Inspiring People to Care About our Oceans Since 1995

DIVERS FOR THE ENVIRONMENT

WWW.EMIRATESDIVING.COM | MAGAZINE | SEPTEMBER 2017 | VOLUME 13 | ISSUE 3

LAGOON OF LOST SHIPS
A RUSTY PILGRIMAGE TO TRUK

MOVIE NIGHTS • **GOUMBOOK'S DROP IT CAMPAIGN** • KIDS CORNER • **REEF CHECK** • TURTLE RELEASES IN 2017 • **THE PEOPLE'S CHOICE AWARDS** • MEXICO'S EAST COAST

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DIVERS FOR THE ENVIRONMENT

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جمعية الإمارات للغوص
Emirates Diving Association

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EDA
جمعية الإمارات للغوص
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REGULARS

NEWS

KIDS CORNER

REEF CHECK

FEATURES

UW PHOTOGRAPHY

DIVING DESTINATIONS

HEALTH

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. It is hoped that the magazine can become 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 of "Divers for the Environment" released in December 2017. Send all articles, feedback or comments to: **magazine@emiratesdiving.com**

COVER

PHOTO BY JESPER KJØLLER
Lagoon of Lost Ships | A Rusty Pilgrimage to Truk

REDUCE REUSE RECYCLE

KIDS CORNER – FONT USED: **DYSLEXIE FONT**

Dyslexie font has developed a typeface especially for people with dyslexia called Dyslexie. People with dyslexia have problems distinguishing some letters. They sometimes turn, mirror and switch letters whilst reading. The Dyslexie typeface targets these problems by altering the shape of the letters so they are clearly different from any other letter. As well as this, the spaces between the letters are improved and capitals and punctuation are bolder so people with dyslexia don't read words or sentences together anymore. Representative research among many dyslexics has now shown that the font actually helps them with reading texts faster and with fewer errors.

EDITOR & DESIGNER

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

THE QUARTERLY CONTRIBUTORS

Meet the regular quarterly magazine contributors who share their passions, interests and the expertise of their fields for our readers. Want to contribute?
Email: **magazine@emiratesdiving.com**

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

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

BRONWYN MACRITCHIE
Bronwyn is a freelance writer, dive master, raw nutritionist and teacher. She is an avid world traveller, scuba diver and underwater photographer whose other interests range from health and fitness to the latest startup trends. **Instagram: Bronwyn MacRitchie Photography @faeriebb**

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**

PATRICK VAN HOESERLANDE
Diving opens up a whole new world. Being a writer-diver and co-editor of the Flemish divers magazine Hippocampus, I personally explore our underwater world and share it through articles with others, divers and non-divers. You'll find a collection of my articles on **www.webdiver.be**

NICO DE CORATO
Blogger, marathon runner, triathlete, divemaster and heli rescue swimmer with Bergamo Scuba Angels. You can check my website **www.dubaiblognetwork.com**, contact me on social networks or email me at admin@dubaiblognetwork.com for information about my articles or just to say hello.

GLOBAL RECOGNITION

IBRAHIM AL-ZU'BI
EDA Executive Director

Welcome to our September issue of 'Divers for the Environment.' I have noticed that some of our members have travelled to some excellent dive destinations this summer including Mexico, Australia, Philippines, and the Dominican Republic amongst others.

Emirates Diving Association (EDA) was established by order of H.H Sheikh Zayed Bin Sultan Al Nahyan, the late President of the United Arab Emirates, under Federal Decree No. (23) Under Article No. (21) on 23/02/1995 registered by the UAE General Authority of Youth & Sports Welfare and chose Dubai as its base. It is my great pleasure to inform you that EDA was recently renewed with one of the most important global recognitions. EDA has been reaccredited by the United Nations Environment Programme (UNEP) as a non-profit global Voluntary Organisation. We are the first diving association in the world to get such accreditation, our commitment to the marine conservation for the last 22 years put us on the forefront of global organisations that promote for sports and the environment. Having had more than 3,000 passionate and dedicated members over our 22 years who appreciate the sea and underwater marine life are key factors in our success and making EDA a hot organisation on the national, regional and international level. Congratulations to all of you, to our leaders and most importantly to our beloved UAE.

I also want to take this opportunity to share with you the role and the objectives of EDA since our launch in 1995:

- To legislate all diving activities in the UAE.
- To ensure environmentally respectful diving practices in both commercial and recreational diving through standardisation of practice.
- To Support the diving industry within the UAE by coordinating the efforts of the diving community.
- To promote and preserve historical aspects of diving within the gulf region, i.e. pearl diving.
- To enhance environmental education to diving and non-diving communities through EDA activities.

Since our establishment in 1995, EDA has been committed to marine conservation and our flagship project, Clean Up Arabia is becoming a platform for scientists, divers and activists to take practical action to protect our coral reefs by studying them, collecting data, raising awareness based on a scientific approach and sharing the results regionally and globally.

EDA's annual 22nd Clean Up Arabia will be starting in November this year in partnership with the UAE Ministry of Climate Change and Environment and the local municipalities, and I am sure you are all excited to join us to ensure we do the best we can to keep our oceans as clean as possible. Looking forward to seeing you all there and a big thank you in advance to all our clean up volunteers and of course, sponsors.

I hope you have all managed to have a diving holiday and explored somewhere new this summer. It's a wonderful world.

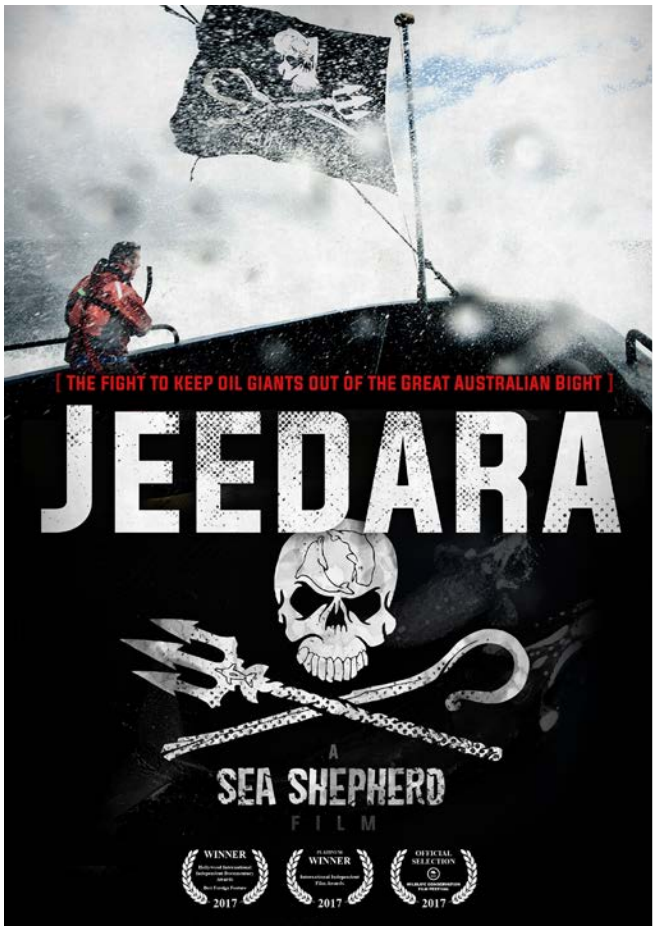
Eid Adha Mubarak to you all, and as always, happy eco diving.

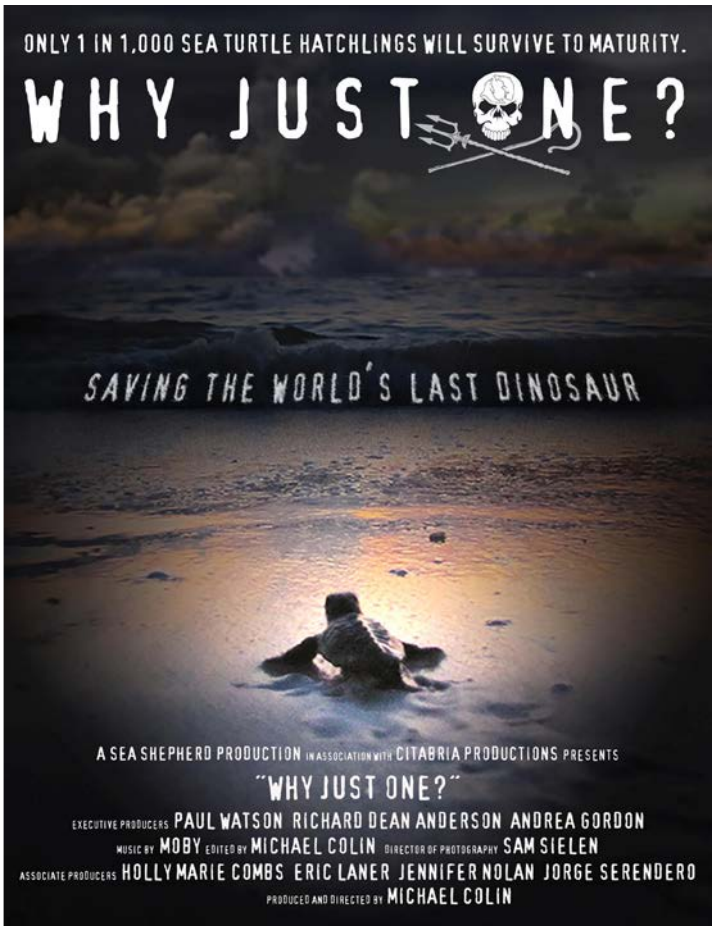
Dive Safe!

Ibrahim Al-Zu'bi

Ibrahim Al-Zu'bi

AN EDA MOVIE NIGHT WITH VOX CINEMAS
OPERATIONS JEEDARA & JAIRO





On the 9th of August, we played two Sea Shepherd documentaries back to back: Operation Jeedara, the fight to keep oil giants out of the Great Australian Bight, and Operation Jairo: Why Just One, about turtle conservation in Costa Rica. All our movie screenings are played in partnership with VOX Cinemas, Mercato Mall for our EDA Members.

Natalie Banks introduced the projects and was available for any questions had at the end of both screenings. Natalie had worked on Operation Jeedara, and had written an article about the project for the June magazine issue. She currently represents Sea Shepherd Dubai.

FILM SYNOPSES

OPERATION JEEDARA: JEEDARA

A 50 minute documentary examining the consequences if BP were allowed to bring their largest oil rig into the Great Australian Bight to undertake exploratory oil drilling. It asserts that it will not be a question of if there is a spill, but when.

Any damage from an oil spill would be irreversible and with the Great Australian Bight home to the world's largest Southern Right Whale nursery and many other marine animals, this documentary questions whether the potential for oil is worth the risk in this pristine area.

Operation Jeedara documents the journey of conservation group Sea Shepherd's ship The MV Steve Irwin on campaign to film and document the beauty of the Great Australian Bight.

OPERATION JAIRO: WHY JUST ONE?

Features the story of Jairo Mora Sandoval, the sea turtle conservationist that was murdered in May 2013 in Costa Rica while working to protect leatherback turtles. A gripping documentary that explores the plight of endangered sea turtles, with particular focus on efforts by the Sea Shepherd Conservation Society to protect threatened species of sea turtles in Costa Rica from poachers.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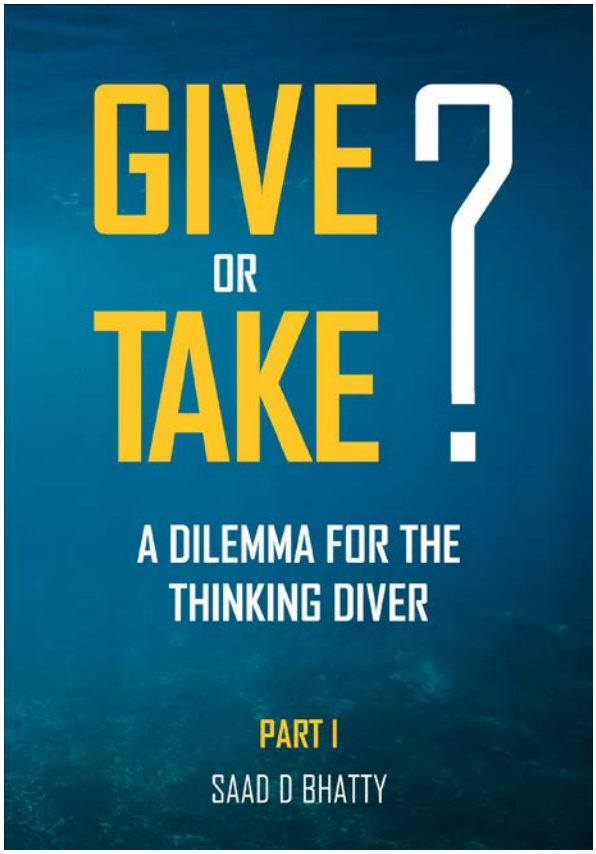
BOOK REVIEW: **GIVE OR TAKE?**



Don't let the unassuming title fool you; like the surface of a placid lake it only hints at the depths below. As you start turning the pages it becomes obvious why this book must be so understated. "Give or Take?" focuses upon scuba diving's most controversial, divisive and enduring argument: Which is the best protocol for emergency air-sharing?

The author had to navigate along a tricky path, neither inflaming the debate nor sugarcoating the truth. He also had to simplify underlying technicalities so less experienced divers can also understand the dilemma. A fairly daunting agenda and yet Saad D Bhatty seems to have thrived on the challenge. The book is quite an enjoyable read, offering a ringside seat as air-sharing protocols slug it out against the harsh backdrop of out-of-air realities.

OOA emergencies are fortunately uncommon, but one of the first things new divers learn is how to share air with a buddy. This is where it becomes complicated. Not only are there different ways to share, but opinions (on which approach is best and why) remain divided. On the one hand, we have "Primary Give" where the donor gives his/her primary regulator to the OOA diver. On the other hand we have "Secondary Take" where the OOA diver takes the donor's secondary. This choice is generally misunderstood and sometimes misrepresented, further complicating the debate.

"Give or Take?" examines things from all angles. It explores the intricacies of out-of-air emergencies, air-sharing protocols and the dilemma which confronts thinking divers – from novices who have just taken up the sport, to experienced divers who have been enjoying it for years. Along the way Saad offers several original insights which will help to enrich scuba diving knowledge and diver opinion at a universal level. His "12 Dimensions" for example, is a uniquely simple yet highly useful comparison of both protocols across a range of critical aspects.

Written as an engaging discussion spread over five chapters, the book is replete with photographs, illustrations and the author's own sidebar commentary which make the journey enjoyable and even entertaining. "Give or Take?" doesn't claim to have all the answers, but it will definitely give you lots to think about. And who knows, it may just save your life one day.

Give or Take?
The 12 Dimensions

	Primary Give	*Secondary Take*
1. Condition	working DV	unused DV
2. Control	donor	OOA diver
3. Deployment	single action	multiple steps
4. Environment	any	non-overhead
5. Familiarity	donor	OOA diver
6. Location	fixed	widely variable
7. Orientation	flexible	upright
8. Speed	faster	slower
9. Streamlining	effective	problematic
10. Toxicity	protected	at risk
11. Transfer	one hand	both hands
12. Visibility	desirable	essential

There is a lot more to air-sharing than meets the eye. Here are 12 different ways to look at it.

"Primary Give" uses primary and secondary DVs. Secondary is worn on a necklace under the chin. When required, donor gives primary to OOA diver and switches to secondary.

"Secondary Take" uses a designated AS which is coloured yellow and located within the golden triangle. When required, OOA diver takes AS by removing it from donor's stowage.

WHERE TO BUY A COPY:

- Available in the UAE exclusively at Al Boom Diving (Al Aqah, Al Wasl and Al Quoz).
- Available online at Narked at 90 (**www.narkedat90.com**) and also on Amazon websites (US, UK & Europe).
- For reviews and links, check out the official site **www.somewhatsalty.com**.

(Images/captions © Saad D Bhatty)

DIVERS DOWN ANNOUNCE NEW PADI COURSE DIRECTOR

Divers Down, one of the leading scuba diving centres in the UAE, is pleased to announce Michela Colella's appointment as their new Course Director. Michela will cooperate with Dave Griffiths, our long time experienced Course Director, in offering the best PADI professional training in the UAE.

Michela joined Divers Down in July 2016 as Operations Manager and PADI Master Instructor, overseeing the running of the busy centre in Dhadna in Fujairah. She completed the Course Director Development Course in July in the Dominican Republic, overseen by the greatest personalities within the PADI industry.

Michela's appointment as Course Director complements Divers Down's position as the pre-eminent five-star PADI Career Development Centre in the United Arab Emirates. Her skills will augment Diver Down's experienced and professional PADI-trained instructors and support staff.

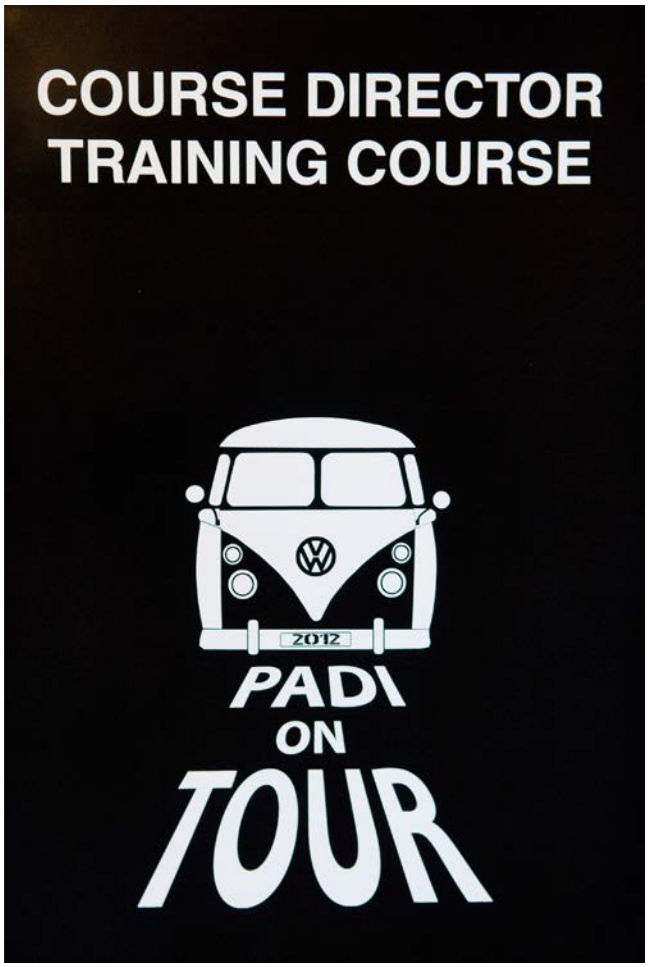
Michela, who has previously worked in Italy, Cambodia, Malaysia, Oman and Egypt, said, "Becoming a Course Director is a personal ambition achieved and I am looking forward to using my new skills to expand divers knowledge and ability. I am also wiling to bring my passion about the marine environment and lead the new instructors to teach the importance of conservation to new divers. My goal is to positively influence the program and the quality of the instructor experience by focusing on approach and ability."

Dave Griffith, director of Divers Down, said, "We are thrilled to be able to build on Michela's experience and skills to offer divers a role model in the diving industry."

Divers Down is open 365 days-a-year and runs three dives daily. It is also the leading tec-rec provider in the Emirates.

For more information, contact 050 553 1688 or visit **www.diversdownuae.com**.

THE THRILL OF BECOMING A COURSE DIRECTOR



To turn your back on a traditional four-wall job in favour of a life lived for the ocean is a story common to many PADI professionals. But to then take that new career to its pinnacle is a story as rare, as it is exciting.

Michela Collela and Nicola Liddell, both long-standing PADI professionals with an unparalleled love of the sea, have done exactly that – and so much more.

Italian Michela and Scottish-born Nicola, both found their first careers – logistics and event management, respectively – lacking the excitement, fresh air and fun they longed for and decided to take the plunge. They also longed for personal challenges and the hope of the satisfaction of achieving new goals.

Now living their dreams as instructors in the UAE – Michela at Divers Down CDC and Nicola at THE Dive Centre – were both coincidentally accepted to take part in this year's Course Directors Training Course.

In July 2017, their separate but similar paths took them on a long journey from the UAE, via New York, for the ten day PADI training boot camp in the Dominican Republic.

There they would meet and be taught by the best PADI has to offer. Secretly, they thought, 'Am I up for this challenge? Is this beyond me?'

Michela said, "We were both excited, curious, interested, but overall very nervous. On the first day of our CDTC, we were divided into groups. We were assigned to two different groups, but we didn't really feel it as each evening, we went through the most basic skills or knowledge presentations together. It was as if we were starting everything from scratch and attending our IDC for the first time."

As they worked through the tasks and assignments laid before them, a strong friendship was forged through shared experiences, and the bond that brings divers together – a love of diving.

Michela said, "The long days began at 8:30am and ran until 6pm or 7pm, and that did not include our homework for the next day. Soon enough, our lives revolved around discussing teaching techniques and evaluation discussions. It was fantastic to share different teaching techniques and approaches, and there was so much to learn from 40 other CD candidates. We were so proud to be elected to attend such an amazing programme. The last few days of the course went by in the blink of an eye. There was much to do and much to prepare. Before we knew it, we were celebrating our achievement as new Course Directors."

