has been a Professional Underwater Photographer and Instructor for several years with Sun Divers. Originally from Mauritius, the island's seabed hides nothing from him. He is the ideal guide and will explain all the different dive sites' hidden secrets to you. His dive centre is located at the La Pirogue Hotel in Flic en Flac, on the west coast of the island. In front of the dive centre, there are over 20 dive sites, all accessible within a 10-15 minute boat journey.

The dive boat can accommodate up to 14 divers with the options to dive coral reefs, wrecks, caves, and other gigantic arches. The dive sites are varied and done with 2 dives in the morning, and one in the afternoon.

At the end of each dive, the boat returns to the dive centre to enjoy a short break with coffee served on the hotel's white sandy beach. From there, you can contemplate the magnificent landscape of the coast up to Le Morne, a natural site protected by UNESCO. The Sun Dive team is very welcoming, and the atmosphere is always positive. The boat is tied

to the wooden pontoon at the jetty which is just 50m on foot which the team load all the dive gear onto thanks to a small electric vehicle. Boarding the boat is completely hassle-free.

THE DIVES

The underwater fauna is fantastic, isolated in the middle of the Indian Ocean, you will encounter a wide variety of fish species.

I did a lot of my dives at Snake Reef again this year, which I had greatly appreciated during my first visit. Divers, and especially underwater photographers always request to go to this dive site which has a maximum depth of 24m.

This site has an expanse of rocks laying in the middle of the sand. The area is roughly the size of a tennis court. It may seem small, but it will take several dives to discover the entire site.

You will get some incredible encounters of all sizes. Big, medium, small, and very small. The diversity here seems endless! Stingrays are often seen here because of the cleaning station.

Around the rocks, in the faults or on the sand, there are a number of large scorpionfish in position, (Tassled scorpionfish and Poss's scorpionfish) ready to swallow passing prey.







ABOVE & OPPOSITE PAGE: The array of autumnal colours within the different species found at Snake Reef alone is impressive.

From my experiences of diving around the globe, I have never seen such a large population of big scorpion fish in such close proximity.

Several species of lionfish also occupy the site and some are not that common, such as the Twinspot lionfish, Zebra lionfish or the African lionfish.

Be careful here as not all rocks are what they seem! If you look closely, you will also find the Devil scorpionfish, and perhaps Stonefish which are venomous, dangerous, and fatal to humans.

You will also see large numbers of white, yellow, tan or even brown Leaf scorpionfish.

This year, I was fortunate to find 2 species of rare fish I had not seen before which Gerald had told me about. Their presence is quite common at this site but depending on the time of year, this can change. I had come at the right time and Gerald pointed them out to me on our first dive showing their distinct shapes and colours.

These are the Lacey scorpionfish, and the

Weedy scorpionfish which belong to the Rhinopias family. Their species can also vary in colour. The Lacey we saw was purple, and the Weedy was a yellow/brown colour. Their behaviour is very similar to that of scorpionfish. They are quite static, they wait for potential prey, and they have a fairly slow gait.

Besides that, there are various species of shrimps and other crabs, as well as nudibranchs to see. This site is clearly full of life and each visit back here gives you some great surprises every time.

OTHER ACTIVITIES

At the end of the dives, or simply to fill a rest day, there are plenty of other things to do. Mauritius has plenty of sports and tourist activities on offer: Climbing, forest and mountain hikes, waterfall visits, tree climbing, horseback riding, kitesurfing, big game fishing, or even swimming with dolphins are some of the most popular activities.

There are also plenty of sandy beaches to visit which are protected by small lagoons. They are all just as nice as each other, so there are

plenty to choose from.

The island's population is cosmopolitan and there are a wide range of restaurants available which will cater to everyone's tastes.

Mauritians are incredibly helpful and very friendly. They won't hesitate to chat with you in English, Creole, or French.

There are plenty of hotels with various budgets, as well as accommodation rentals. These are very common on the island and easy to come by via various rental websites.

THE CONCLUSION

It is clear that my second visit was just as good as my first. It was such a pleasure to go back and dip my fins in Mauritian waters once again.

SUNDIVERS MAURITIUS

The dive centre is based at La Pirogue Hotel, in Wolmar, Flic en Flac.

Email: sundiversmauritius@gmail.com

www.sundiversmauritius.com

An underwater photograph showing a large, rusted metal structure, likely part of a shipwreck, with a triangular opening. The structure is covered in marine life and algae. The background is a clear blue water.