Michela and Nicola are now back in the UAE, stronger and more confident than ever before – and have never been more excited about teaching people how to teach diving.

GOUMBOOK'S DROP IT CAMPAIGN RAISES AWARENESS ON PLASTIC POLLUTION IN OUR OCEANS

FEATURE **TATIANA ANTONELLI ABELLA**

Last January 2016, a report released by The Ellen MacArthur Foundation during the World Economic Forum announced that by 2050 it is expected that there will be more plastic waste in the sea than fish.

Following this worrying news, Goumbook, the leading social enterprise promoting sustainable living and green practices in the UAE, decided to launch a nation-wide campaign to minimize plastic bottled water consumption and reduce plastic waste across the UAE, under the patronage of H.H. Sheikh Abdulaziz bin Ali bin Rashid Al Nuaimi, the UAE's "Green Sheikh".

With the UAE having one of the highest consumptions of bottled water per capita in the world, the aim of the campaign is to raise awareness on the implications of consuming plastic bottled water on people's health and the environment versus consuming filtered tap water, as well as tackling the plastic pollution issue in the UAE.

Drop It helps companies to dramatically reduce their plastic consumption in the office by switching to filtered water: the switch allows companies to remove plastic bottles and reduce CO2 emissions but also to make sizeable financial savings, considering that bottled water is at least 1,000 times more expensive than tap water. Ultimately, it also impacts their employees' mindsets, who are also encouraged to install water filters at home, thanks to an educational awareness program organized in-house for all companies by Goumbook.

Recently Goumbook hosted a free movie screening and panel discussion on Plastic Pollution and its impact on marine life in partnership with Jumeirah Group in order to increase the awareness among the local community: the event was officially attended by the Green Sheikh and opened by H.E. Dr. Thani Ahmed Al Zeyoudi, Minister of Climate Change and Environment for the United Arab Emirates, to celebrate Drop it campaign's first anniversary. The campaign already counts many UAE companies as members which have switched to filtered tap water, saving over 225,000 small plastic bottles and 4,400 5-gallon plastic bottles from landfills, and ultimately, from the oceans.

"Plastic bottle consumption is 82% higher in the UAE than the rest of the world and drinking water solely from plastic containers can disrupt hormones or expose individuals to more bacterial contamination. We also want to reinforce the high quality of tap water in the UAE, and remind the community that local bottled water is typically filtered tap water, and not mineral water." said Tatiana Antonelli Abella, founder and MD of Goumbook. "As we celebrate our first year, we decided to bring the topic of plastic pollution in our oceans into focus, with a free movie screening of "A Plastic Ocean" with the support of key partners including all our members as well as Jumeirah Group, the Emirates Wildlife Society (EWS-WWF), Emirates Diving Association (EDA), Surge for Water and all our filtration solutions partners."

Plastic use increased twenty-fold over the past 50 years and is expected to double again in the next 20 years. Worldwide, only 14% of plastic packaging is collected for recycling, and about 8 million tons a year leak into the ocean, which compares to one garbage truck dropping its contents every minute.
(World Economic Forum, The new plastics economy, Rethinking the future of plastics, January 2016)

"It is high time for our community to realize that the plastic pollution threat is immediate and imminent, and that we have to urgently re-think and reduce single-use plastic consumption. If you wish to take action, get in touch with us through **www.dropit.ae** and help us make a real difference" added Mrs. Antonelli Abella.

Goumbook is planning to launch Drop It Youth this coming October and hopes to see many students involved and engaged in saving the oceans and their environment for a better future.

Website: www.goumbook.com
Instagram: @goumbook
Facebook: www.facebook.com/Goumbook

PROTECTING OUR REEFS

AL MARSA AND SCUBA STEVE CLEAN UP TRIP 2017

FEATURE **STEVE WOOD – PADI IDC STAFF INSTRUCTOR 636859** PHOTOGRAPHY **CAROLINE CARR**

Andy, Chris and Tariq removing fishing nets on Ras Lima.

This huge, old net on Ras Lima had to be cut from the rocks and corals.

The 11th-12th of August saw our third joint effort with Al Marsa Travel and Tourism to complete a weekend of dive site clean up work in the Musandam. The divers who took part worked tirelessly over the 2 days to collect an impressive 97kg of old fishing nets, ropes, lines and general litter from some of the most dived sites in the peninsula, despite rough seas, which meant a lot of surge in the shallows and limited visibility.

Once again the Al Marsa team supported us by providing the Dhow completely free of charge for the weekend which encourages divers to sign up for what is a weekend of hard, but very rewarding work. 11 divers set out on Friday morning from Dibba to complete 4 dives.

We focused on sites dived more regularly, that see a higher level of boat traffic – as we have done in previous years. This year we targeted The Caves, Ras Lima, Lima Rock (North) and Ras Hamra.

I have mentioned before that the Musandam is generally very clean and the sites we visit are in extremely good condition. This remains the case, and the coral is very healthy with large fish populations. But we can always do more to help protect the reefs and fish we enjoy diving with. The main issue, is old fishing nets and ropes which take years to degrade and can drag against rocks and coral causing irrevocable damage, as well as trapping fish, shellfish such as slipper lobster, crabs etc. and most distressing of all, the occasional turtle. The local fishermen need to make their living and we should respect them at all times, so we never remove live nets or damage fish cages, for example. But as divers, we can go below the waves and remove those old nets, cut ropes away and clear monofilament fishing line.

Once on board the Red Dhow, all divers were fully briefed on what to remove and what should be left alone. They were kitted out with knives and cutting tools, collecting bags and gloves. We planned how we would conduct the dives and who would collect, who would gather and who would handle the collecting bags, etc. Lift bags were deployed to bring the bags to the surface where they could be collected by the speedboat providing surface support.

On day one, we undertook clean up dives on The Caves and Ras Lima. The biggest task was on Ras Lima where we had already been advised of a large net draped across the rocks. It was huge, at least 20 metres wide, 10 metres from top to bottom and at a depth of around 16 metres. Cutting it away from the rock, removing the floats and weights, and then tying it up so we could send it to the surface took the majority of our time underwater. The underwater high fives and shouts through regulators as the lift bags took it to the surface showed we all felt a sense of achievement.

On Day two we dived Lima Rock North and recovered more ropes and lines. As the weather was getting worse and the waves increased, we took the decision to go to a shallow site at Ras Hamra for our final dive. This site isn't dived often but is fished a lot so we reasoned that there would be enough to keep us busy. That proved to be true with lots of old nets and ropes across the reef. It also turned out to be a stunning site, the hard corals are in pristine condition, masses of fish life and we were lucky enough to be joined by a large guitar shark, eagle and mobula ray! Not a bad way to end the weekend and certainly a site we will add for future trips.

On surveying the piles of rubbish back up on the speed boat, we estimated to have collected an excess of 97kg of rubbish.

Once again the clean up had been a great success with all the divers feeling they have contributed something towards keeping the Musandam beautiful. Many thanks to all the divers who worked so hard and collected so much. You should all be very proud of your efforts: Andy Jones, Chelsea Purje, Nicky Barr, Ewan Kubrycht, Vanik Tahmasian, Jamie Hillis, Caroline Carr, Pete Snellgrove, Chris Cannon, and Yvonne Donoghue. And special thanks to Turner Snellgrove who came along and kept us supplied with cups of tea all weekend!

Thanks to Soheir and all the team at Al Marsa for supporting us in being able to run the trip again this year. In particular, we must thank the crew who did a marvellous job in properly disposing of the many bags of rubbish we collected.

We aim to run a similar trip in 2018 and would welcome anyone who would like to join us. In the meantime, why not do your bit for the dive sites we know and love? Carry a mesh bag on your dives, pick up any rubbish you see. If we all bring just one piece of rubbish back from every dive we do, then that makes all the difference in itself.

Steve, Vanik, Pete and Andy bringing the bags up.

NEW MOBILE APP TRANSFORMS ANY SMARTPHONE INTO A TOOL FOR OCEAN PROTECTION

A smartphone app from the environmental organisation Project AWARE® will enable scuba divers around the world to record levels of marine debris now causing increasing problems for wildlife and ocean habitats.

The app is designed to make it easier for scuba divers to register information on the man-made debris they encounter on their dives, building a dataset shared with science and conservation bodies. The app includes a list of common debris items and uses geo-location for quick and easy reporting.

Project AWARE developed the mobile app to support the data submission process for its global underwater marine debris survey Dive Against Debris®, which began in 2011 in an attempt to map the extent of the underwater problem.

Marine debris is defined to include any anthropogenic, manufactured, or processed solid material discarded or washed into the sea. Awareness of the problem of plastic and other pollution of the ocean has risen sharply in recent years, with litter being ingested by marine mammals and seabirds and microplastics now traced in the remotest seas including the deep waters of the Arctic.

Divers are increasingly in the vanguard of the so-called 'citizen scientist' movement working alongside academic bodies to map the scale and extent of marine litter and help governments meet the objectives of the Global Partnership on Marine Litter, which builds on the 2011 Honolulu Strategy and seeks to protect human health and the global environment by the reduction and management of marine debris.

Danna Moore, Project AWARE's Director, Global Operations, "For many people, marine debris is a problem that's out-of-sight, out-of-mind once it enters the marine environment. This is mainly because 70 percent of marine debris that enters the ocean sinks to the sea floor. That's why scuba divers are so critical to this movement – they have the unique ability to bring to the surface what's going on beneath the waves. This app is going to make a huge difference in gathering critically-needed data to reveal the extent of the global marine debris crisis for scientists and help conservationists to advocate for change. There is a tide of debris suffocating the ocean. We have to reverse it."

KEY FACTS ABOUT MARINE DEBRIS:

All seven sea turtle species, over half marine mammal species and almost two-thirds of all seabird species, have been found to have ingested or become entangled in marine debris. In 2016 alone, divers reported 1,624 entangled marine animals during Dive Against Debris® surveys.

More than 500 marine and coastal species are affected by ingestion of, or entanglement in marine debris, which includes the effects of ghost fishing.
(Source: Marine Debris: Understanding, Preventing and Mitigating the Significant Adverse Impacts on Marine and Coastal Biodiversity. Technical Series No.83. Secretariat of the Convention on Biological Diversity, Montreal.)

Abandoned, lost or otherwise discarded fishing gear (known as 'ghost gear') in the oceans contributes to around 10 percent of global marine litter.
(Source UNEP Regional Seas Reports and Studies, No. 185; FAO Fisheries and Aquaculture Technical Paper, No. 523. Rome, UNEP/FAO. 2009.)

Globally annual plastic production has boomed from 1.7 million tons in 1950 to almost 300 million tons today.
(Source: PlasticsEurope 2014. Plastics – The Facts 2014: An Analysis of European Plastics Production, Demand and Waste Data)

Project AWARE works with organisations and marine debris like the Global Ghost Gear Initiative, focused on lost or abandoned fishing gear, and Trash Free Seas® Alliance , to establish solutions to stop marine debris at its source.

HOW THE APP WORKS:

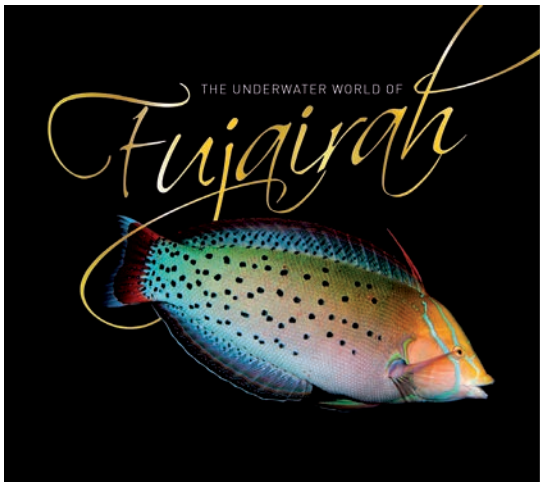
- After the dive, divers simply report all the debris items removed along with the dive conditions and any photos.
- The dive site's latitude and longitude can easily be added using information from the mobile device.
- No data connection? No problem. The app will store divers' data as a draft for submission once connection is resumed.
- Data becomes part of a global dataset to help drive long-term change and address the global marine debris crisis.
- Through the App, divers are also encouraged to report debris free dive sites.

The free Dive Against Debris® App is available now for iOS and Android devices from the App Store or Google Play. For more information visit:
www.projectaware.org

THE UNDERWATER WORLD OF FUJAIRAH

Whether a Regular East Coast Diver or a First, Discover this Must Read about Fujairah's Marine Life

FEATURE **NICO DE CORATO – ADMINISTRATOR OF DUBAIBLOG**



After one of my usual dives in Khorfakkan, before heading back to Dubai, I stopped for a coffee to say hello to my friend Major Ahmed Ebrahiem – Managing Director of the Fujairah International Marine Club. It was a few days before Ramadan starting and I had a gift for him: a copy of the book I had just published (Dialetto Emiratino, an Italian-Emirati phrase book). He in turn, had two books for me. The first, 'Focus on Fujairah: Through Minie's Lens 1964-2001' is a photography book documenting the creation of the Fujairah Maternity Hospital, built by Wilhelmina van de Weg, daily life and her travels on the East Coast. The second, 'The Underwater World of Fujairah' whose publication has been possible thanks to His Highness Sheikh Mohammed Bin Hamad Mohammed Al Sharqi, the Crown Prince of Fujairah who shares the richness of Fujairah's underwater world.

Fujairah is characterised by a mountainous landscape; agriculture and fishing were the traditional main activities, although nowadays the economy is based on different fundamentals. During the past few decades, due to the improvements of road and communication networks of this Emirate, the underwater world has become a popular tourist attraction especially for divers.

Those who love tropical seas and seeing all sorts of incredible marine creatures with their strange forms and bright colours, coexisting within the various corals and sandy bottoms, should not miss out reading this book. It will introduce you to the main attractions of the underwater world in this Emirate.

It has an elegant black paperback cover with dust-jacket and contains magnificent illustrations of the most important fish and beautiful underwater photography of the local marine life. In the book introduction, His Highness expresses his concerns about the fragility of this ecosystem and how it can easily be damaged by human interaction. He strongly urges for protecting this precious environment by keeping it as clean and healthy as possible for the next generations to enjoy.

The book is divided into six parts: sharks and rays, fish, moray eels, corals and starfish, nudibranches, and critters of the sea. The photography is by self-taught Underwater Photographer and SSI Instructor, Werner Thiele who has won numerous prestigious international awards including the World Championship in Underwater Photography (category: wide-angle with model) in 2005, before he became an esteemed guest juror. His very first love was a Nikonos III with a 35mm lens – today he uses a Nikon D4.

In the book's first part, there is a comment by HH Sheikh Mohammed Al Sharqi who considers sharks and rays the gracious emperors of the oceans and not mans' enemies. "It is a good sign that such creatures still survive in Fujairah since there are no fishing industries that catch sharks. Sharks are not to be considered enemies of humans but it is true of the opposite".

The sharp and bright illustrations, and the notes and captions on each page of this book are a precious guide for the classification and recognition of underwater creatures. Special attention has been given to small fish species living only in Arabian waters and in particular in Fujairah, such as the Reticulated Leather Jacket that can be seen in different dive spots, especially those with sandy beds and also on top of wrecks.

For other small creatures such as the Scorpionfish, it is quite difficult to spot them underwater due to their camouflage abilities. They live in depths ranging between 1 to 40 metres. The Tassled Scorpionfish is carnivorous and usually lies in wait on stones for smaller fish to pass at an opportune moment.

Goatfish contribute to maintaining the balance of the ecosystem and are found mainly in muddy or sandy habitats, close to coral reefs. They are characterised by a pair of chin barbels which contain chemosensory organs and are used to probe the sand or holes in the reef for food. They feed on invertebrates living in the lowest part of the water (benthic zone), by stirring the sand with their barbels.

There are other smaller species of fish such as Pipefish which are quite similar to seahorses. They have been reported as friendly and sociable fish which make them easy to photograph.

The most beautiful fish contemplated in this book are the Arabian Angelfish which live exclusively in the Arabian waters and can easily be seen in Fujairah. The Emperor Angelfish is distinguished for its dynamic and bright colours.

The fourth part of the book focuses on the importance of coral reefs and the risk they are exposed to such as pollution, the increase of water temperatures and improper human activities. There is also some very important and useful information for those involved in Reef Check activities.

I went through the entire book in an evening, admiring its magnificent collection of photography and enjoyed reading the rich information shared on Fujairah's marine life, the beauty and incredible biodiversity present. I actually planned a dive trip the next day to finally put a name on all the creatures I am used to seeing underwater when I'm there.

This book is a must read for all divers and sea lovers.

NAUI DIVERS ACROSS THE GLOBE
Promote Environmental Awareness and Conservation


Sarasota


Brazil

Middle East

NAUI Divers Across the Globe Promote Environmental Awareness and Conservation

Tampa, Fla., (June 8, 2017) – As the leader of "Dive Safety Through Education," the National Association of Underwater Instructors (NAUI Worldwide) and the community dedicated to the NAUI Green Diver Initiative (GDI) are working diligently to empower individuals to preserve and conserve the ocean planet.

"The end of April 22 did not signify the end of Earth Day projects and celebrations for NAUI divers," said NAUI Communications Coordinator Angie Cowan. "It marked only the continuation of our global efforts to sustain the aquatic resources that we, as divers, enjoy and appreciate so much."

Since late April, NAUI divers have been organising events that would soon lead up to and introduce June's "World Environment Day" and "World Oceans Day" awareness campaigns. In recognition of these campaigns, NAUI divers across the world are making an impact by acting, as well as encouraging people to get outdoors and embrace nature.

"The theme of this year's World Environment Day and World Oceans Day are 'Connecting People to Nature' and 'Our Oceans, Our Future' and what better messages for NAUI to endorse as a worldwide organisation and sharer of this water planet," said Cowan. "As a leader in the scuba industry, NAUI works hard to promote diver education and safety, a mission that includes the protection and conservation of aquatic resources the industry relies upon. Through the engagement and action of our NAUI network, the Green Diver Initiative has become an excellent means to support a range of outreach and conservation projects."

The most recent project took place on June 3 in Sarasota, Florida, as a group of 60 individuals – organised by Scuba Quest and Sarasota Bay Watch and joined by NAUI GDI divers and the Sarasota Police Dive Team – hit the waters with six paddle craft, two jet skis and two police boats to combat marine debris and manage the docks. As a result, about 300 pounds of lead, 42 cast nets, PVC pipe, five dive knives, a gas metre, a transport dolly and countless lures and fishing gear were collected over the weekend during the bay cleanup.

The initiatives over the weekend were not limited to only North America. Over 200 NAUI divers and volunteers in Brazil assembled for its 17th cleanup of the Rio Jundiaí-Mirim river in Jundiaí – State of São Paulo. The river acts as the main supply source of water for the City of Oakland Park. This initiative has increased in recent years, not only in numbers of participants, but with its reduction in the debris removed from the river.

In mid-May, NAUI divers Xtreme Dive Center (XDC) in Zouk Mosbeh, Lebanon, in collaboration with Operation Big Blue Association (OBBA), the Lebanese non-governmental organisation dedicated to protecting and monitoring the coastal and marine environment, performed an underwater cleanup, which resulted in the removal of plastic bags, aluminium, rubber and tires, cloths, foil, nets and other debris. Environmental collaboration for the month of May did not stop there. NAUI divers in Tampa, Florida, with the Tampa Bay Estuary Program, Hillsborough County Soil and Water Conservation District, The Florida Aquarium, Brandon Scuba, and the Center for Open Exploration, joined and removed nearly 100 pounds of plastic festival beads and trinkets and 70 pounds of trash along a stretch of the Bay's Seddon Channel that covered approximately 1,000 feet along and about 75 feet out from the seawall.

Other global efforts include early March's research dives in the Middle East led by NAUI GDI divers in Oman who joined the Ministry of Environment and Climate Affairs and Fisherman Training Institute of Khaboora to collect fish samples for data and research that contribute to marine awareness.

NAUI's community of divers is not only diversified geographically, it is also distinct generationally. "I'm not sure which hits home more: watching preservation efforts come together 'internationally' or watching the dedication pass down to the younger generations," said Cowan.

Earlier this year, a Green Diver Initiative Dive4Change grant was awarded to student divers, who, in celebration of Earth Day in April, used the opportunity to work alongside Costa Rican students for certification in the first part of the Nautical Archaeology Society (NAS) Underwater Archaeology mapping skills course through ECU Maritime Studies while exchanging and establishing ideas for conservation and environmental projects for the future. The youth divers also participated in an artificial reef survey course, a new Discovery Deep citizen science program. Both courses were conducted at Rum Runner Dive Shop, a GDI dive partner, a NAUI dive shop, and site of the Pitt County Youth Scuba Club. A new initiative of the Club is the "Keep Your Bottom Clean" project. The youth have researched and presented their project ideas for underwater cleanups, including a reusable bag that can be clipped to a BC for easy use underwater.

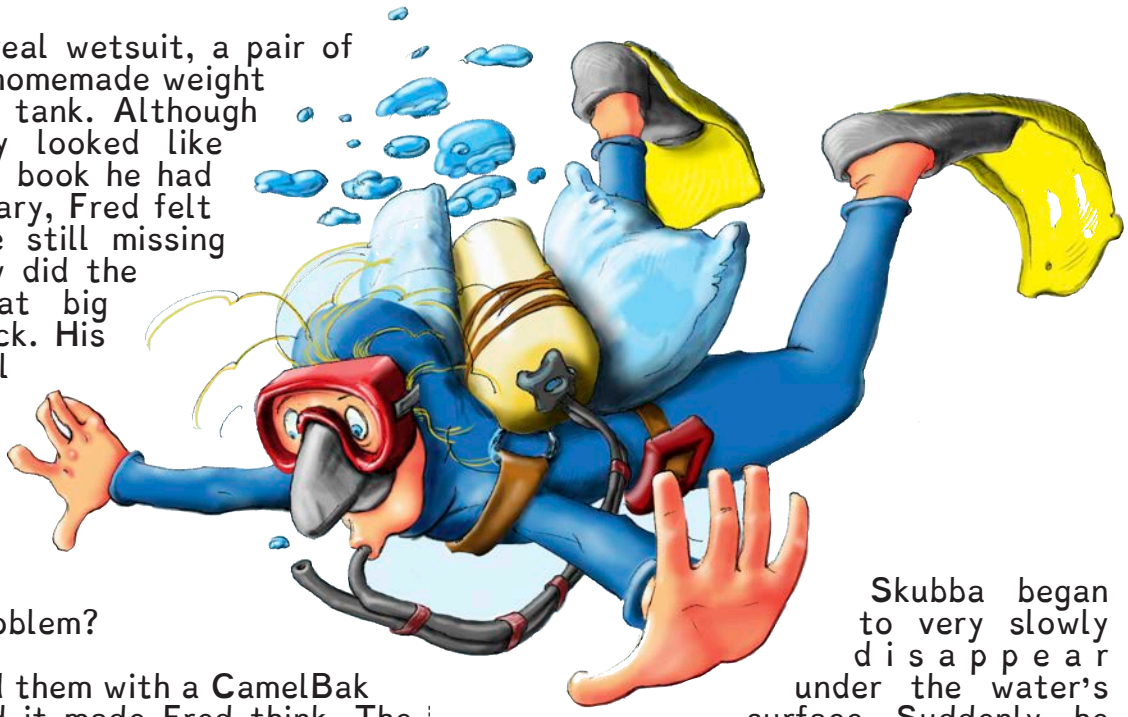
NAUI challenges stakeholders across the industry to take action to protect and preserve our shared global water resources. Getting Started is Easy. Simply download our Dive4Change Tool-Kit: **https://goo.gl/d2FEKy**.

By supporting GDI with your Dive4Change event, you are providing essential resources for GDI to support programs like the new Dive4Change Grant Program.

Remember, a healthy and vibrant environment is vital for the long-term sustainability of the diving industry. For more information, visit **www.naui.org** and **www.nauigreendiver.org**. If you would like to contribute to the GDI Dive4Change grant program, visit: **www.nauigreendiver.org/dive4change-grant.html**.

REAL DIVERS

STORY BY PATRICK VAN HOESERLANDE ILLUSTRATION PETER BOSTEELS



Skubba had a real wetsuit, a pair of fins, a mask, a homemade weight belt and an air tank. Although Skubba already looked like the diver in the book he had seen in the library, Fred felt that they were still missing something. Why did the diver have that big thing on his back. His friend had all the things the diver in the illustration had except that. Could this be the last solution to Skubba's problem?

A runner passed them with a CamelBak on his back and it made Fred think. The runner could drink through a tube. You could also blow air through the tube if you wanted to. If Skubba could blow air into the bag while underwater, he would ascend. If Skubba could blow enough air into it, he would not sink into the mud, but float above it.

There was only one thing to do and that was to try it. Fred took his father's CamelBak and fixed it on the tank's belt. With a strong tape found in the toolbox, he secured the CamelBak's hose to the one coming from the tank. That way Skubba would easily be able to switch between breathing from the tank and blowing air into the bag.

If this worked, Skubba would have everything he needed to be a Scuba diver. The boys could not get to the waterfront fast enough. Today Skubba would be a real diver. It was as if they had almost reached the end of a long journey. They were close to the point of seeing the finish line.

Skubba rapidly got dressed while Fred got the rest of the material ready. With his suit donned, fins on his feet, weight belt fitted and the tank's belt over his shoulder, Skubba waddled into the lake until the water had reached his hip. Fred then handed him his mask.

Skubba began to very slowly disappear under the water's surface. Suddenly, he popped back up to the surface.

"There's too much air in the bag and I can't sink!" he yelled.

Fred suggested to inflate the bag above the water and to let the air out bit by bit as he went down. Once he started to sink, he had to wait until he reached the bottom. There he had to blow a little bit of air into the bag. And a bit more, until he began to float off the bottom's surface. Skubba dove again. Fred had heard the hissing from the hose and had seen his friend sink to the bottom. Skubba did not return to the surface this time. It seemed to be working.

Fred became more and more nervous. Skubba stayed away longer than expected. Fred occasionally saw a few bubbles emerge. His friend was diving! He saw that Skubba was swimming quite quickly because of the long distance between the bubbles breaking the surface. It had worked!

His hopes had been confirmed when Skubba surfaced and told him that he had done a real dive. He had managed to blow enough air into the CamelBak so that he hovered above the bottom. He could follow fish. Fred jumped with joy at their success!

THE ENCOUNTER

STORY BY PATRICK VAN HOESERLANDE ILLUSTRATION PETER BOSTEELS

They spent days and weeks at the waterfront. Skubba spent all his time in the water and Fred at the side of the lake. Skubba tried everything they made, while Fred pondered on the problems and found their solutions.

Then one fine day Skubba was busy sorting his hoses when he noticed a few oddly dressed people. Although they were not far away, he had only just noticed them. It took him a while before he realised that they were divers. Real divers!

And there were more of them. They all wore a slick black suit and most of them had a big bottle strapped to their backs. Some stood with their feet in the water, while others were walking towards it.

Then he saw air bubbles breaking the surface in front of two divers with their feet in the water. The bubbles grew larger and larger.

And suddenly...there were two heads piercing the surface. Divers!

He stopped breathing and felt his heart skip a beat. With his eyes wide open, he stared at them, in their suits, their masks, the large bottle with hoses on their backs, their...

He gathered all his courage and decided to go over to talk to them. When he was nearer the group, he saw that Fred was already talking with one of two divers. One was a woman in full diving gear. Her name was Nella.

Skubba and Fred hung onto every word the diver said. They asked so many questions and she was able to answer all of them.

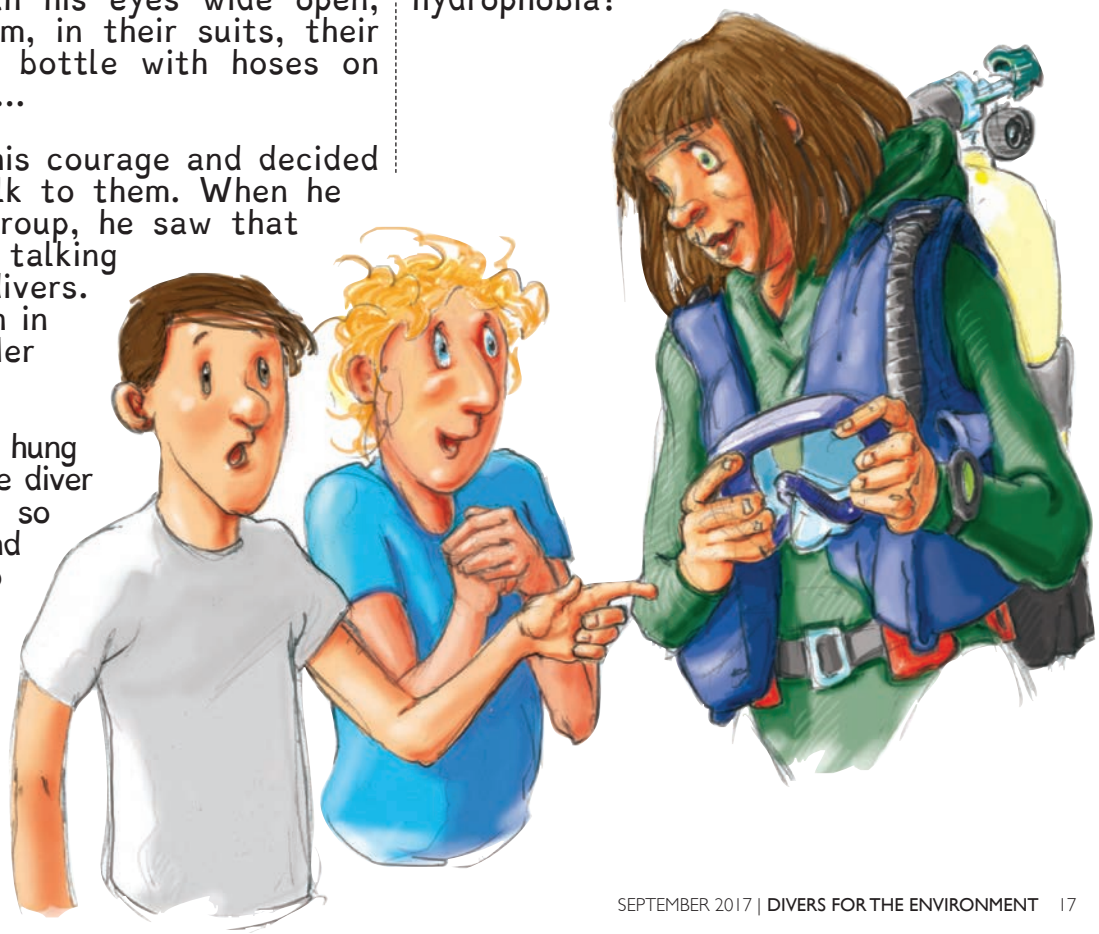
"How did you learn to dive?", "Where do you go to dive?", "What age must you be to start diving?" And so on and so on.

She invited them to come to a pool training and have a look at some of the junior diving courses. Being older than 8, they could learn to dive like real divers. They noticed that the other diver was a girl about their age!

Fred had once told Skubba about junior divers, but Skubba had not believed him. Standing next to them now was a real junior diver to prove it and they were invited to try a course. Skubba could become a real diver. His dreams of underwater adventures could come true! Very soon!

In all his excitement, he couldn't utter another word. Fortunately, Fred wasn't speechless. He took a piece of paper and wrote when and where they needed to be. They were allowed to join the junior divers a couple of times during practice to see if they liked it. Or not.

Skubba was already convinced. This was what he had always wished for. He would love it! But Fred hesitated. He suffered from hydrophobia!



LOCAL REEF CHECK GROUPS ESTABLISHED IN MALDIVES AND OMAN

BY **BIOSPHERE EXPEDITIONS**


Euro Divers and Reef Check Oman.


Community divers in action on a reef near Muscat.


Jenan


Rafil


Maldives

Maldivians are now establishing a local NGO Reef Check Maldives, giving their reefs the science-based care they desperately need. Since 2010 award-winning, international conservation organization Biosphere Expeditions, together with the Marine Conservation Society, Reef Check, LaMer, Carpe Diem Maldives and the Rufford Foundation, have been training Maldivians in reef survey techniques. This has already resulted in community-based surveys in Velassaru and Dhigurah, as well as community education efforts. But now Maldivians, spearheaded by Rafil Mohamed and Ibrahim Shameel, have taken the next step.

"I was trained by Biosphere Expeditions in 2012 and 2014 to Reef Check EcoDiver Trainer level and also hold a Masters in Marketing from the University of Sydney," reports Mohamed. "But my real passion is the sea, and especially our Maldivian reefs. We all know they are under threat from climate change and rampant development. And it often seems our reefs have no voice, despite being the basis of our country, culture and livelihood. We need more Maldivians speaking for our reefs and if I can do this, it will be an honour."

Dr. Matthias Hammer, Founder and Executive Director of Biosphere Expeditions, adds, "This is exactly what we need – local people surveying their own reefs and supporting government efforts so that the natural beauty of the Maldives can be better protected and passed down to the next generations, as well as safeguarding livelihoods and traditions, like those of fishermen."

Dr. Gregor Hodgson, Executive Director of Reef Check adds, "I am extremely pleased to see this collaboration lead to better marine education and conservation in the Maldives."

The group now plans to coordinate concerted, community-based survey efforts around the archipelago and designate a full-time Maldivian Reef Check coordinator.

"The more Maldivians we can train and the more capacity we can build, the better," concludes Mohamed. "So we invite divers and businesses all across the Maldives to join us in our efforts. With their help we can create something big and positive for the country. Maldivian reefs are threatened, and with them the country's economy and well-being. Problems are overfishing, pollution and development without concern for the environment. The time to be aware of this and act accordingly is now, and if community-based surveys and the scientific data they provide can help the government to make the right decisions based on scientific facts, then everyone wins in the end."

The news is equally positive from Oman, where Omanis are setting up a local Reef Check Oman.

Since 2009, Biosphere Expeditions, with the support of Reef Check, the Marine Conservation Society and the Anglo-Omani Society, have been surveying Omani reefs and training Omanis in reef survey techniques, resulting in marine protected areas being established in Musandam and community-based surveys conducted near Muscat.

Jenan Alasfoor, who is spearheading the effort, says, "I am an avid diver and I was trained by Biosphere Expeditions to Reef Check EcoDiver Trainer level and recently became the Reef Check Coordinator for Oman. The ocean is my passion and reefs are under threat from climate change, pollution, development and other impacts. Reefs are a beautiful asset of our country, but it often seems they have no voice. We need more Omanis speaking up for our reefs and protecting them, not just because they are beautiful, but also because they provide income through tourism, protection from storms and form the basis of fishermens' livelihoods around the coast."

Adds Hodgson, "This is another great initiative by Biosphere Expeditions working with local people. Only months after having been instrumental in the creation of Reef Check Maldives, I am extremely pleased to see this collaboration in Oman with Omanis and for Omani reefs, which leads to better marine education and conservation in the country, for the benefit of everyone."

In another positive development, both the Grand Hyatt Muscat, as well as Euro Divers Oman, have agreed to provide corporate support for Reef Check Oman's community-based survey efforts.

"The more support we receive for our efforts, the better, and we are grateful to Hyatt and Euro Divers for their assistance," says Alasfoor. "I know the economic climate in Oman is tough at the moment, but if there are any more companies out there who would like to become involved in community-based environmental protection, they should contact me so that we can work with their CSR departments and staff."

Beyond garnering support, Reef Check Oman plans to coordinate concerted, community-based survey efforts around the country and to work with the government and Biosphere Expeditions to provide science-based information and solutions for reef protection.

For more information or to get involved, visit the Reef Check Maldives and Reef Check Oman websites at:
www.reefcheckmaldives.org
www.reefcheckoman.org.

KICKSTARTER CAMPAIGN AIMS TO HELP CALIFORNIA KELP ECOSYSTEMS

BY **REEF CHECK CALIFORNIA**

Photo by © Steve Clabuesch

Reef Check California has launched a Kickstarter campaign to fund two multi-day expeditions to the Big Sur Coast and the Channel Islands. Since 2015, Reef Check has launched four successful Marine Ecosystem Assessments of these areas, part of a sustained effort toward the long-term monitoring of these unique coastal ecosystems. The data we collect is publicly available on Reef Check's Global Reef Tracker for scientists, marine managers and the general public to use.

Kelp forests are critical ecosystems along California's coastlines and provide food, shelter and oxygen for hundreds of species. These ecosystems are changing due to rising ocean temperatures, invasive species, marine diseases and other environmental stressors. This project aims to address these issues by collecting data that will be added to previous years' information so that fisheries managers, researchers and the public can have the scientific information they need to protect these precious habitats.

In this era of global environmental stressors like ocean acidification, rising sea temperatures and the vast reach of plastics pollution, the knowledge of what changes are occurring is key to successfully adapting management and conservation actions to protect these rich habitats. In 2015 and 2016, we documented trends that were both alarming and encouraging. We saw increases in invasive species, the loss of sea stars, and declines in kelp forest. But we also saw encouraging signs, for example, purple urchins which are devouring kelp forests north and south of the Big Sur coast, were on the decline along this remote stretch of coastline in 2016. At Scorpion Anchorage on Santa Cruz Island, which has been a Marine Protected Area since 2003, we found that giant kelp had returned and the urchin barren that had been there since we first started monitoring in 2008 was gone. These are just some examples of why it is so important to maintain the long-term collection of this data. They document the changes to these remote and unique ecosystems and their responses to environmental stressors over time.

Photo by ©Chris Glaeser

Please help by visiting our Kickstarter campaign: https://goo.gl/v8xoVu

REEF CHECK TAYRONA IS COLOMBIA'S BIGGEST CITIZEN SCIENCE EVENT

BY **REEF CHECK COLOMBIA COORDINATOR PHANOR H MONTOYA MAYA, PHD, DIRECTOR OF CORALES DE PAZ** PHOTOS BY **REEF CHECK COLOMBIA**

In April, more than 60 citizens conducted 248 dives in which they invested over 14,000 minutes in training. The purpose of this Reef Check Tayrona expedition, the largest citizen science event ever conducted in Colombia, was to survey the health of the local coral reefs.

The event was a complete success because they were able to unite the diving tourism industry, the fishermen, and the scientific community, all with the same proposition: to learn to evaluate the health of our coral reefs. The participants are now observers with Corales de Paz, which assists national institutions, so that together they can increase the scale and frequency of the monitoring of the health of this strategic and threatened ecosystem.

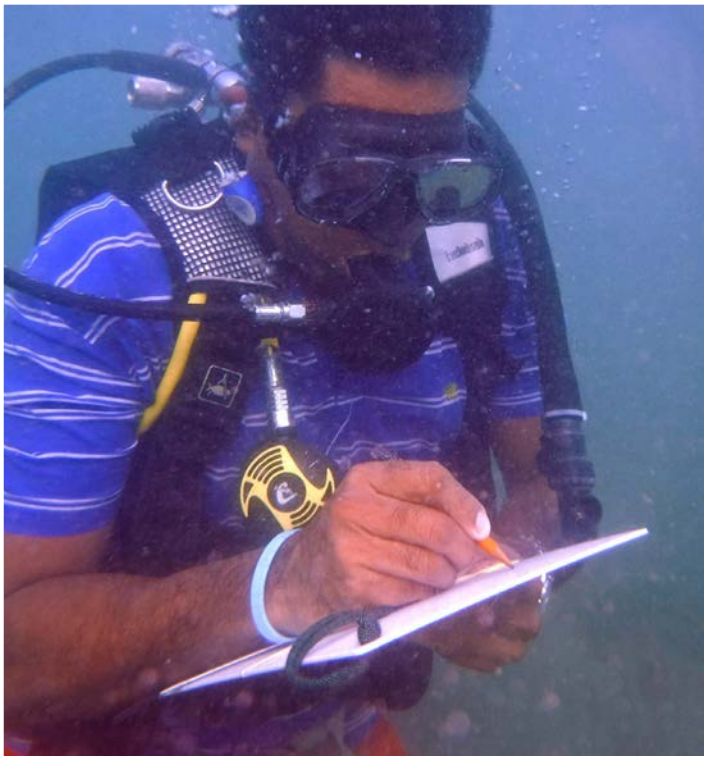
The event also gave participants the opportunity to transmit their knowledge directly to the public. Similarly, they learned the impacts threatening the reef ecosystem. In the words of partipant Pedro Daniel, ex-president of the Association of Chinchorreros of Taganga, "the Reef Check Tayrona allowed me to observe the physical damage generated by anchors over the coral heads; now I am more conscious of the necessity to avoid irresponsible anchoring".

Corales De Paz wants to thank all the entities that helped with this important and vital initiative. The Reef Check Tayrona expedition demonstrated the support of Reef Check, the Confederación Mundial de Actividades Subacuaticas (C.M.A.S) Zona América, Conservación Internacional Colombia, the Corporación Autónoma Regional del

Magdalena (Corpamag), la Dirección Territorial Caribe de Parques Nacionales Naturales, the Instituto de Investigaciones Marinas y Costeras (Invemar), la Federacioón Columbiana de Activadades Subacuaticas (FEDECAS), the Tienda de Buceo El Rodadero y Casa de Buceo, the dive school Arrecifes del Pacifico, the dive centre Reef Shepherd, Monitoreos Ambientales (MoAm), Asesorías Contables Doly Luna S.A.S., Colombina, the Hotel El Rodadero, the Acuario y Museo del Rodadero, and the application for mobile phones SEAK.

Lastly, we extend thanks to the national and international scientific team, Maria Claudia Diazgranadaos, Juan Pablo Caldas Aristizabal and Edgardo Ochoa of the Conservación Internacional; Raúl Navas and Cesar Garcia of Invemar; Ruben Torres and Nicolas Florestal of Reef Check; Oscar Delgadillo of MoAm; and Nuphar Charuvi.

For more information about future expeditions, visit **www.coralesdepaz.org** or contact **info@coralesdepaz.org**.



REEF CHECK JOINS CAMPAIGN AGAINST PLASTIC STRAWS

Reef Check Foundation has just signed up as a partner to the OneLessStraw Campaign, begun by One More Generation founders Olivia (age 14) and her brother Carter (age 16), with the goal of cleaning up our environment and educating people on the harm of using single use plastic straws.

Americans use an estimated 500,000,000 plastic straws every single day, equivalent to 1.6 straws for every man, woman and child living in this country every single day. Many of these end up in our oceans. Since the launch of the campaign over 3,000 people from over 44 countries around the world have signed their online pledge form promising not to use a single-use plastic straw for at least 30 days.