WE TAKE A DIVE WITH PADI INTO THE **WRECKS** **OF BERMUDA**

FEATURE AND PHOTOGRAPHY **PADI**

There are over 300 sunken ships scattered around Bermuda. Some even date back to the 1600's thanks to Bermuda's extra shallow reefs. With so many shipwrecks to explore, it's easy to see why the Bermuda Triangle has become the stuff of myth.





Are you a thrill-seeker looking for something mesmerising, intriguing, and eerie, then look no further than Bermuda. Found in the North Atlantic Ocean and surrounded by fringing coral reefs, Bermuda already offers fantastic diving for anyone delighted by diverse and stunning aquatic species.

You may already be familiar with strange stories about the Bermuda Triangle – a peculiar region where planes and ships seem to disappear into thin air – but did you know that Bermuda is also known as the Wreck Capital of the Atlantic?

There are over 300 sunken ships scattered around Bermuda. Some even date back to the 1600s thanks to Bermuda's extra shallow reefs. With so many shipwrecks to explore, it's easy to see why the Bermuda Triangle has become the stuff of myth.

8 FUN FACTS ABOUT BERMUDA

1. Strange Weather and Extra Deep Waters

Bermuda is known for all kinds of bizarre natural phenomena. From ultra-extreme weather and uneven seafloors to strong electromagnetic field pulls (ever heard of electronic fog?) and unpredictable rogue waves, it's no wonder there have been so many shipwrecks around the island over the years. At a depth of 27,493 feet, the Bermuda

Triangle is home to the deepest point of the Atlantic Ocean at the Puerto Rico Trench in the Milwaukee Depth.

2. Mysterious Disappearances

The Bermuda Triangle has long been renowned as a creepy spot that pilots and ship captains alike would prefer to avoid. There are countless tales of ships, planes, and submarines that have gone missing without a trace, and while there are over 300 wrecks found on the ocean floor, many disappearances remain a mystery. It's estimated that at least 50 aeroplanes and 20 ships are unaccounted for to this day.

3. Magnetic Anomalies

The Bimini vortex often comes up as an oddity connected to the Bermuda Triangle. It's described as a unique spot where compasses spin, and electronics fail to work properly. Even more strange are reports of dolphins that appear very suddenly and come right up to divers. Some attribute the anomalies to "electronic fog" which is described as an electromagnetic field that appears as a cloud over the ocean, engulfing a ship and causing its electronics to malfunction. While pilots and coast guards have indeed reported uncanny fog in the area, electronic fog remains a supernatural theory that makes the Bermuda Triangle even more mysterious.

4. Fact or Fiction?

The city of Atlantis is a fictional story that originated with Plato about a lost civilization that was wise and powerful. Some of the stranger myths about the Bermuda Triangle suggest that the inexplicable magnetic anomalies found in the area are connected to ancient technologies left behind from Atlantis. Paranormal writer Charles Berlitz brought this idea to life, also suggesting that Atlantis was the cause of the many mysterious disappearances in the Bermuda Triangle.

5. Supernatural Lighting

Dive on the east end of Bermuda and you'll discover the Cathedral site, where a beautiful and ethereal series of coral formations are inhabited by a host of spectacular fish. What makes the Cathedral so special is its vaulted reef structure that creates a natural skylight when you're in the depths of your dive – talk about mood lighting! A single shaft of light through a hole at the top of the reef illuminates the otherwise dark and spooky waters at depths of 55 feet.

6. Surprise Visitors

To the west you'll find Eel Garden, named after garden eels, where the critters will come out as you delve through shallow and deep waters at depths from 30 to 70 feet. Not to worry – although they may startle you, these



eels simply want to wave hello when they pop their heads out from the sand.

7. Shoot Real-Life Monsters

The real monsters in Bermuda aren't the friendly garden eels. Instead, you need to watch out for lionfish, an invasive species in the Atlantic that reproduces quickly (laying up to 2 million eggs a year!) and feeds on small crustaceans and fish. Because they have such an impact on the local ecosystem, lionfish culling is a common practice in Bermuda. You can help in the hunt to take down these real-life monsters with the PADI Bermuda Invasive Lionfish Culler Distinctive Specialty.