Reef Check joins almost 300 partners from around the world including schools, restaurants, resorts, zoos and aquariums. One partner, Simply Straws, has offered to send everyone who signs the OneLessStraw pledge a coupon for a free glass reusable drinking straw (excluding postage) to help them stay plastic-straw-free forever. OneLessStraw also offers campaign buttons to schools and restaurants that agree to sign the pledge, as well, to share with students and customers.

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FEATURE CREATURE

PORCUPINE RAY (*UROGYMNUS ASPERRIMUS*)

FEATURE **IUCN RED LIST 2016** PHOTOGRAPHY **SIMONE CAPRODOSSI**

RED LIST CATEGORY & CRITERIA: VULNERABLE
Scientific Name: *Urogymnus asperrimus*
Common Name: Porcupine Ray

Justification: The Porcupine Ray (*Urogymnus asperrimus*) is a shallow water species occurring inshore to at least 30m depth, often associated with sandy and coral reef habitats. This species is widespread in the Indo-West Pacific region where intensive and largely unmanaged net and trawl fisheries occur (with the exception of Australia).

While life history data are not available, the life history of a related species, the Brown Stingray (*Dasyatis lata*), suggests that this species may have a long generation length (21.5 years). Fishing pressure is heavy in its known, shallow-water habitat, and fisheries are likely to catch this species if present. Many shark and ray fisheries and stocks in the region are known to be over-exploited, with catches declining. Market surveys indicate that this species has decreased in abundance in parts of the centre of its range for which comparative data are available such as the Gulf of Thailand. It is also a commonly caught and heavily used species in Indonesia which is a global centre for intense shark and ray fishing and over-exploitation.

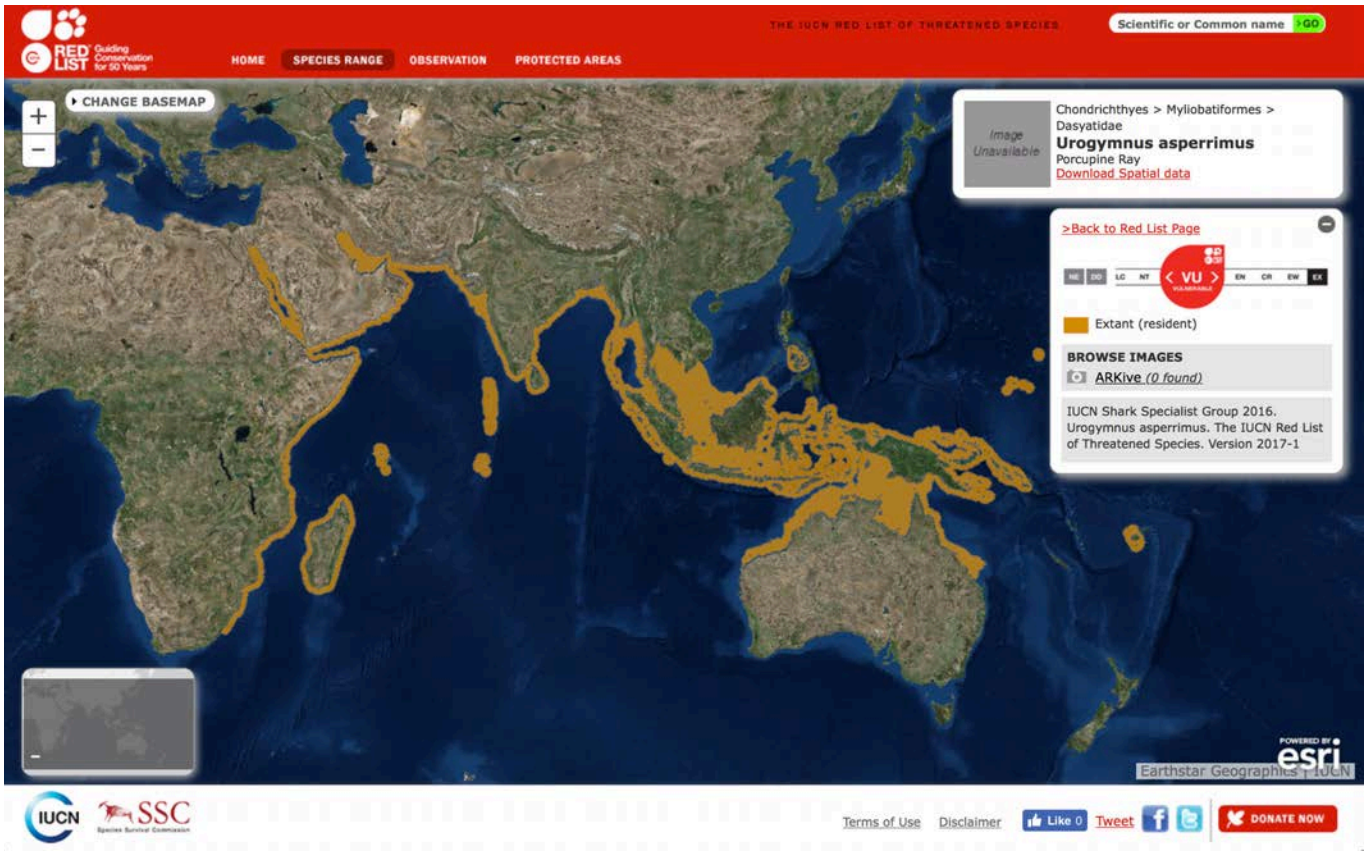
Based on its shallow water habitat preferences, long estimated generation time, global declines in chondrichthyan landings of at least 20% over the past 12 years, and the fact that the Indo-West Pacific region is a region with some of the most poorly managed and intensely fished waters, a population reduction of greater than 30% over three generations is inferred for the Porcupine Ray, resulting in an assessment of Vulnerable. In Australia, the species is assessed as Least Concern as has no commercial value in Australian waters and is seldom caught. While the species was occasionally captured in commercial trawl fisheries, the introduction of trawl exclusion devices has significantly decreased the bycatch of large batoids in Australian trawl fisheries. Marine protected areas at Ningaloo Reef and the Great Barrier Reef are likely to provide effective protection for this species.

Range Description: The Porcupine Ray is a widely distributed but relatively uncommon species found in the Indo-West Pacific; it is also possibly tropical West Africa (Senegal, Guinea, Ivory Coast) and as an invasive in the eastern Mediterranean (via the Suez Canal) (Last and Stevens 2009).

Localities include South Africa, Madagascar, Kenya, Seychelles, Red Sea (Koseir), Saudi Arabia, Oman (Muscat), Gulf of Oman, Arabian Sea and Persian Gulf, Pakistan, India (Bombay, Madras, Malpe, South Canara on Malabar Coast), Sri Lanka, Myanmar, Malaysia (Malay Peninsula, Penang), Singapore, Taiwan, Thailand, Indonesia (Jakarta, Java, Kalimantan), possibly the Philippines, Viet Nam (Cholon), Australia (Queensland, Western Australia, Northern Territory), New Guinea and Melanesia (Fowler 1941, Herre 1953, Capape and Desoutter 1990, Last and Stevens 1994, Last and Compagno 1999, Theiss et al. 2010, Ebert et al. 2013).

The species appears to have patchy localised distributions with local hotspots recorded at D'Arros Island in the Seychelles, and specific sites in Ningaloo Reef and the Great Barrier Reef, Australia (Theiss et al. 2010, Chin 2014).

Countries Occurrence: Native: Australia (Northern Territory, Queensland, Western Australia); Egypt; Eritrea; Fiji; India; Indonesia;



Iran, Islamic Republic of; Iraq; Kenya; Madagascar; Malaysia; Myanmar; New Caledonia; Norfolk Island; Oman; Pakistan; Saudi Arabia; Seychelles; Singapore; Solomon Islands; South Africa; Sri Lanka; Sudan; Taiwan, Province of China; Thailand; United Arab Emirates; Vanuatu; Viet Nam; Yemen.

FAO Marine Fishing Areas: Native: Indian Ocean – western; Indian Ocean – eastern; Pacific – western central; Pacific – northwest.

Additional data: Lower Depth Limit (metres): 30, Upper Depth Limit (metres): 1

Population: Little is known about the population status, trends or structure of this species, although the Porcupine Ray is considered to be an uncommon species.

Globally, shark and ray landings have declined by at least 20% since 2003, but the Indo-Pacific is amongst the regions where this decline has been more severe (Dulvy et al. 2014). Catches of sharks and rays in Southeast Asia are very high but are declining and fishers are travelling much further from port in order to increase catches (Chen 1996). Net and trawl fisheries in Indonesia (especially the Java Sea) and elsewhere are very extensive and as a result, many shark and ray species are highly exploited and stocks of most species have declined by at least an order of magnitude (Blaber et al. 2009). Batoids are heavily exploited (White and Dharmadi 2007) and datasets from as early as 1963–1972 show the considerable decline in batoids in the Gulf of Thailand (Pauly 1979). Trawl and gill net fisheries are also moving further afield. For example, in Jakarta the gillnet fishery at Muara Baru travels to waters around Kalimantan due to the decline in local populations (W.T. White, unpubl. data). While species-specific data on long-term declines in elasmobranchs in the Southeast Asian region are lacking, declines of he Porcupine Ray in Southeast Asia and elsewhere in the Indo-West Pacific are inferred given the widespread historical and continuing declines of demersal fisheries in this region (Stobutzki et al. 2006). Furthermore, the extensive loss and degradation of habitats such as coastal mangroves are another key threat to coastal and inshore species; Southeast Asia has seen an estimated 30% reduction in mangrove area since 1980 (FAO 2007, Polidoro et al. 2010).

Current Population Trend: Decreasing

Habitat and Ecology: Although very wide ranging, this ray appears to be uncommon compared to various species of dasyatid rays which are sympatric with it. Occurrence appears to be patchy with localised hotspots (Chin 2014). Juveniles appear to be site-attached, and highly resident to small areas of shallow coastal mud and mangrove habitats (Cerutti-Pereyra et al. 2014). It has been recorded from coral reefs, sandy reef lagoons, beaches, mud flats and mangroves, at depths of ~1m to at least 30m (O'Shea 2013, Cerutti-Pereyra et al. 2014, Chin 2014).

There is virtually no information available on life history parameters for this species. Age at maturity, longevity, average reproductive age, generation time and average annual fecundity are all unknown. Attempts to collect size-at-age data from vertebral counts have proved difficult due to the fragile nature of vertebra (O'Shea 2013). The Porcupine Ray reaches a maximum size of at least 115cm disc width (DW) with females mature by ~100cm DW and males at ~90cm DW (Last and Stevens 2009). Using data from the Brown Stingray (Dasyatis lata), a related species of similar size from the Pacific as a proxy, generation time for the Porcupine Ray is inferred to be 21.5 years.

Systems: Marine

Generation Length (years): 21.5

Use and Trade: This species is caught in net fisheries in Indonesia and used for its meat, and the skin is considered very valuable (White et al. 2006). This species is sometimes taken by traditional hunters in northern Australia (A. Chin, pers. obs., 2015).

Major Threat(s): The species is presumably largely taken as bycatch in unregulated fisheries in nearshore waters. It has been recorded as a high value catch in Indonesian net fisheries (White et al. 2006). It appears to have disappeared or become extremely rare (compared to certain other batoids) in the batoid catches landed in Bangkok from the Gulf of Thailand in recent decades (Compagno and Cook, unpubl. data). This suggests probable local over-exploitation here and possibly also in the Bay of Bengal. Similar trends are likely to be occurring or will occur in other areas where batoids are taken in multi-species fisheries. Certainly, demersal

fishery resources in the Gulf of Thailand and Southeast Asia have been severely depleted from historical levels (Stobutzki et al. 2006). Human modification and degradation of the ray's habitat is also possibly occurring in some of the more highly populated and polluted coastal areas as a result of human influences. The loss of coastal habitats such as mangroves may be of particular concern for this species which is suspected to have highly localised habitat use (A. Chin, unpubl. data).

This species was occasionally taken in northern Australian trawl fisheries (Brewer et al. 2006). However, the introduction of turtle exclusion devices appears to have successfully excluded this species from continuing capture in trawl nets (Brewer et al. 2006). The Porcupine Ray is considered to be potentially one of the most vulnerable chondrichthyans to the impacts of climate change in northern Australia (Chin et al. 2010).

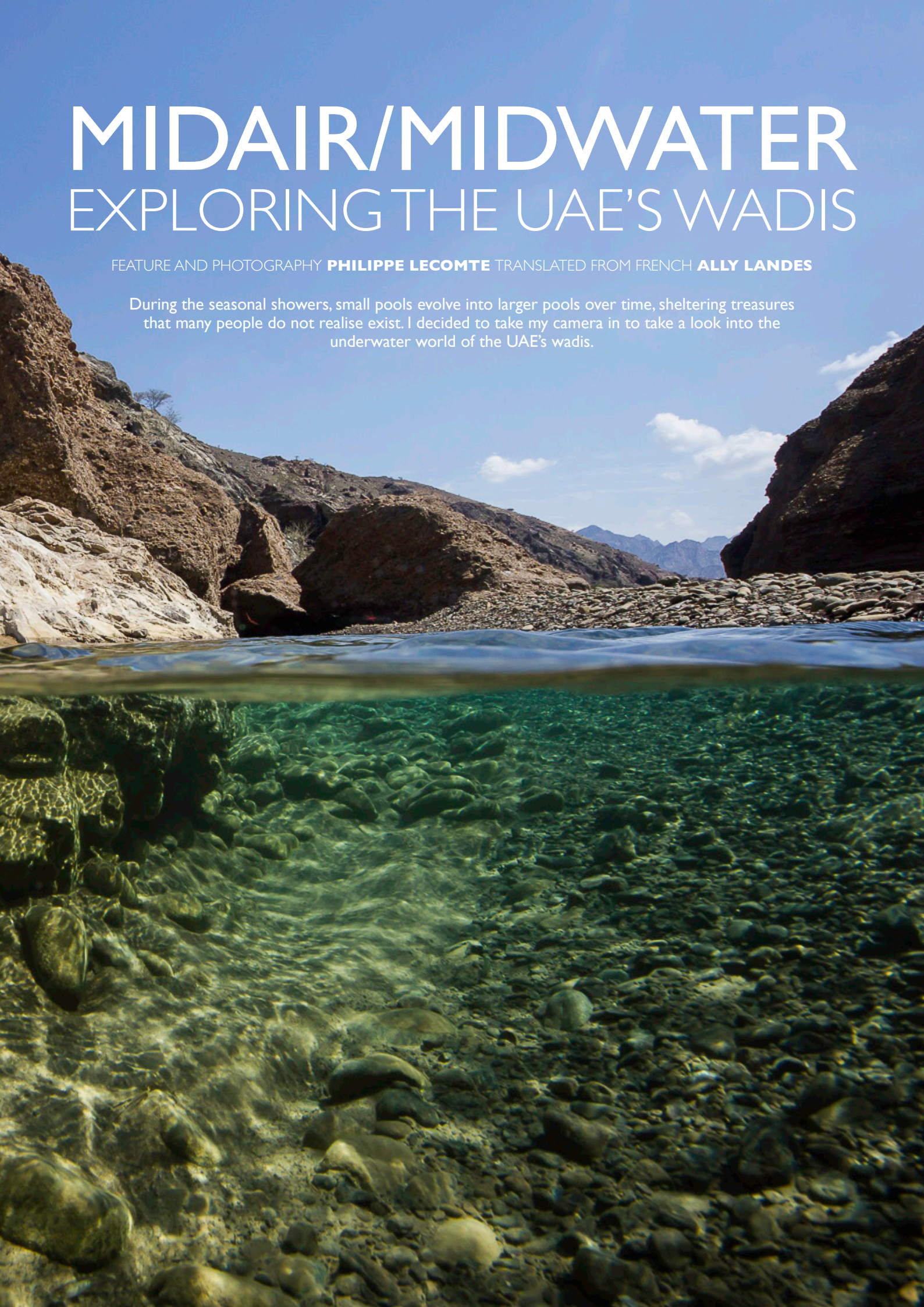
Conservation Actions: There are no existing conservation measures throughout most of this species' range. In Australia, turtle exclusion devices (TEDs) have reduced the bycatch of this species in Australian trawl fisheries (Brewer et al. 2006). Marine protected areas such as those in Ningaloo Reef may provide some protection for juvenile life history stages (Cerutti-Pereyra et al. 2014). Given what is known about its movement patterns (Cerutti-Pereyra et al. 2014), the large protected area of the Great Barrier Reef Marine Park is also likely to provide effective protection for this species on the east coast of Australia.

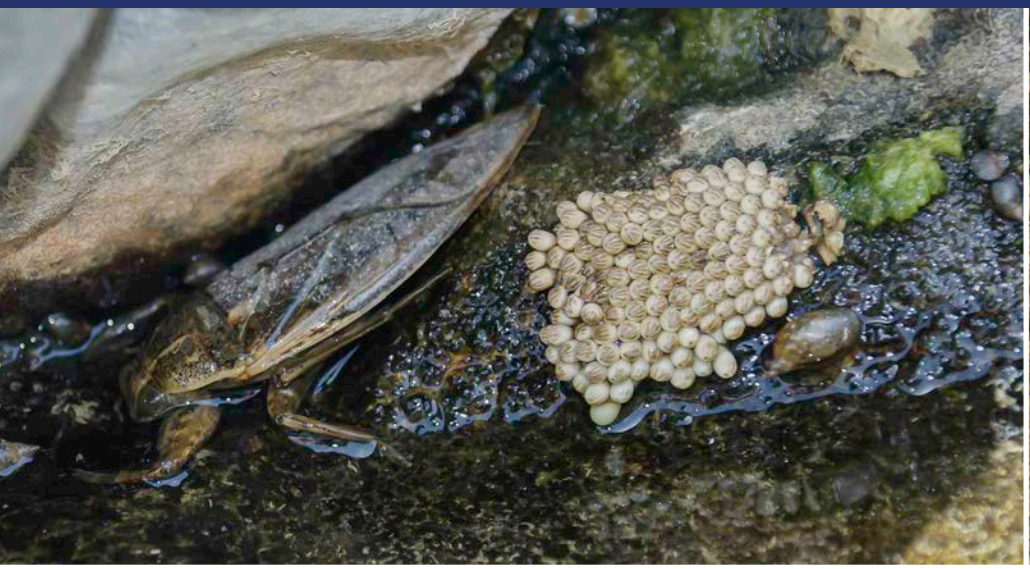
Citation: Chin, A. & Compagno, L.J.V. 2016. *Urogymnus asperrimus*. The IUCN Red List of Threatened Species 2016.
www.iucnredlist.org

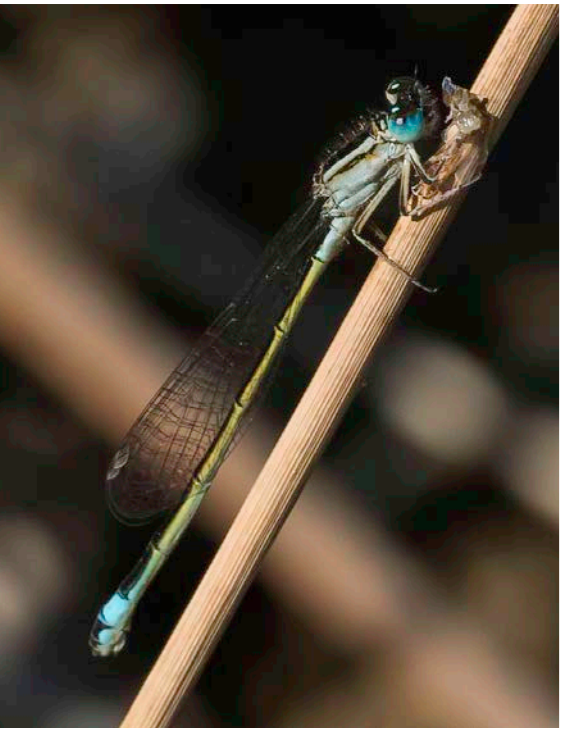
MIDAIR/MIDWATER
EXPLORING THE UAE'S WADIS

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

During the seasonal showers, small pools evolve into larger pools over time, sheltering treasures that many people do not realise exist. I decided to take my camera in to take a look into the underwater world of the UAE's wadis.








Nowadays, we often see video clips or articles of divers exploring rivers, lakes and caves on social networks and in divers magazines. Particularly in Europe. Photographers dip their cameras into these areas in order to immortalise the fish and the landscapes of these bodies of fresh water. Why not do the same in the United Arab Emirates?

Many believe that the UAE possesses only salt water dive locations and that there are only sand and rocks on land. This is not entirely true. There are no rivers or lakes in the UAE, but there are wadis which are dry except in the rainy season when the valley's pools fill up with water.

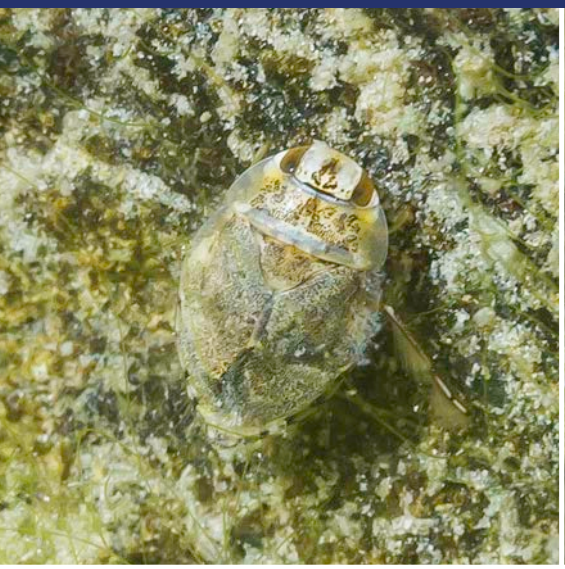
After exploring several places, especially in the north of the country where the desert slowly disappears and the mountains take over the landscape within the various valleys – formed over thousands of years by rain – I discovered some secret locations. The country has some isolated places and they are often difficult to access, but it is possible to get in with a mask and snorkel. During the seasonal showers, small pools evolve into larger pools over time, sheltering treasures that many people do not realise exist. I decided to take my camera in to take a look into the underwater world of the UAE's wadis.

This experience can only be done during the winter months and more so after heavy rains. If you decide to camp overnight in a wadi, check the weather forecast beforehand as it is extremely dangerous to be in these valleys when heavy rains are due.

Before getting in to this small aquatic world, it is firstly necessary to choose a fairly large pool. Then, from the surface you will be able to plan what subjects are of interest for your shots. Take care when you move around in these often shallow environments as to not destroy anything, and pay attention to sudden movements as they may raise sediments that will render the visibility cloudy.

You will notice a large number of fish live in these small reservoirs of water. These fish grow quite rapidly and from time to time they get trapped in the small faults. They can grow up to 3-5cm long. These fish have small barbs they use to search through the sand and mud as they forage for their food which is made up of small worms and other microscopic insects. I have not found a name for them, but I think they may belong to the *Goujon* family. In some pools, these fish come in the dozens and swim in all directions when approached too closely. Once in the water, you need to stay still and wait a few seconds to get them used to your presence. You will then be able to see their orange eyes and their camouflaged scales.

Fish are not the only inhabitants in these fresh water reservoirs. When you look closely, you will find more insect subjects. The *Dytiscidae* – a family of water beetles – are common in fresh water. The smaller ones rapidly swim to the surface in a circle without stopping. Other species, larger in size, come to the surface only to breathe and then hurriedly return to the bottom to take refuge under the algae. During the day, they remain underwater while they







wait for the night to fall, and then in the evening, they fly from pool to pool to find the ideal companion. Their sizes vary from 1-5cm and their colours can sometimes be quite bright.

Predators are also present in these small bodies of water. Among them, small water bugs attach themselves along rocks for sudden attacks on prey by propulsion force of their 2 large hind legs that serve as propelling fins.

Around these natural pools, dragonflies of all sizes and colours fly rapidly in search of small flies and other flying insects. Their larvae are also great predators, but they do not fly, they swim. The larva has an extensible mouth that allows it to catch any potential prey passing at a good distance from it without the larva moving. Not having fins to move rapidly underwater like the water bug, the larva can only walk.

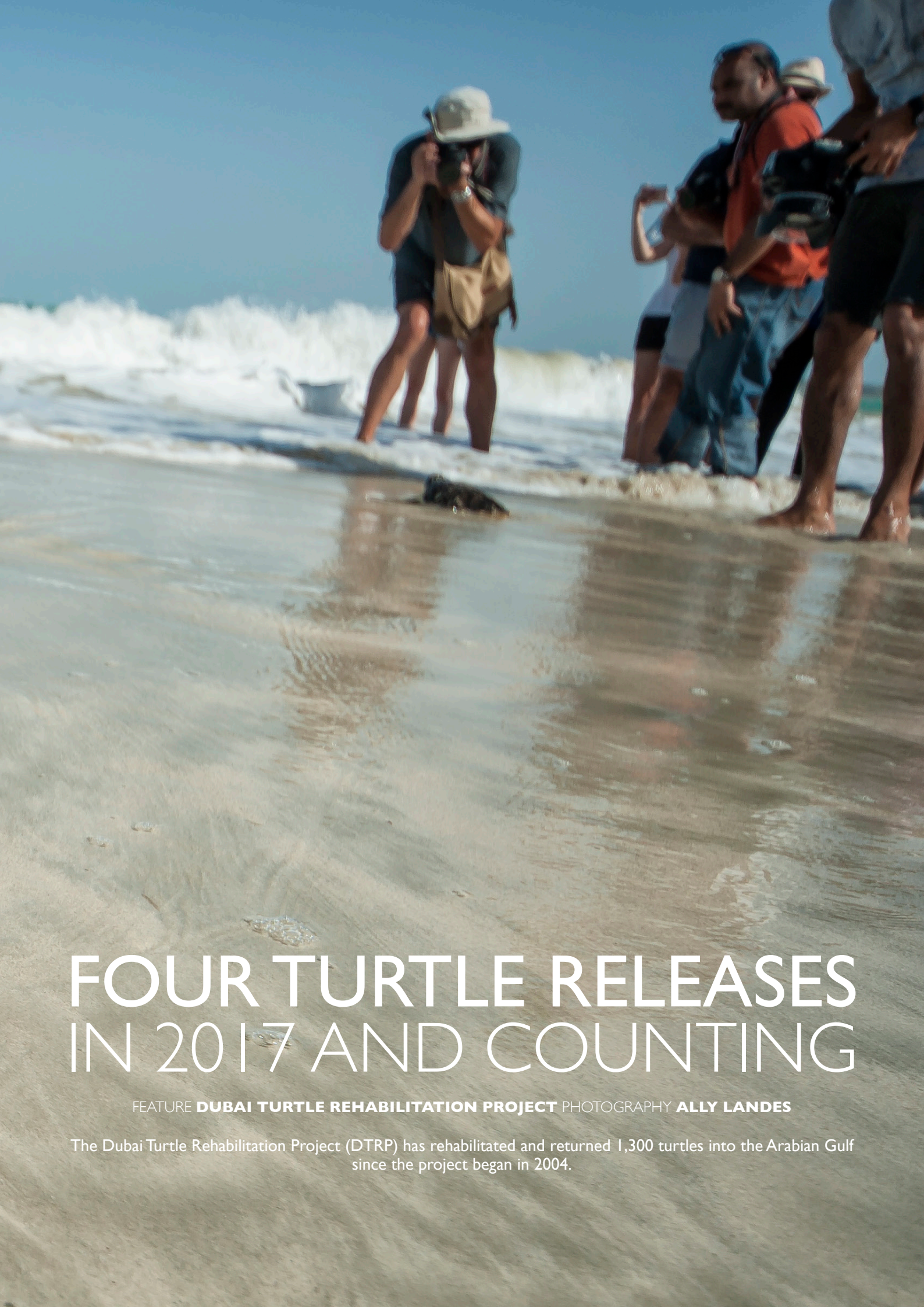
If you are lucky, you may spot the largest predators found in these locations – *Lethocerus*, colloquially known as giant water bugs. There are several species in the world. The one I have seen on several occasions measured between 5 and 7cm. This insect has two long forelegs acting as tongs and a dart in its mouth to inject venom into its prey. Very voracious, it can catch fish, tadpoles and even frogs. They remain motionless as they cling to the rock and like the dragonfly larva, waits patiently for prey to pass between its mortal hooks.

As soon as there is water, the *Batrachians* are present. The most common is the Arab Toad (*Bufo arabicus*). It is found in wadis where water flows. Be careful when walking over the pebbles, they can sometimes be numerous. Tadpoles are very common in all water reservoirs and if you see them, you will surely see the different stages of evolution. Some tadpoles will still have their tails showing with their 4 legs gently growing. During the summer, they know how to find crevasses or how to bury themselves between the roots of the plants in order to escape the torrid heat.

Do not hesitate to stay in the water and wait for the local life to move. Most of them possess very good camouflage and may need a second look.

Besides all these small pool inhabitants to photograph, wide angle or fish eye photography also make great subjects with fantastic results of images taken in mid-water. I appreciate many different styles of photography with several different angles of view. With the surface of the water being mostly calm, it is possible to take some very beautiful photos that will surprise your friends. The arid mountain and its streams with surrounding greenery are always worth contemplating.

If you are thinking of strolling through these unique places this winter, do not forget to respect the plants because they are a landmark for some and food for others. Do not throw anything away that could harm these areas as these places are unfortunately too few. Go for walks in the wadis this winter and alternate them with walks in the desert. Make the most of the good weather to come and enjoy the UAE's outdoors.



FOUR TURTLE RELEASES IN 2017 AND COUNTING

FEATURE **DUBAI TURTLE REHABILITATION PROJECT** PHOTOGRAPHY **ALLY LANDES**

The Dubai Turtle Rehabilitation Project (DTRP) has rehabilitated and returned 1,300 turtles into the Arabian Gulf since the project began in 2004.

THE 1st TURTLE RELEASE OF 2017
(TOTAL: 76)

75 critically endangered Hawksbill turtles (*Eretmochelys imbricata*) and one very rare adult female Olive Ridley sea turtle (*Lepidochelys olivacea*) named Barnacle were put back into the wild on the 11th of May from the Jumeirah Al Naseem beach. Olive Ridleys are most certainly rare, as there are only 25 nesting female Olive Ridleys left in all of Arabia.

Situated near the shores of the Arabian Gulf, the new facility at Jumeirah Al Naseem is the region's first purpose-built lagoon for rehabilitating rescued turtles. The animals which have suffered a range of illnesses or traumas, can now be carefully monitored in the lagoon before they are returned back to their native waters.

Tucked away near landscaped gardens, the new facility and nature trail is the public interface of the DTRP which has been saving turtles since 2004. The project plays a vital role in helping to raise awareness of the plight they face.

The opening of the lagoon is a dream come true for marine biologist Warren Baverstock and his small team of six who work tirelessly to rescue and rehabilitate these injured and sick turtles (mainly Hawksbills, Green and Loggerheads) from around the region. It's the combination of over 12 years of continuous hard work and their innate passion for wildlife which has enabled the project to get to this stage.

Warren Baverstock, the Burj Al Arab's Aquarium Operations Manager said, "We are extremely proud to release these rehabilitated sea turtles back into their environment. We are especially grateful to the local community and the organisations who found many of the injured turtles and brought them to us for rehabilitation. The tagging initiative provides valuable data about how the turtles are progressing back into the wild."

The turtles were all rescued from the shores of the UAE and nursed back to health by the DTRP, one of the longest standing Corporate Social Responsibility initiatives in the region and the only project of its kind in the Middle East. The project accepts any distressed turtle, with the most common turtles found in the Arabian Gulf being the critically endangered Hawksbill and the endangered Green sea turtle. The majority of rescued turtles are juvenile Hawksbills, which are found washed up on the Gulf coastline during the winter months of December, January and February suffering from the adverse effects of cold sea temperatures. Other common aliments include ingesting plastic rubbish and injuries sustained from boats.

Once the turtles have been rescued, they are assessed before beginning the rehabilitation process which can take up to a year. Prior to release, they are transferred to the new outdoor enclosure at Jumeirah Al Naseem which allows the team to monitor the final stages of rehabilitation before the turtles are released back into UAE territorial waters.

His Excellency Dr. Thani Al Zeyoudi the Minister of Climate Change and Environment attended and participated in the release. The Dubai Turtle Rehabilitation Project team worked tirelessly to save these animals and get them back into the wild where they belong. It was an amazing event supported by children from the Dubai British School who raised the funds for Barnacle's satellite tag!

This release however did not have a happy ending. Devastatingly, Barnacle was struck and killed by a large and powerful boat sometime on Saturday evening (2 days later) and washed ashore on the Sunday morning. The tag showed that she had made it about 30km offshore before she was struck. The DTRP managed to recover her body but the damage was quite extensive and the tag was lost from her carapace due to the impact. The DTRP had worked with Barnacle for over a year to get her fit enough and strong enough for her release and were all extremely saddened that this had happened. Unfortunately, boat strikes are not uncommon and they are a serious threat to sea turtles all around the world. The DTRP are hoping that this incident will raise awareness about the threats that turtles face in UAE waters.










THE 2nd TURTLE RELEASE
ENDANGERED SPECIES DAY (TOTAL: 50)

A very successful turtle release was done from the Emirates Palace beach, Abu Dhabi on the 18th of May with 49 juvenile Hawksbill turtles and a satellite tagged female monster Loggerhead turtle (*Caretta caretta*) named Sam. She was brought into the DTRP in December 2016 suffering from a severe infection and debilitation. After months of intensive care and rehabilitation, Sam gained 20kg and was released in Abu Dhabi where she was originally found. She was fitted with a Wildlife Computer SPOT 6 satellite tag which was sponsored by Shamsa Al Hameli, Amna Al Mansoori and Maitha Al Hameli from the Environment Agency – Abu Dhabi (EAD). The first letter of each name concluded her name was SAM.

This event was in celebration of the Endangered Species Day (May 19th) which highlights the plight of many threatened and critically endangered species and highlights ways in which each person can alter their behaviour in small ways to help protect and save animals.

Loggerhead turtles are not common within the Gulf, so it is important for the Dubai Turtle Rehabilitation Project to track their movements and areas that are important to them. Satellite tracking also allows them to watch the turtles' behaviour after release to see if they integrate back into turtle society well. It also allows them to see if all the hard work they put in during her rehabilitation had worked, and so far, so good!

Once turtles are released from long periods in captivity, they first find a nice place to rest and then it takes them a couple of days to orientate, and then they take off. This is exactly what Sam had done, and she headed south of Abu Dhabi. The DTRP's previous tagging had shown that Loggerheads prefer slightly cooler water, so they expected her to take a turn towards the central Gulf.

Dr Shaikha Al Dhaheri, Director to the Terrestrial of Marine and Biodiversity at EAD said, "This turtle release shows EAD's commitment towards conserving endangered species through rescuing turtles and involving the community and younger generation. By getting them closer to the species, they can connect to our natural heritage and become players in the conservation arena. It's important that the public understands that these are endangered wild animals and if found, must be handled appropriately and handed over to authorities for expert care. We urge the public to call 800-555 if they encounter any stranded turtles or marine life."

Often weighed down by barnacles, the young turtles are sensitive to rough sea and cold conditions and get washed ashore. While other turtles suffer from infections, boat strikes and gill net injuries, and other threats are underlying conditions that could be fatal to these animals.

Dr. Shaikha also added, "We also thank the Emirates Palace for their wonderful support with rescuing turtles and for hosting this event today".

THE 3rd TURTLE RELEASE
(TOTAL: 40)

40 rehabilitated turtles were released at EMEG's (Emirates Marine Environmental Group) Ghantoot Reserve with Dubai Municipality on the 26th of May. The day was a huge success with many onlookers there to support the release.

THE 4th TURTLE RELEASE
WORLD SEA TURTLE DAY (TOTAL: 40)

The DTRP collaborated with the Dubai Aquarium and Underwater Zoo in Dubai Mall on this occasion and released 40 endangered sea turtles into the Arabian Gulf next to Jumeirah Al Naseem to celebrate World Sea Turtle Day on the 15th of June.

For the past three years, the Dubai Aquarium and Underwater Zoo in Dubai Mall has supported the DTRP and this year raised awareness of the project by hosting five of the turtles as part of their rehabilitation process.

The four juvenile Hawksbills and one amputee juvenile Green turtle were displayed in a large exhibit to raise awareness about the plight of the sea turtles in the region and also to promote the project via literature around the exhibit. In support of the project and research, the Dubai Mall Aquarium then purchased five satellite tags for the turtles to enable the team to track their progress in the wild.

Warren Baverstock said, "The exhibit at Dubai Mall, which highlights DTRP's rehabilitation efforts is designed to educate the many visitors to Dubai Mall on the plight of these turtles. After a month's rehabilitation period, the turtles were returned to the Burj Al Arab Jumeirah aquarium, fitted with a satellite tag and then released back into the Arabian Gulf. Their movements can be monitored and followed on Facebook."

TO DATE

More than 1,300 sea turtles have been successfully returned to the sea over the past ten years since the project's inception. The satellite tagging initiative allows the DTRP to develop a picture of the turtles' journeys through the region. Interested parties can check for updates on the Dubai Aquarium and the DTRP Facebook pages.

The project's tagging initiative once tracked a turtle that travelled an amazing 8,600km in nine months almost reaching the coast of Thailand. This shows the project not only affects these populations on a regional and national level but also on an international level. The tags also allow the team to compare habitat, temperature choice and migration patterns for each species, information which is crucial for the formulation of conservation plans. According to the International Union for Conservation of Nature (IUCN), the Hawksbill turtle has seen an 87% decline in population over the last three decades with only an estimated 8,000 nesting females left in the world.

DUBAI TURTLE REHABILITATION PROJECT

Jumeirah
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ABOUT THE DTRP

The Dubai Turtle Rehabilitation Project has rehabilitated and returned 1,300 turtles into the Arabian Gulf since the project began in 2004.

The project impacts the national, regional and international sea turtle populations by increasing the number of animals in the environment that would have otherwise perished. Only one out of 1,000 sea turtle hatchlings will reach sexual maturity. By saving these animals and releasing them back into the wild, we are increasing the chances of the number of turtles that could possibly reach breeding age. The DTRP is based at the Burj Al Arab and Madinat Jumeirah and is run in collaboration with Dubai's Wildlife Protection Office, with essential veterinary support provided by the Dubai Falcon Hospital and the Central Veterinary Research Laboratory.

www.jumeirah.com/turtles

FACE TO FACE

WITH DWARF MINKE WHALES IN THE GREAT BARRIER REEF

FEATURE **NATALIE BANKS**

While many countries have banned programs where visitors can swim with whales, this experience in the Great Barrier Reef has developed based on the voluntary approaches of the whales themselves, researchers and the fantastic job of the permitted crew members which ensure these interactions are sustainably managed.

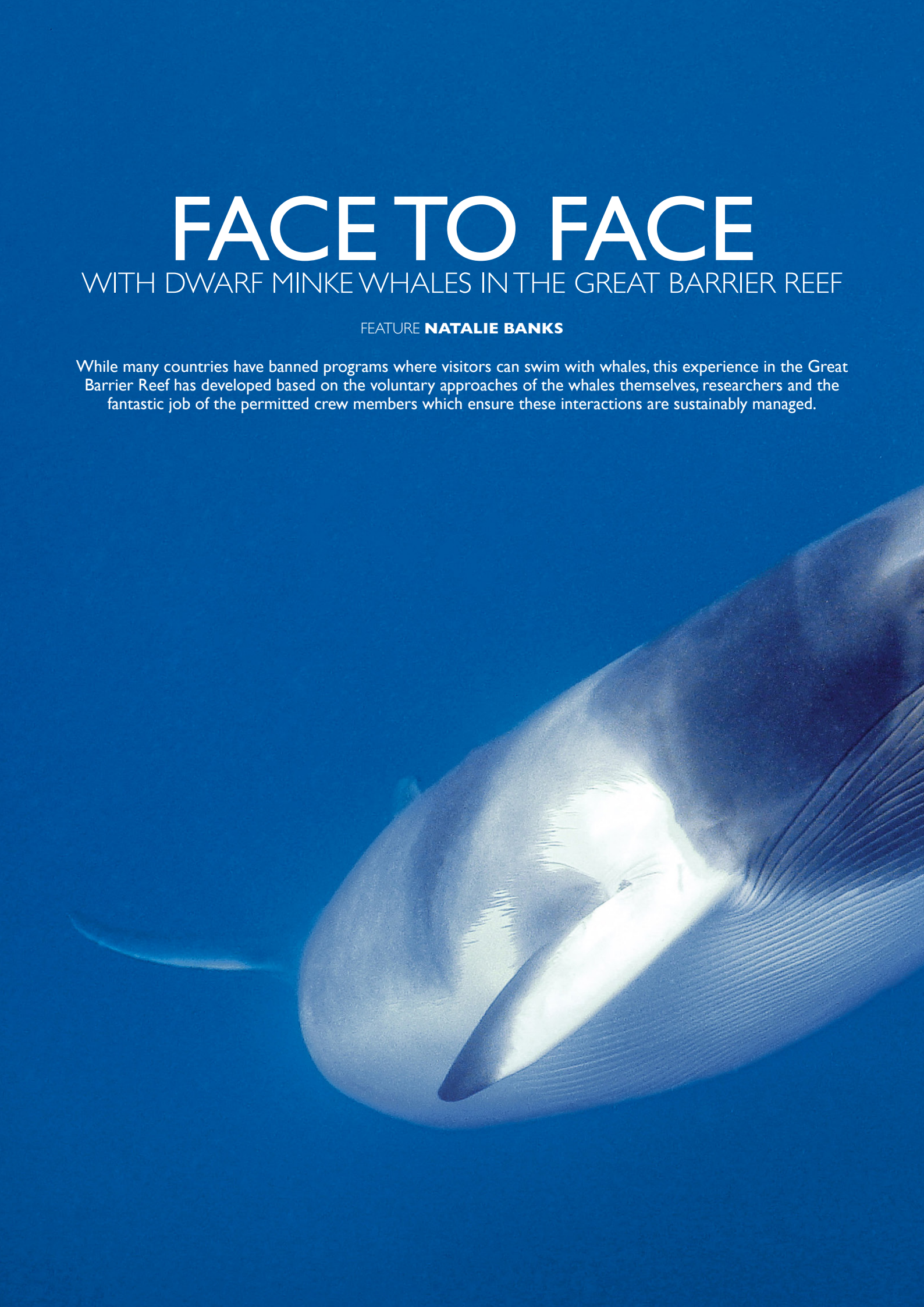
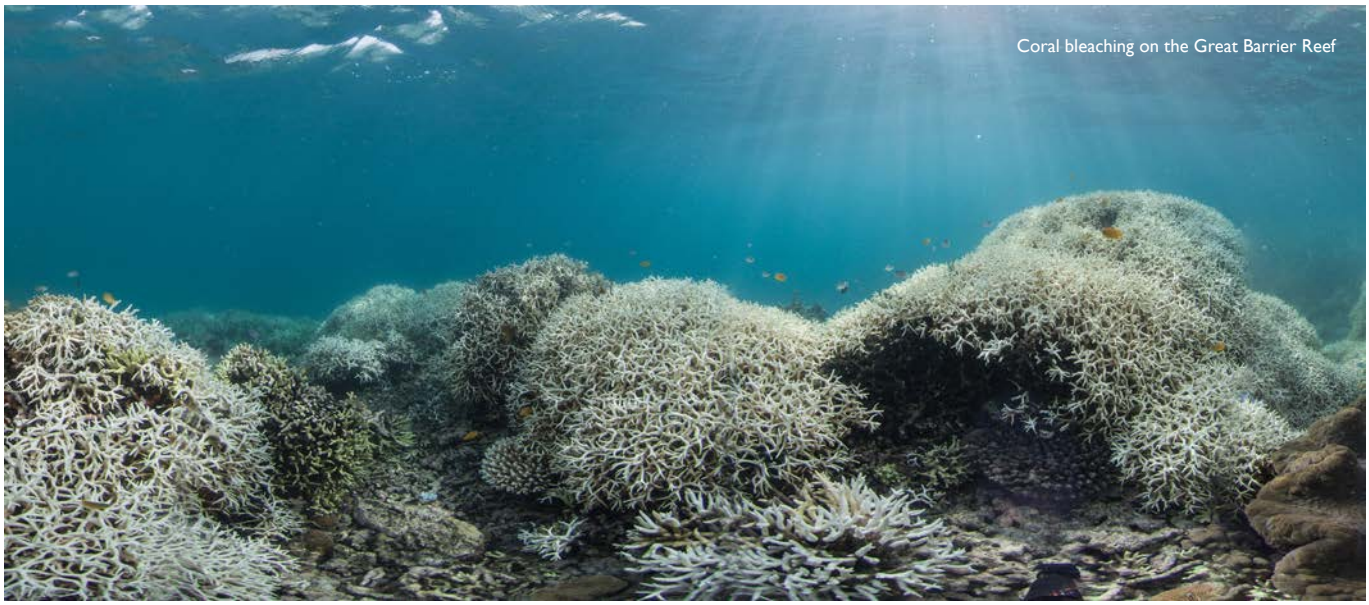