8. More Than Shipwrecks Underwater

While Bermuda is famous for the extensive number of shipwrecks scattered around the island, there's more to be found in the deep blue. Divers can also visit the skeleton of a B-50 Bomber that crashed into the watery depths of the Atlantic in 1963. The aeroplane went down after its jet engine exploded and to this day divers can find the remains of bent propellers, wings, and fuselage at a depth of 25 feet.

TOP 7 WRECKS TO DIVE IN BERMUDA

1. The Mary Celestia

Also known as the Mary Celeste, this Civil War-era paddle steamer hit a coral reef and sank to her watery grave 1884. She's known as one of the oldest wrecks in the area and is well-preserved considering: divers can view both her intact paddlewheel and engine, plus her bow, stern, boilers, and anchor. Resting at 55 feet below the surface, a little piece of Mary Celestia made its way above water in 2015 after a few bottles of 150-year-old wine were discovered and delivered to sommeliers for sampling in Charleston, South Carolina.

2. The Cristóbal Colón

This enormous ship is the largest wreck in all of Bermuda. Coming in at a whopping 499 feet long, the Cristóbal Colón was a Spanish luxury liner that crashed into a coral reef off the north shore in 1936. With an abundance of marine life that's settled in and around the wreckage strewn across 100,000 square feet of the sea floor, she's visited by snorkellers and divers alike. Today she can be found at depths of 15 to 60 feet, but she used to peek out the surface of the water when she first sank, up until she was used for target practice in World War II.

3. The Iristo

Only a year after the Cristóbal Colón went down, the Iristo (also known as the Aristo) followed in 1937. The captain of the Norwegian freighter is said to have been startled by the Cristóbal Colón's wreckage, which ultimately led to the Iristo's own untimely fate. He ordered the crew to change course but the Iristo struck a submerged reef and went down too! Her wreckage remains to this day with engine, boilers, and propeller visible amongst spectacular coral.







4. The North Carolina

Check out the North Carolina's ghostly "deadeyes" in rows along her deck railings – the uncanny sailing riggings look just like cartoon skulls. At depths between 25 and 45 feet, she makes for an eerie visit whether taking a shallow dive as a beginner or diving into the deep. Hailing from Liverpool, this 250-foot English iron hull sank on New Year's Day in 1880 when she ran aground southwest of Bermuda. Despite attempts to raise her, she remains in the depths of the sea sitting upright with a collapsed mid-section.

5. The Montana and the Constellation

Get a two-for-one dive in when you visit the Montana and the Constellation which are uniquely stacked on top of each other to the northwest of Bermuda. The Montana wreck dates back to 1863 – the Civil War era blockade runner hit a shallow reef and down she went. The Constellation followed eighty years later in 1943 and some reports state that the Montana's bow took her down! The American cargo ship was carrying building materials and scotch when she went down, so divers can

view stacks of cement bags and glassware when they explore these shallow waters.

6. The Hermes

Explore the outside or inside of Hermes, a freighter that experienced engine trouble and was abandoned by her crew. Built in 1943, the lonely ship was deserted until 1984 when she was acquired by the Bermuda Dive Association and turned into a sunken artificial reef. She's known as a highly photogenic beauty with fantastic visibility. Fully intact with her mast pointing to the surface, Hermes has come a long way from desertion as one of Bermuda's most popular dive sites.

7. The King George

Another lonely ship left to sink to the bottom of the sea, the King George is a large dredger that was built for the Bermuda Government. After arriving on the island in 1911, she served a few years before being towed out to sea and left to sink in 1930 when she was no longer needed for harbour operations. Fully intact and upright, divers can circle her from end to end on the quiet ocean floor.

WRECK DIVER TRAINING

Formal training for wreck diving is especially important for your safety as it involves special procedures, techniques, and equipment. The PADI Wreck Diver Speciality Course covers all the fundamentals and includes 4 scuba dives to give you practice in the open water.

ENROLLING IS SIMPLE: you must be at least 15 years old and have earned your PADI Adventure Diver certification or higher. PADI's wreck dive certification covers the basics, from navigating the inside and outside of a wreck to the appropriate gear you'll need for wreck diving. You'll also learn how to plan and map a wreck site along with special techniques to protect the site's integrity.

You complete your certification after four wreck dives with an instructor, and away you go! Call your local dive centre for more info.