Photo by Matt Curnock



Coral bleaching on the Great Barrier Reef

As summer in the United Arab Emirates approached, my husband and I thought we would escape back to our island home of Australia and finally dive the Great Barrier Reef. But this wasn't just going to be any ordinary diving holiday. We had planned our trip to occur when dwarf minke whales visit the area for a few months before continuing on with their migration.

The Great Barrier Reef is the only known predictable aggregation point of these whales in the world. Growing up to eight metres and weighing several tonnes, dwarf minke whales are exceptionally inquisitive and often approach boats, divers and snorkellers closely, sometimes interacting for extended periods. There is no confirmed evidence as to why these whales congregate here for the Australian winter, but it isn't a feeding ground. Current speculation is that it is purely a place to socialise and potentially mate.

My excitement for this experience grew as we flew into Cairns, Queensland, but I needed to keep my expectations in check. These are after all wild animals and there is no guarantee that they would show up. We had also booked at a time when they had spotted these whales earlier in the season than usual, and our trip was planned towards the end of the season. The previous trip prior to ours had three dwarf minke whales show up, with averages, we were told of about 12 per trip.

So, we started our four day liveaboard journey from Cairns to the outer ribbon reefs of the Great Barrier Reef, diving particular sites. One of which was promised to be "one of the best diving locations in the world." Sadly, I was extremely shocked and saddened by the state of the Great Barrier Reef. Not only was there very little colour, but a cyclone had recently come through and had broken large sections of the reef, leaving me staring out of my mask at what appeared to be a very sick and dying reef system. We had of course heard the news about the Great Barrier Reef's worsening condition, but perhaps my optimism didn't prepare me for the destruction. I found myself tearing up at what was once the jewel of Australia, apparently the largest living organism in the world. The dive sites were not remotely close to some of the amazing dive sites I have witnessed in places like Egypt, Fiji or even Western Australia. My heart broke and our fellow divers from all over the globe felt the same.

Speaking on a personal level, I would have been greatly disappointed if this holiday was just about diving the Great Barrier Reef. But it was more than that. On board with us were two scientists from James Cook University who are involved in a non-profit research project looking at the dwarf minke whale biology, behaviour and tourism interactions. Headed by the passionate and informative Dr. Alastair Birtles, the Friends of the Minke Whale Project has been researching these amazing animals since diver interactions became common in the mid 1980s. I took an instant liking to Dr. Birtles. His love for these animals is clearly obvious and his excitement of what we might experience allowed me to let my excitement grow even more. The objective became less about diving the sites of the Great Barrier Reef than it was to look out for signs of whale activity. And on day two, we had some. A humpback whale was seen breaching two kilometres out from the boat…once.

That was before a large grey object was seen around our boat just as we were about to go in for a dive. "Minke", I heard Dr. Birtles yell. And it was happening. The experienced boat crew held the divers back and started getting lines ready for people to hang on to. Divers are told that this is a snorkelling experience only and that they will be divided into groups. Then a boat crew member hangs on the line and I see him holding up four fingers. FOUR DWARF MINKE WHALES! My excitement tippled over. Goosebumps formed on my arms. I was about to snorkel with four whales! It was at that moment though that I realised that I was in the last group to go out. I needed to rein that excitement in and practise patience. The groups were given about 20 minutes each and it felt like an eternity before our group was given the go-ahead. I was the first person in our group to be ready. All I could think of was, what if this is it, what if they move on, or if someone scares them away. Four of us were told to go to the marlin board of the boat and get ready to slowly enter the water. But then, we were told to wait. There had been an issue in getting everyone from one of the groups off the lines and we couldn't go in until everyone from the previous group was back on board. Time slowly ticked by. The disappointment must have been all over my face as the dive crew apologised and told me not to worry, encounters with these whales can last for hours. I was worried. I didn't want to miss out.

Eventually we were given the go ahead. We slowly lowered ourselves into the water and pulled ourselves along the rope so as not to scare the whales from any kicking involved in swimming out. Then we found our place on the line and held on. The visibility was a little murky, but eventually I saw the white of the dwarf minke whale colouring in the distance as it slowly and gracefully made its way past the snorkellers underneath us. Then I found myself looking at fingers pointing to look behind me, as yet another whale swam by metres from where I was positioned. I said early on that these whales are inquisitive, but they don't just focus on one place, they move all along the group, giving every person a breath-holding experience as all eight metres slowly passes you by.

Cameras were flashing, GoPros were filming, selfie sticks were out and all sorts of squeals of joy could be heard. Our experience was roughly 25 minutes long and we were asked to continue the rotation of the groups. Back on board the boat, the excitement I had was shared by everyone, with lots of laughter,

chatter and smiles. People were comparing their footage that they had captured. By the time our group were ready to go out again however, the whales had decided to move on, so we focussed yet again on the diving.

Our third day on board the boat saw us at a popular site for minke whale sightings; Lighthouse Bommie on Ribbon Reef 10. There had already been a sighting of a minke whale early in the morning. Groups were divided up again and some were able to snorkel on the line with this individual whale from the bow of the boat or dive from the back of the boat onto the dive site. We were put in the group of divers. About 10 minutes into our dive, with amazing visibility, my husband points up and we can see the shadow of the whale above us. It is slowly doing circles around the divers and the snorkellers, but what amazed me was the sounds it was making. I can only describe the noise like a ray gun going off in quick succession.

And it was only seconds until I realised it was communicating to other minke whales! In fact, there were about 13 gliding past us one by one as they gracefully went to mingle with the snorkellers. I can not describe what it was like to have this experience, but it truly was surreal. A moment you will never forget. And for me, it has been my favourite diving experience.

But we were further spoilt when we snorkelled with this group of dwarf minke whales. I felt literally surrounded by them, just not knowing where to look. At one point, my husband pointed out a whale swimming towards me, only for it to stop about one metre from me. It slowly raised its body vertically right next to me to check me out eye to eye, and just lulled there for about a minute before moving on.

I felt blessed. What was more impressive however, was Dr. Birtles, who has been studying these whales for over 35 years, stated that throughout the day there had been approximately 30 individual whales he had seen, and that was without going through all the footage collated. He also mentioned that he counted more whales together at one point then he ever had since the mid 1980's. To top it off, the whales spent nine hours with us before we had to move on to our next location. To the credit of Dr. Birtles, he stayed there with the whales the whole nine hours.

If you haven't got this experience on your scuba diving bucket list, you must rectify that! I highly recommend it. While many countries have banned programs where visitors can swim with whales, this experience in the Great Barrier Reef has developed based on the voluntary approaches of the whales themselves, researchers and the fantastic job of the permitted crew members which ensure these interactions are sustainably managed.

Photo by Spirit of Freedom

SEARCHING FOR LIVING FOSSILS

FEATURE **DAN SOUTHERN AFRICA** PHOTOGRAPHY **EVE MARSHALL**

Imagine diving in the waters of Sodwana, looking for fish and finding a (thought to be) extinct species. Underwater explorer Peter Timm, who set up operation Triton together with Rolleen Jacobs in 1996, is the man who made the discovery in 2000.

Timm famously rediscovered the Coelacanth, a primitive-looking fish that was thought to have gone extinct nearly 65 million years ago.

To celebrate his legacy, a group of friends who call themselves The Unified Dive Team, gather annually and go off on the amazing adventure in search of the illusive Coelacanth. The group submit their dive and emergency plans to DAN Southern Africa for approval before heading off on their quest – to keep operation Triton alive in the name of research. They collect data for the South African National Biodiversity Institute (SANBI) Marine Biologists and document the progress of the Coelacanth.

There are only two known species of this fossil fish: one lives in the waters just off Indonesia, and the other off the East Coast of Africa. They are found in extremely deep waters and have been known to reach over 2m in length and weigh up to 100kg.

This year, operation Triton came with the usual weeks of planning and preparation – backup divers, descent plans, emergency plans, financial issues, sponsors, sunburn, hyperthermia, hypothermia, equipment, cameras. All for 10 minutes at the bottom. This is how it went at Jesser Canyon:

THE DIVE

DAY 1: They had 12 minutes: 2 minutes to reach the bottom and 10 to search for the lost beauty.

Once they reached 108 metres under, everything happened quickly. Searching for the caves, finding the famous U-shaped cave.

Nothing came up in the first 7 minutes. And then…there she was. The Coelacanth, the very reason this all started, looking at them straight in the eyes.

Easily, without scaring her, they did their jobs in wonder, collecting data, taking pictures from all sides, looking for indicator species.

Time was up. They started making their way up to 60 metres to meet with the deep backup divers. A message went up: "One fish was spotted and all the divers are ok!". Celebrations started on board and DAN was updated about the progress.

It took 2 minutes to get down and 2 hours to resurface. But it was worth it.

DAY 2: The second day came up with seriously tough conditions: howling wind and a current of 70m/min. Don Hauman's first dive down to that depth was a tough one. At 100m, the team stopped their descent, unable to locate the caves. A further 10m down still brought nothing. Time was up.

DAY 3: You'd say third time's a charm, but no.

The third day was overcast and conditions were choppy. It was Janko's turn at a first deep dive. Once under the surface, conditions weren't as rough and they hit the U-shaped cave spot. Loads of fish were spotted in the third cave – but no Coelacanth.

DAY 4: On the fourth day they woke up to rain – pouring, soaking torrents of rain.

Kitting up, analysing and marking their cylinders in silence, everyone kept their eyes on the clouds that were showing no sign of clearing up. Grant, the skipper, made the call: "We dive! The rain fills the potholes and the ride will be smooth, albeit wet."

On the ride out, it dawned on everyone, they were the exact same group of people (with the addition of Don Hauman) who saw the last Coelacanth more than two years ago. Of course Timm, who passed away in 2014, was no longer with them, a gap that never goes unnoticed. It was the same divers, same skipper, same deck hands, even the same surface marshal.

They rolled over into the water and hit 90m in 2 minutes, landing about 15m from the U-shaped cave. Inspecting the surrounding areas, they found nothing. Until their lights shone into the actual cave.

And then it happened again.

She was approximately 2-3m inside the cave, calm and gracious. Jesser (as she is fondly known) was filmed, photographed (turning for the divers as if she knew the drill) and generally stared at by all.

Before anyone realised, it was over and it was time to deploy the buoys and head for the surface. History had repeated itself to the very same team.

Days 5 and 6 saw Riaan and Elaine doing their first super deep dives but, unfortunately, the Coelacanth remained elusive to them, leaving it up to next year's expedition team to continue documenting her progress.

TEAM SPIRIT

Coming back to reality, you just have to face the facts, you cannot do this by yourself. The Unified Dive Team is a group of friends, who support each other. They plan their DAN safety plans together and rally together for sponsors. A special thanks needs to go out to the surface crew who sat in the rough seas and pouring rain for the entire time – without them it simply couldn't happen!

This is a team of people who love diving, love the ocean and have an interest in the beauty of corals and fish. To them it's about so much more than the Coelacanth. It's about forming bonds that last lifetimes and creating stories that will be shared for generations to come.

DAN | AlertDiver

INTRODUCING: KURT ARRIGO

FEATURE **DAN STAFF**

You are a renowned specialist in marine photography. When and how did you set off on a mission to capture the unpredictable nature of the ocean?
I never really set off on a mission. It was more of a natural progression in my career and it is something which still gives me a lot of satisfaction and fulfilment. I feel very connected to the marine world. Being underwater re-energises my spirit and wellbeing. It keeps me alive.

Growing up on an island has definitely influenced my love and passion for the underwater world – I was only 10 when I first started diving. My dad, being one of the first pioneers of scuba diving in Malta back in the 1960s, was a huge inspiration on me growing up. I would accompany him at sea from a very young age. Then, I got into photography when I was 15 and underwater photography was an obvious thing to do. Till this day, I very rarely go for a dive without a camera. The camera has become an extension of my hand! I've been doing this for the past 30 years and I still enjoy the challenges. So ultimately, I'm still on a mission.

What draws you to the underwater world?
To me, the underwater world has always presented an element of unknown. No matter if I'm diving in the same location or using the same equipment, I'm constantly experiencing something which is different. And so I'm constantly learning ways of dealing with new challenges – I feel that through diving, you learn to become a problem-solver.

So what are the main challenges of underwater photography?
The challenges of being underwater are very different from being a photographer in a fixed studio or on land. Diving brings with it a lot of variables many of which are hard to predict and beyond our control, namely, the current, visibility, lighting, nature. As you start to read books about the subject, you'll come to realise that successful marine photographers must possess a good sense of humour because you never know what's coming your way! And it tests you – it tests your patience, tolerance, creativity, it tests yourself as a person. One of the main challenges is actually having to work with marine life. There might be instances when you go for a dive with something in mind and it's simply not happening. It's there where you learn to appreciate the little things, or the topography, the stones, the caves. Then there's the preparation. Before you embark on your assignment, you need to make sure you have the right diving and photography equipment since you're limited to the amount of camera gear you can take – it's not like on land where you can simply change a lens. If you're down there with a wide-angle lens you're limited to that style of imagery. Also, an average underwater shoot would take an hour, so time is also a limitation.

"I very rarely go for a dive without a camera. The camera has become an extension of my hand."

You're a precocious swimmer, diver, and sailor. Has this helped you take your images?
I feel lucky I was constantly by the water's edge as a young boy, and that I enjoyed it all tremendously – from the challenges to the preparation. When I talk to other marine photographers, I tend to tick a few more boxes – some might be more comfortable sailing and others not so much. So understanding all these areas has helped make my career as a marine photographer a lot easier.

In your career, you've swum with hammerhead sharks and undertaken intrepid environmental projects in the Galápagos Islands. How would you describe these experiences?
Overwhelming. Swimming with hammerhead sharks and spotted dolphins in the Bahamas, diving with bull seals – it made me feel insignificant. And especially for someone who like me has such a connection with the underwater environment, the feeling of sharing their territory is just so deep. When you do experience something bigger than you in terms of nature, there's also the element of risk which makes it exciting.

"It tests your patience, tolerance, creativity – it tests yourself as a person."

You have almost 69K followers on Instagram. How has social media changed the way you capture images and tell your visual stories?
Social media has definitely helped creatives express themselves and Instagram is a great platform to help me showcase my work. It hasn't changed the way I take pictures, but it has changed the way I share them. Whereas before I took pictures for myself or to show a handful of people, now I have an audience. So it has certainly helped me carry on expressing my passion. People started engaging with my work, by commenting and passing on lovely feedback. Before I would get some work published in a couple of magazines here and there, or perhaps participate in a competition to get recognition. But now it's easier. The social platforms available have reignited me to carry on. I share an image each day to keep my audience alive and I'm very happy to communicate with the people I'm doing this for.

If you were to recommend one thing to the readers, what would it be?
Diving is all about knowing your parameters. Be sensible and aware. If you're aware that things can go wrong, you will act sensibly within the diving environment.

Hometown: Malta
Years Diving: Over 30 years
Favourite Dive Destination: Each and every destination I've been to has challenged me in different ways. But if I were to choose, I think the Galápagos was the most exciting and diverse.
Why I'm a DAN Member: I first joined DAN when I started travelling. Knowing I was part of a community dedicated to the underwater world gave me a feeling of safety and a sense of security. Apart from that, it's also formative for me to be part of an organisation committed to understanding the nature of diving and divers.

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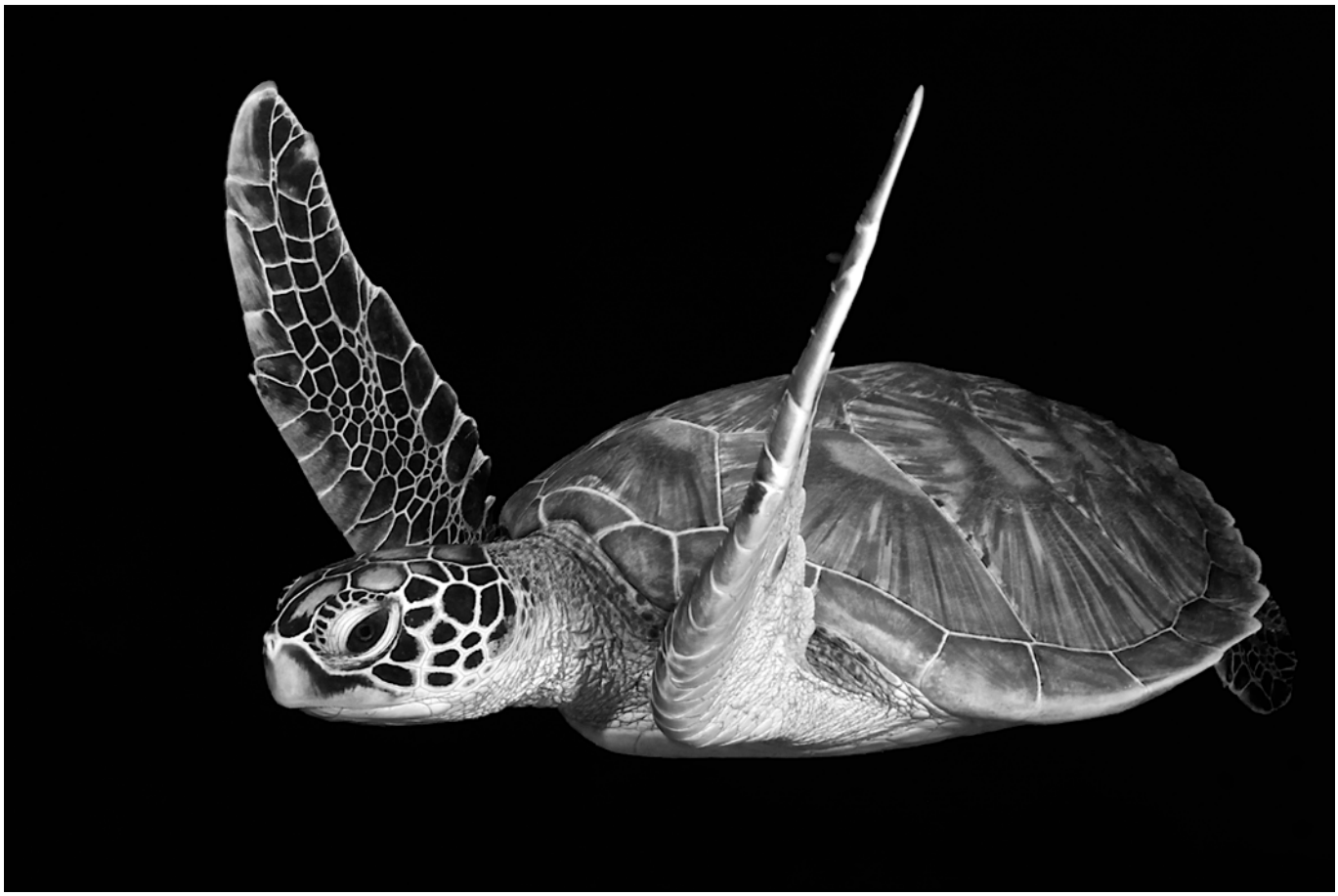

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LAGOON OF LOST SHIPS
A RUSTY PILGRIMAGE TO TRUK

FEATURE AND PHOTOGRAPHY **JESPER KJØLLER**

It's a challenge to avoid all the usual clichés when describing diving the wrecks in Truk Lagoon. The banalities are lining up: wreck diving paradise, the holy grail of wreck diving, number one on the wreck diver's bucket list, world's largest underwater museum. And the list continues. There is a good reason that diving the Japanese vessels in the lagoon has been described with these labels. They are all true!