DECOMPRESSION ILLNESS FOLLOWING TWO NITROX DIVES

FEATURE **MARTA MARROCCO, MICHAEL MENDUNO**



THE INCIDENT

A dive instructor who lives in Dubai, in the UAE, made two local dives on nitrox 32%. The first dive was to 30 metres for 37 minutes which included a safety stop. He had a 64-minute surface interval, and then made a second dive to 24 metres for 35 minutes, and again included a safety stop. Three hours later he developed pain in his left shoulder, which felt worse with movement.

The diver had planned to go diving the following day, but was in too much pain and he was unable to dive. He decided that he needed to see a doctor and emailed the DAN Europe Hotline team at emergency@daneurope.org for advice on what he should do.

CASE MANAGEMENT

Shortly after receiving his email, the Hotline team called the diver and put him in touch

with the UAE Diving Medical Officer (DMO), who was also in Dubai. Because the symptoms were relatively minor, and not a clear-cut case of decompression illness (DCI), the DMO wanted to evaluate the diver in person to determine if the pain was a manifestation of decompression sickness.

As a result of the visit, the doctor confirmed the DCI suspicion, and arranged for the diver to be treated at the local chamber. The diver received two chamber treatments and recovered completely. The visit and treatment costs were covered directly by DAN Europe's insurance.

CONCLUSIONS AND LESSONS

Current tables and dive computers are not infallible. Though the use of nitrox can reduce the risk of decompression illness when compared to diving air, it does not eliminate

the risk as the diver learned in this case. Also, it's important to report the onset of any symptoms and seek immediate treatment, versus delaying, as this can greatly improve treatment outcomes.



DAN

AlertDiver

DID WE CONVINCE YOU?

Before leaving, make sure your DAN membership is still active. If it isn't, join DAN or renew your membership at www.daneurope.org.

Your DAN membership ensures the services of the biggest international network for assisting divers anywhere, during any emergency.

UPCOMING EVENTS

REEF CHECK ECODIVER TRAINING

BECOME A CERTIFIED REEF CHECK DIVER

EMAIL: reefcheck@emiratesdiving.com if you would like to receive the next available training dates. Places are limited and on a first come, first served basis.



Reef Check
UNITED ARAB EMIRATES

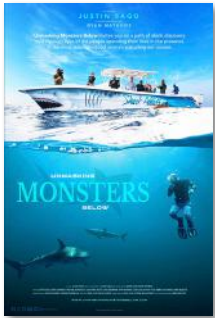
When you join a Reef Check EcoDiver training, you will learn about our local ecosystems and you will be able to participate in our regular survey dives which will help us to understand the threats our corals are facing by providing important data.

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, fieldwork, and an exam.

EDA MOVIE SCREENING

UNMASKING MONSTERS BELOW

Thursday 2nd February 2023 | 84 mins | Deep Dive Dubai | Online Screening Option Available



Unmasking Monsters Below (UMB) is a film that explores a passion for sharks discovered at a very early age by filmmaker Justin Sago. UMB chronicles his journey to Florida and the people along the way that brought him closer to sharks and ultimately, to the terrifying realisation of the troubles these majestic animals face today.

Unmasking Monsters Below invites you along on a path of shark discovery and the truths to the often-misunderstood animals patrolling our oceans. Be compelled to have your mind changed, as Justin joins his travel compadre and fellow filmmaker Ryan Mathews to document the lives of three people at the forefront, spending their days interacting with sharks and doing their part to change the

dreadful future these great animals face. Be prepared to witness the spiritual side of sharks and the incredible life changing impacts they have had on these individuals and others. As the UMB crew explore the waters of the shark capital of the US, they will come face to face with sharks and attempt to unmask the monsters below.

DID YOU KNOW?

TREES & SEAS: UNITING OCEAN AND FOREST



TREES & SEAS

MISSION

We're building a bridge between ocean and forest conservation to emphasise that we are multiple communities that make-up one planet... one environment... and in the end, one global community united in our effort to foster a healthier and more just planet for all.

www.treesandseas.earth



EDA
جمعية الإمارات للغوص
Emirates Diving Association

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MISSION STATEMENT

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

LEGISLATION

EDA is a non-profit NGO registered with the Ministry of Community Development as per the Ministerial Decree No. 149.

The Decree stipulates the following responsibilities for EDA:

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

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If you come across a sick, injured, entangled,
stranded, or dead sea turtle;
please **call the toll-free line**

800TURTLE (800 887853)

and our professionals will provide guidance.

***Do not** attempt to remove anything from the
turtles' carapace. This could harm them even more.*



800TURTLE (800 887853)