L-R: Douglas Dauntless Bomber over Truk. This was one of the most important Allied aircraft in the Pacific WWII theatre; Burning Japanese freighter in front of Dublon Island; Ships of the U.S. Pacific fleet anchored at Majuro in the Marshall Islands, shortly before leaving to attack Truk.

A tropical lagoon in the Pacific with more than 60 ships from the Japanese WWII Navy has been a wreck divers' wet dream since the area was discovered in the early '70s. In the beginning, the logistics of diving this remote location resembled an expedition, but today you can leisurely explore the wrecks from a comfortable liveaboard. Jesper Kjøller spent ten days on Truk Master and had a blast – no pun intended.

Ever since I was a kid and I had watched Jacques Cousteau's documentary, Lagoon of Lost Ships, I wanted to visit the place – so far away from my native Denmark. Thousands of wreck dives later and 25 years after being certified as a diver, I finally find myself in Truk Lagoon for the first time.

I wanted to start the adventure well rested and fine-tuned to the Pacific time zone, so after arriving at the small airport on Weno, I planned to adjust my jet lag at Blue Lagoon Resort, where I had booked two nights before boarding the Truk Master. The road from the airport to the resort is in poor condition, but it is surrounded by exotic scenery. Women walking alongside the road in colourful outfits with flowers in their hair look like they have just stepped out of a Gauguin painting. Strangely the cars all seem to have right hand side steering, but they don't drive on the left side. Maybe that is why so many wrecked cars are left beside the road?

Blue Lagoon Resort is a somewhat shabby lodge with a very laid-back service concept. However, it is said to be the best resort on the island. I remind myself that Truk is a poor and remote location, and I spend most of the two days on the resort reading up on the historical background of the adventure that lies ahead of me.

SECRET FORTIFICATION

There were already ties between Japan and Truk back in the late 19th Century when Japanese seafarers began visiting the islands inside the enormous atoll. After World War One, Japan was formally awarded a mandate to govern Micronesia as part of the Treaty of Versailles. Japanese expatriates settled on the islands and developed the infrastructure. The two cultures blended and interracial marriages were not uncommon, a fact that even today is evident in the locals' facial features and names. As Japan became increasingly more militarized in the 1920s and '30s, naval officers recognised the advantages of the sheltered lagoon. They secretly turned Truk into a fortified stronghold. The lagoon was ideally situated halfway between Hawaii and the Philippines, and Truk became Japan's principal naval supply station for both commercial and military operations in the Pacific Theatre.

The military reinforcement of the lagoon was in direct violation of the Treaty of Versailles, but the Japanese managed to carry out the fortification in utmost secrecy, and no foreigners were allowed to visit the area.

KNOWLEDGEABLE CREW

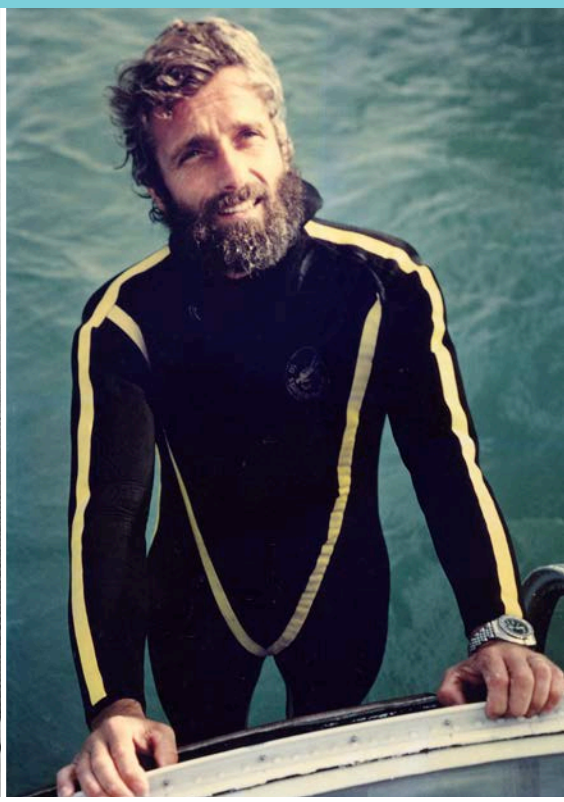
After a few days, I left terra firma to embark the Truk Master. On board, I was met with a stark contrast to the weary resort – on the boat everything was clean, effective and streamlined. The local crew members are very friendly, helpful and speak excellent English, and the Truk Master is roomy with large cabins and plenty of space for cameras and gear. The satellite-based Wi-Fi on the boat is probably the fastest and most reliable in Micronesia. However, it's expensive to use, so it is wise to limit internet time to a minimum – or to just go off the grid for a while.

The boat is captained by the experienced British skipper, Martin Cridge, who himself is an enthusiastic wreck diver and the ten-day trip is led by the young, but very competent cruise director, Aron Arngrímsson from Iceland. Martin and Aron's combined extensive knowledge of the wrecks and their enthusiasm for Truk adds an extra dimension. In addition, the local dive guides on Truk Master knows every nook and cranny of the wrecks – they have literally grown up on them.

The boat has a nice reference library in the saloon, so after setting up my equipment and camera, I continue my studies of Operation Hailstone whilst waiting for the trip to commence.

SITTING DUCK

The Americans suspected that Truk Lagoon was used as a Japanese anchorage, but they had no idea of the massive scale of the military operation inside the lagoon. There were over 40,000 Japanese civilians living and working in Truk. Over 1,000 war and supply ships were moored there and a total of five airfields supported close to 500 aircraft. Among the vessels were battleships, cruisers, submarines, aircraft carriers and in addition a huge number of auxiliary vessels, supply ships, and tenders.



L-R: Dive bombers over Truk; The two month expedition in 1969 was a Philippe Cousteau operation. Papa Cousteau only stayed in Truk Lagoon a few days.

As the war progressed, the allied forces gradually came closer and closer, and early in February 1944, the lagoon was overflown by two American PB-4Y Liberator reconnaissance aircraft from a base in the Solomon Islands. The Japanese tried to shoot down the spy planes, but the American pilots managed to escape with revealing recce photos. The secret was out. The US generals immediately started planning an air raid from aircraft carriers. Operation Hailstone was conceived.

The Japanese commanders realised that Truk was a sitting duck and they instantly decided to evacuate the more valuable warships to another base in Palau. But many cargo vessels stayed behind and others were still incoming, unknowing that the cover had been blown.

Some of the ships could not move because they were under repair or they were in the middle of off-loading cargo. There was also a shortage of fuel. A few vessels were empty, but many had holds and decks packed with tanks, mines, artillery, land vehicles, aviation spare parts, fuel and other supplies for the Japanese war machine.

STILL LIFES

After a few warm up dives, it came time to dive the mighty Shinkoku Maru, which is completely encrusted with soft and hard corals. In fact, the superstructure is so overgrown with marine life that the wreck took an extra hard beating during the hurricane in March 2015. The additional weight from the corals made the funnel collapse in the rough weather.

There is so much nature to be enjoyed on Shinkoku that you almost forget that it's a reef of metal. Everywhere, clouds of glass fish swarm in the shadows between huge branches of soft coral. Every square centimetre is covered with corals or huge sea anemones with clownfish. The railings of the vessel are invisible behind all the growth. A grey reef shark follows us from a distance and the local turtle peeks out from one of the holds and swims away slowly. With so much life, it's no wonder that Shinkoku Maru is a popular night dive.

If you for a moment forget that you're diving a renowned WWII shipwreck, you are quickly reminded of that reality when you navigate through the explosion hole in the starboard side and wriggle into the huge engine room. The lower parts are quite narrow and require a guide who knows the route well. The upper part of the engine room, on the other hand, is an enormous cathedral with a dim shimmer of light that penetrates through the skylight at the top.

Up on the deck, which is around 18-20 metres, there are plenty of details to enjoy. Partly covering the dial of the stern machine telegraph sits a white sea anemone, complete with a small resident clown fish.

It is tempting to describe Truk Lagoon as the world's largest underwater museum, but someone would misunderstand the concept a little. I assume it is well-meaning local dive guides that have arranged the line-ups of artefacts that are typical of Truk. On most wrecks, you'll see still lifes of bottles, porcelain, boots, ammunition, gas masks, cookware and all kinds of knickknacks neatly arranged in photogenic positions. A more naturalistic approach would convey a better impression of life on board, but I'm sure these line-ups were done with good intentions.

Inside the superstructure, we swim into the infirmary, complete with operating table. Someone has arranged an assortment of large bones on the table, but I seriously doubt if they are human. On the bridge, there is no less than two intact machine telegraphs and a nice compass house, but the bridge is swarming with so much fish life that it is almost impossible to take pictures.

I'm only a few dives into the trip, but so far, I'm inclined to nominate Shinkoku Maru as my preliminary favourite. The combination of all the intact maritime hardware, the impressive marine life and the cathedral-like engine room will be hard to beat.

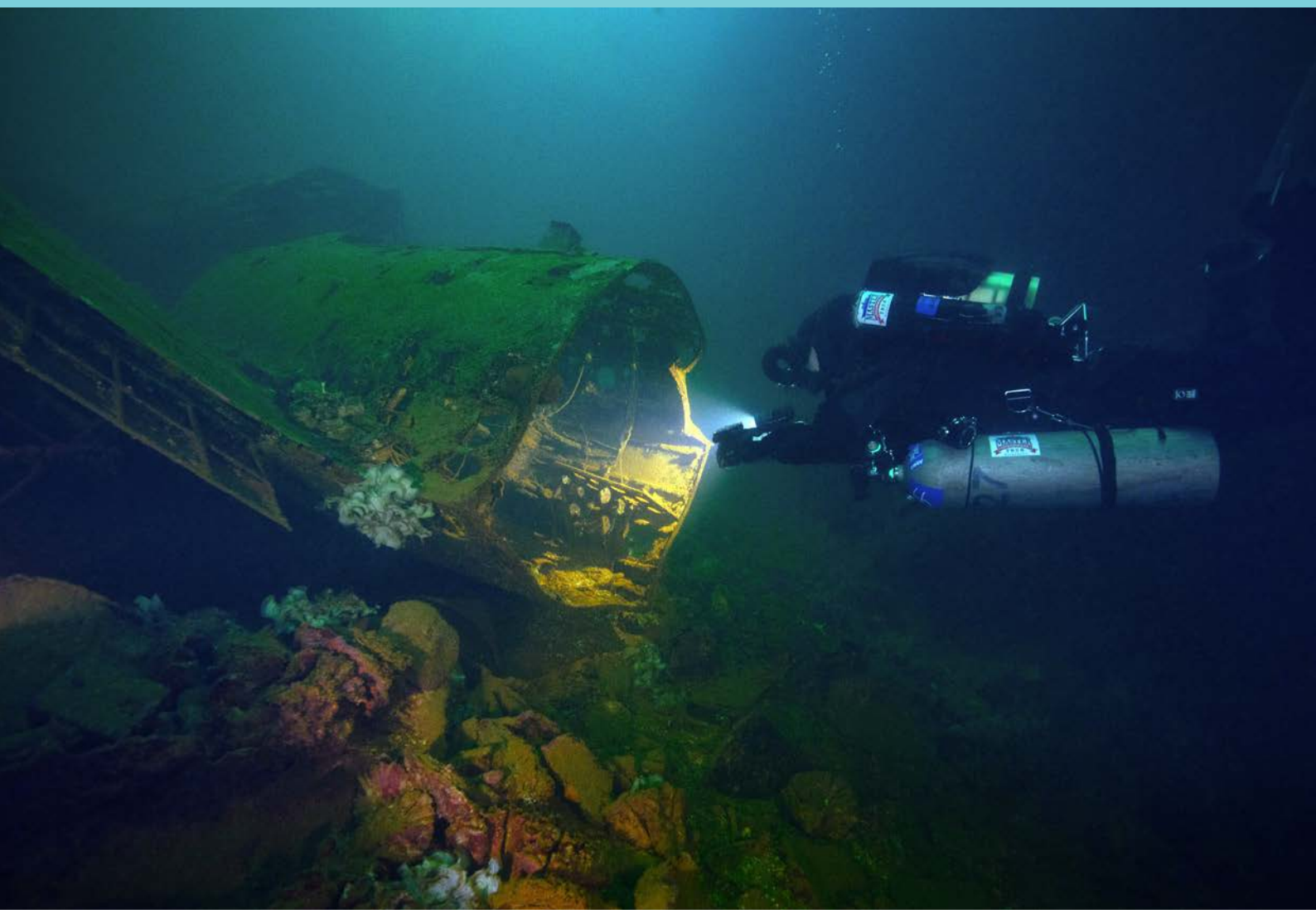
The historic setting is what makes the dives on Truk unique and I dive back into the history books whilst off gassing before the next dive.

ONE-SIDED BATTLE

On the 16th of February 1944, a powerful American naval assault force consisting of battleships, cruisers, aircraft carriers, patrol submarines, plus supply and support vessels approached the lagoon undetected. The fact that the Japanese had evacuated the heavy warships made Truk much more vulnerable, and even if the Imperial Japanese forces suspected a forthcoming attack, they were still caught completely off-guard when Operation Hailstone began the following morning at sunrise.

American Grumman F6F Hellcat fighter planes swept over the lagoon abolishing the Japanese air power. At the beginning of the war, the legendary Japanese Zero fighter had outclassed allied fighter planes, but they were no match for the new powerful Hellcats, and the Japanese pilots were young and

Heinan Maru is lying on her side, so exploring the holds and the engine room is a little bit of a navigational challenge.



Inside the hull of Fujikawa Maru you will find a couple of Zero fighters.

inexperienced. The air attack on Truk was so swift and forceful that it resembled the Japanese strike on Pearl Harbor in 1941. It was payback time.

Many Japanese planes were never airborne – they were demolished on the ground. Others were shot down as they lifted off or during short, violent dogfights with the Hellcats.

The American forces established control of the airspace over the lagoon in just a few hours and soon began to launch wave after wave of bomber planes to attack the now vulnerable cargo ships and land installations. Throughout the rest of the 17th of February and into the 18th of February, Douglas Dauntless, Grumman Avenger and Curtiss Helldiver bombers dropped their lethal payload on the defenceless Japanese fortifications and cargo vessels. It was a one-sided battle.

Operation Hailstone resulted in the Japanese loss of three light cruisers, four destroyers, eight smaller warships, 32 merchant vessels, and approximately 275 aircraft.

NATURE TAKEOVER

From the beginning, the dive operators in the lagoon have been aware of the importance of guarding the underwater treasures that attract the visitors. Good care has been taken to protect the wrecks against pillaging. When leaving the islands, one's baggage is subject to being thoroughly searched (apparently they do not have an x-ray machine at the airport). If you get caught with any relics from the wrecks in your luggage, you risk a fine of 10,000 USD or even a jail sentence. Inevitably, some articles have disappeared over the years. However, there are still so many interesting objects on board the vessels, that there is still enough for everyone to enjoy in situ.

After 73 years at the bottom, the ships are slowly breaking down. One thing is the corrosion, which naturally sets its mark and over time obliterates the metal, but the extensive coral colonisation is another thing that helps to blur the contours and the details, especially on the shallower wrecks. In many places, the wrecks are so encrusted with corals that you must have a good imagination (and a solid knowledge of maritime architecture and function) to understand what you are looking at. I kind of like it. There is something encouraging about seeing how the underwater flora and fauna reclaim its space given enough time. It's like watching the roots of a big tree squeezing through a thick layer of asphalt. Sooner or later, the nature takeover in Truk will be complete.

THE SMELL OF GASOLINE

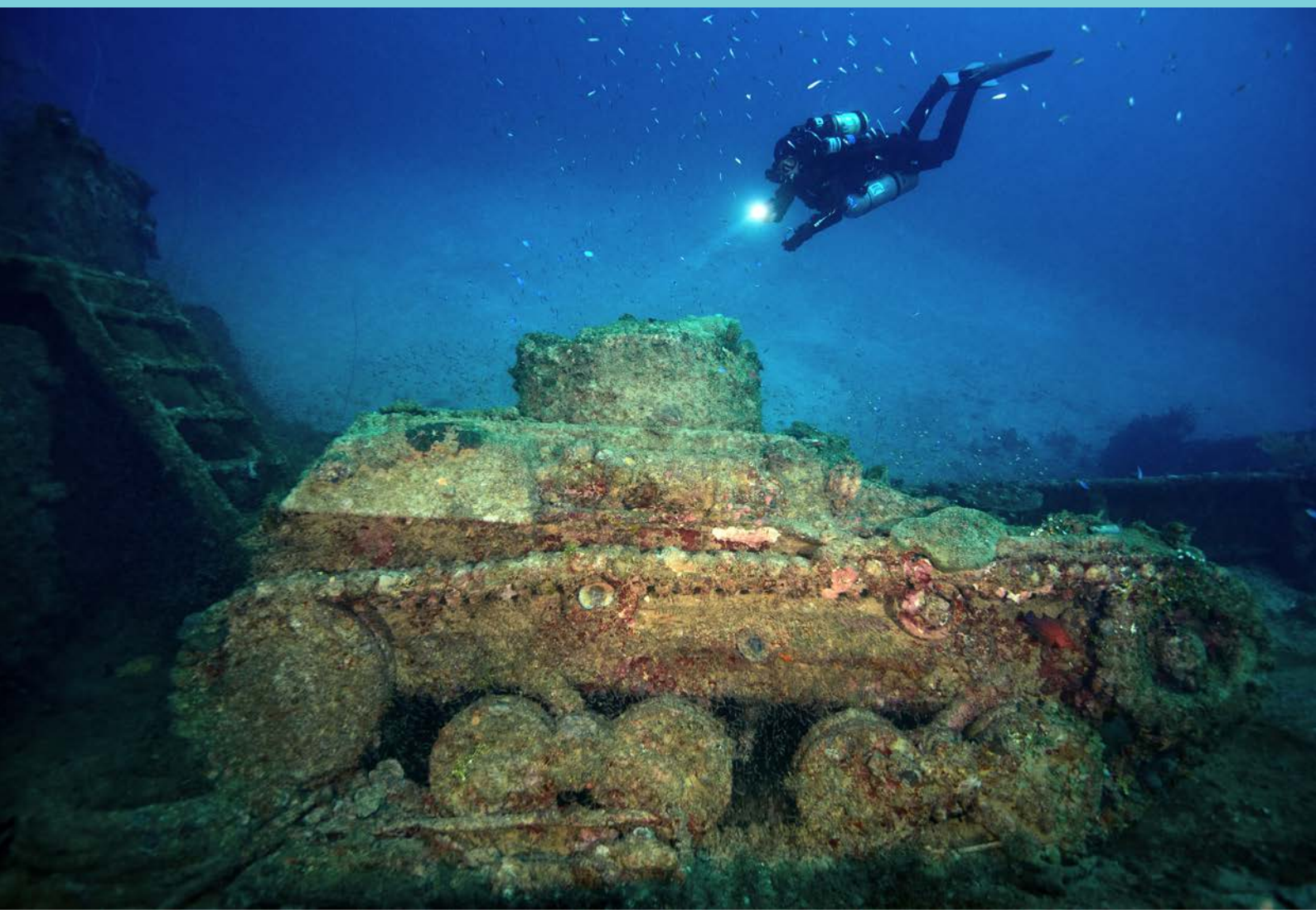
After the war, nobody paid any attention to the Japanese ships on the bottom of the lagoon. The world tried to heal the wounds after WWII and almost no salvage efforts were launched. The locals in Truk had to deal with the toxic reality of the war they never wanted any part of. Many of the ships were leaking oil and aviation fuel in significant quantities. Even today the smell of gasoline is evident above the surface on a few of the wrecks.

Life on the islands just continued, and the abandoned military installations either found a civilian purpose or were just left to decompose as nature took over.

The wrecks were forgotten. And soon Truk was also forgotten. Until a certain French underwater explorer turned up 25 years later…

DÉJÀ VU

When I descend on the famous San Francisco Maru, it is with a special feeling of having been there before. A kind of wreck déjà vu. For over twenty-five years I've been dreaming of this wreck and I've seen so many iconic images of the famous pile of 95 HA-GO tanks that it all seems vaguely familiar – though this is my first dive on the Million Dollar Wreck, as it is affectionately known.



The Type 95 HA-GO tanks on the deck of San Francisco Maru are tiny, but the Japanese still managed to squeeze three soldiers inside them.

Many divers consider San Fran the climax dive of the lagoon. And it is an impressive wreck with the valuable cargo of mines, explosives and the three type 95 HA-GO tanks on the deck. How they managed to fit a commander, a machine gunner, and a driver in those tiny vehicles are mind blowing.

Japanese seamen must have been very thirsty. Beer bottles are found everywhere on the wrecks. The odd one here or there, but often in stacks, in boxes or in huge piles.

Between dives, I spent time in the reference library on the boat. I had already found out about the events that led to the American air strike in February 1944, but I wondered how Truk surfaced as a world class diving destination. I know that Jacques Cousteau played a key role, but how exactly was Truk rediscovered after being completely forgotten after the war?

To find out, I had brought a copy of a Cousteau documentary with me and I played it on the screen in the spacious saloon on Truk Master one evening after dinner.

THE MAN IN THE YELLOW STRIPED SUIT

A lean man in a strange rubber suit with stylish yellow stripes climbs down the dive ladder. Actually, the man is so skinny that he barely manages to fill out his suit. He is not a young man. His thinning grey hair, his almost fragile appearance and the weather bitten features suggest that he must be in his sixties. He is wearing the most basic set of scuba equipment imaginable. The yellow steel tank is strapped to his back with a simple harness. The tank has a first and a second stage joined by a single hose. On his wrist is a divers watch. His kit is completed by rubber fins and a mask. That's it. No frills.

He fits the mask to his face, puts the regulator in his mouth and disappears under the surface. He is moving around with an agility and ease that contradicts his age. He is exploring the wreck in Truk Lagoon with an agility that almost makes you think he invented scuba diving. Which in fact he did. The man in the yellow striped suit is, of course, Jacques-Yves Cousteau, and the scene can be enjoyed in the legendary documentary, Lagoon of Lost Ships.

ALONE ON THE WRECKS

San Francisco is a rather deep dive with an average depth approaching 50 metres, so for divers that would rather spend time exploring the wrecks instead of doing extended hang times, the Nippo Maru, in my opinion, has even more to offer. Among the highlights on Nippo are the Haubitzer-guns, an HA-GO tank similar to those on San Francisco, tons of ammo and the usual assortment of mess gear, gas masks and beer bottles.

The engine room is a cornucopia of rusty panels, gauges and weird looking instruments, but the highlight of a Nippo-dive is the extremely photogenic bridge with the two intact machine telegraphs and the appealingly colourful steering binnacle.

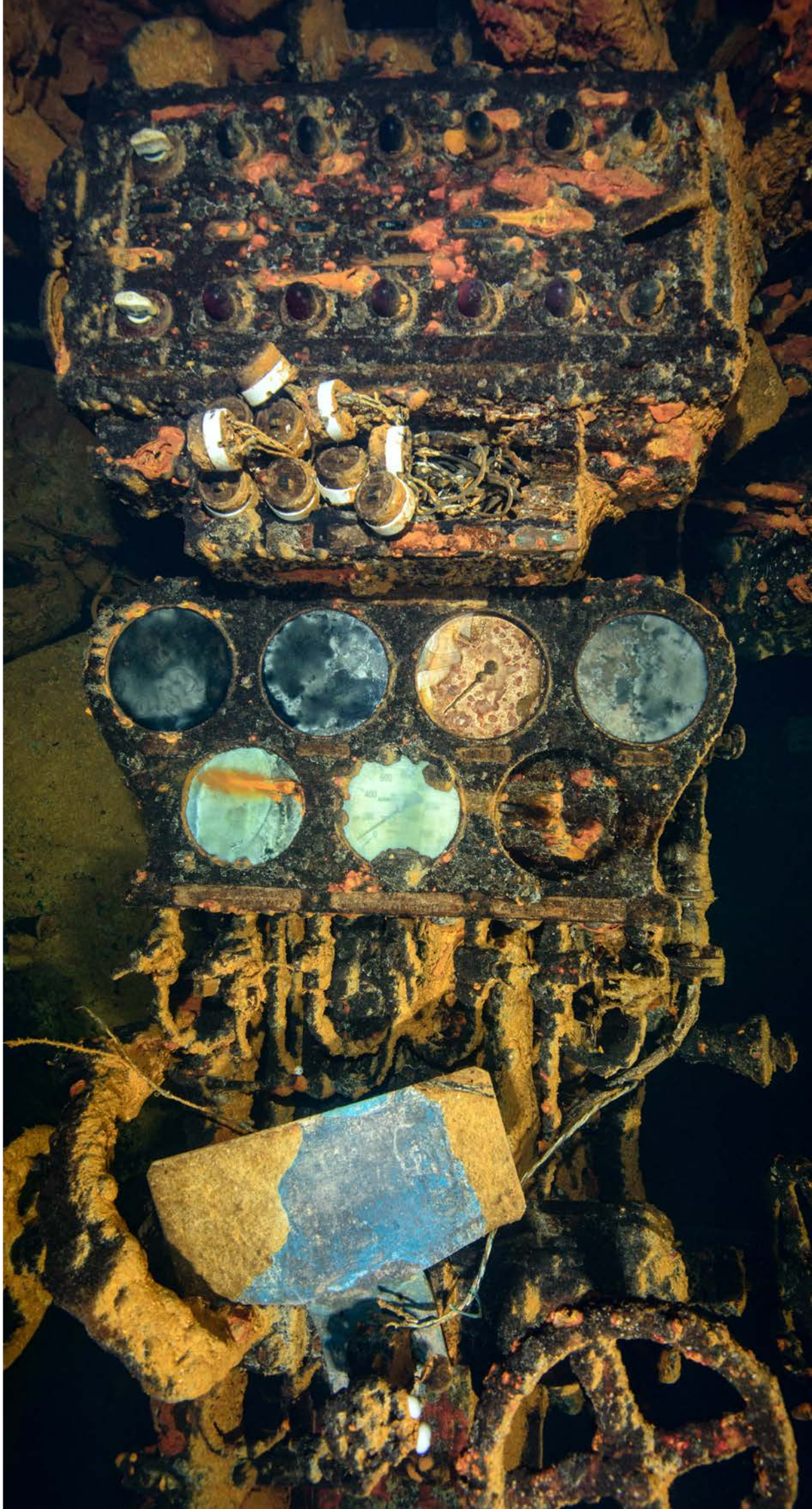
It is a rare treat to have the wrecks completely to ourselves. During my ten days on the Truk Master, I did not meet any other divers underwater except for my fellow travel companions. There are currently only three liveaboards operating in the lagoon, and the small day boats from the land-based dive centres have plenty of wrecks to choose from. To be alone on these world class wrecks bestows the trip with an extra exclusive element and a tangible sense of expedition.

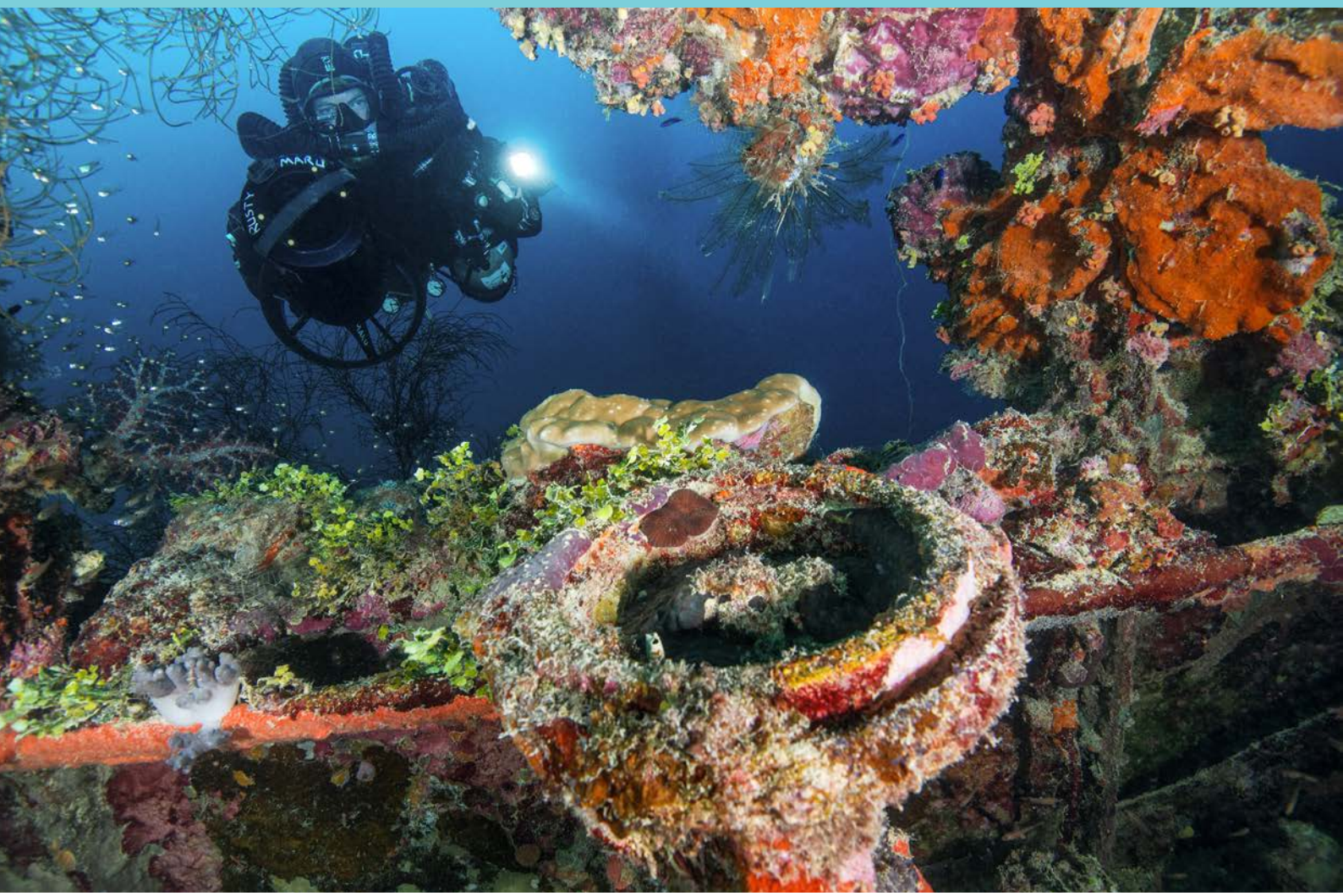
I wonder if the Cousteau team also dived the Nippo Maru? How did they find their way to Truk lagoon in the first place?

CALYPSO GETS A FACELIFT

In 1966, the American producer David L. Wolper approached Jacques Cousteau with

LEFT: The Imperial Japanese Navy's signature lance torpedos in the hold of Heinan Maru. A fast and extremely effective weapon. **RIGHT:** One of the many interesting panels inside Heinan Maru. The face of the middle dial in the lowest row reads, "Burmeister & Wain – Kjöbenhavn (Copenhagen)". For more than a century, Burmeister & Wain was a leading Danish producer of diesel engines.





LEFT: The shallower wrecks in the lagoon are bursting with marine life. This compass binnacle is almost unrecognisable. **RIGHT:** In Truk Lagoon it is also possible to dive on submarines, destroyers and aircrafts such as the well-preserved wreck of a Betty Bomber at 18 metres.

the idea of making a TV series, but after visiting the Calypso, Wolper became somewhat disappointed. "It looks like shit!", he said.

Everything needed to be streamlined on television in the US during an era where clean-cut NASA astronauts in sparkling white space suits were the nation's biggest heroes.

It was Wolper's idea to pimp up Calypso and the crew with the stylized wetsuits, the yellow helmets with radio communication and to wrap the aqualungs in streamlined plastic casings. Wolper was the mastermind behind the space-age look, but Cousteau took it and ran with it. Calypso got a much-needed facelift and was transformed into a floating television studio with a huge capital injection from the television network ABC.

The Undersea World of Jacques Cousteau became a hugely popular tv-series and ran all over the world from 1966 to 1976.

The Cousteau team and the producers were always on the lookout for new adventures, and Truk caught Cousteau's attention when he read an article in the Los Angeles Times. It was written by the syndicated journalist Charles Hillinger, an American WWII veteran. He knew about Truk from his time on board US aircraft carriers in the Pacific Theatre. On the 26th of May 1969, the LA Times heralded the first newspaper story ever written about the wrecks in Truk under the headline: Sunken Japanese Fleet Lie Untouched in Lagoon of Truk. A few days later the journalist received a call from Jacques Cousteau, asking detailed questions about Truk. It's fair to speculate that Cousteau felt a sense of urgency. He wanted to be the first to plant the diving flag in Truk.

STEAM PUNK

Another highlight of the trip is our exploration of Heian Maru, the largest wreck in the lagoon. The 163-metre ship is resting on its port side at 35 metres and is very easy to identify as the name can clearly be read on the stern – both in Western letters and Japanese characters.

Before the war, she was carrying 300 passengers and cargo across the Pacific. But when the war was a reality, she was converted into a submarine tender.

Our rebreathers are a big advantage inside the wrecks, where exhalation bubbles would have produced a rusty rain, which can aggravate the visibility, and at worst, make it difficult to find the exit. Our navigation is disadvantaged by the fact that the wreck is resting on its side and it is difficult to maintain a mental picture of what is up and what is down.

Aaron moves slowly and carefully in front of me. I stop to take photos of exciting and rusty details. This engine room is a treasure trove of rusty relics, and we cheer loudly in our rebreather mouthpieces as we find legible displays, intact gauges and weird configurations of twisted pipes and hand wheels. Large panels of electrical knife switches look like something straight out of an old Frankenstein movie. Fans of the steam punk style would have a blast here. We are in a haunted house of twisted ladders, stairs and gangways. On the face of a big dial, I can clearly read Burmeister & Wain – Kjöbenhavn (Copenhagen). For more than a century, Burmeister & Wain was a leading Danish producer of diesel engines.

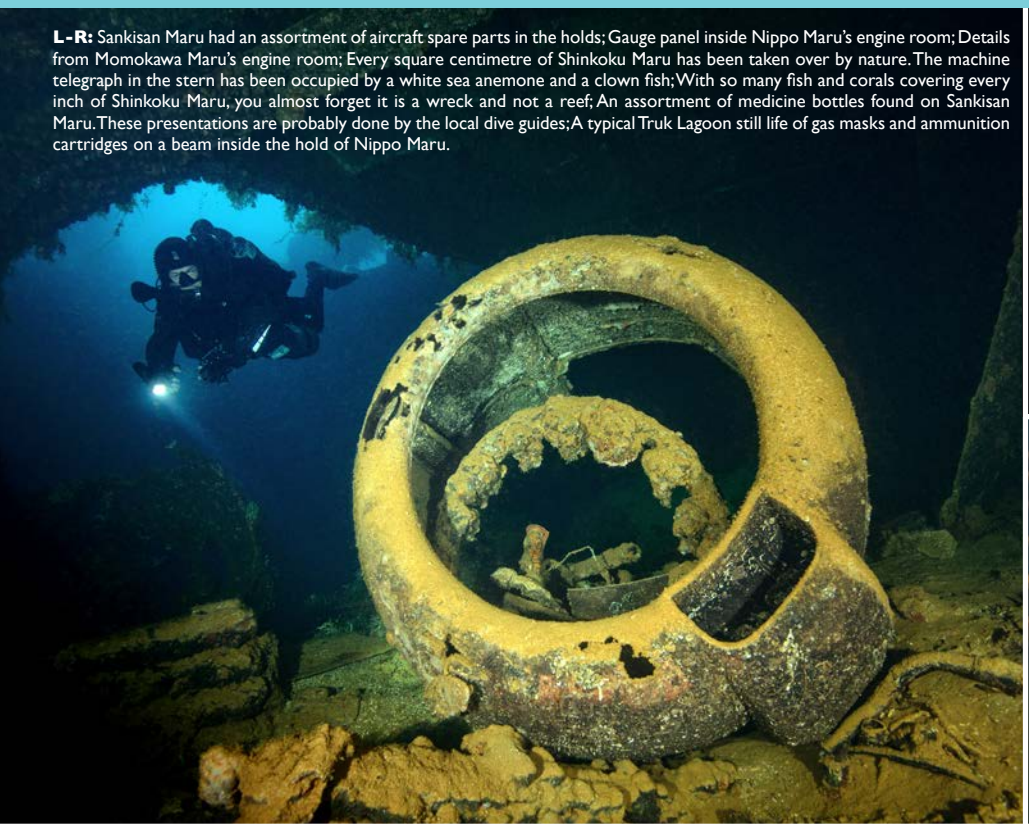
We could easily spend the whole dive in here, but it's time to return before we venture too deep inside the narrow and twisted passages. And we also need time to investigate the enormous lance torpedoes and the pile of spare U-boat periscopes that Heinan Maru was carrying. An epic dive.

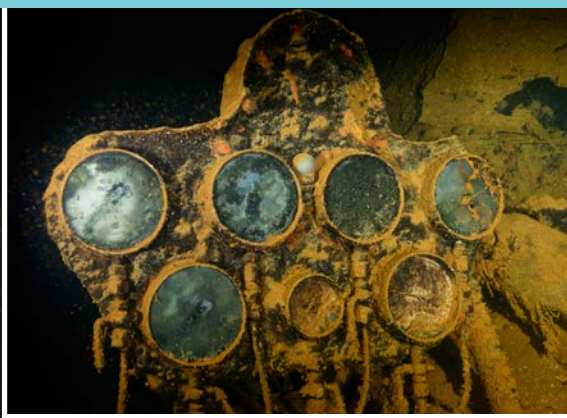
NEW TECHNOLOGY

The Cousteau expedition arrived in Micronesia less than two months after Truk was outed in LA Times. They did not have time to make the long journey with the famed Calypso, so a local tugboat, The Hopeful was hired.

This colourful configuration of lights is one of the many gems deep inside the engine room of Heinan Maru.


MASTER
LIVEABOARDS
TRUK
MICRONESIA





L-R: Sankisan Maru had an assortment of aircraft spare parts in the holds; Gauge panel inside Nippo Maru's engine room; Details from Momokawa Maru's engine room; Every square centimetre of Shinkoku Maru has been taken over by nature. The machine telegraph in the stern has been occupied by a white sea anemone and a clown fish; With so many fish and corals covering every inch of Shinkoku Maru, you almost forget it is a wreck and not a reef; An assortment of medicine bottles found on Sankisan Maru. These presentations are probably done by the local dive guides; A typical Truk Lagoon still life of gas masks and ammunition cartridges on a beam inside the hold of Nippo Maru.

Most of the identities of the wrecks the team dove were unknown or unconfirmed. They used the knowledge of local fishermen, eyewitness accounts, sonars, maps and spotter planes to locate the wrecks. Some were visible from the surface while others were revealed by oil slicks or gasoline smells. The technology and know-how that the Cousteau-team brought into the lagoon made it possible to map and properly explore the wrecks for the first time. Eight weeks later the team had logged 480 dives on 33 different wrecks. Papa Cousteau flew in to sprinkle a little stardust over the footage, but he only stayed in Truk a few days. It was a Philippe Cousteau operation. Controversially, the Cousteau expedition not only left with hundreds of hours of 16mm colour footage, but also with several crates of artefacts for "study". They did not share the positions of the wrecks with anyone and the relics from the wrecks ended up in the Cousteau estate and the eternal legal battles of the family.

The Truk-episode originally aired in May 1971 as part of the popular series, Undersea World of Jacques Cousteau.

I don't know exactly when I saw Lagoon of Lost Ships for the first time, probably late in the seventies. But I distinctly remember the sequence where the team dives a wreck with human bones and skulls inside. The voice-over in the show claims the wreck is at 300 feet (roughly 92 metres). The ship is likely the Aikoku Maru that in reality rests at 64 metres and the superstructure where they find the captain's chest, the shoe and the cap are likely not much deeper than 50 metres. Still a deep air dive, but a little more achievable than "300 feet". A little exaggeration now and then for added drama was not uncommon in the Cousteau documentaries.

HAIL MARU

Many of the merchant ships are of the same type. Before the war, the civilian Japanese shipping industry was heavily subsidized by the Empire and many private cargo vessels were designed – at the polite request of the rulers – so that they could easily be converted for military purposes if the war broke out. Other vessels were simply confiscated by the Japanese Ministry of War.

The Japanese convention for naming ships was quite different from the western tradition. Warships were never named after people. Merchant vessels always include the word Maru and the origins of this norm are unclear. Some people suggest that Maru can mean circle, and that it symbolises something perfect or complete. But since it also means round or even chubby, Maru was often used as an affectionate nickname for slightly overweight kids! The merchant ships are significantly chubbier compared to the sleek destroyers and minesweepers that were built for speed, not for loading capacity. Maybe the tradition of adding the Maru suffix to the merchant vessels was a way to give a personal touch to the name? Anyway, the fact remains that all the non-military vessels in the lagoon carry the suffix Maru.

IT IS TRUE!

It's a challenge to avoid all the usual clichés when describing diving the wrecks in Truk Lagoon. The banalities are lining up: wreck diving paradise, the holy grail of wreck diving, number one on the wreck diver's bucket list, world's largest underwater museum. And the list continues. There is a good reason that diving the Japanese vessels in the lagoon has been described with these labels. They are all true!

Where else can you find so much WWII history in one place, the Cousteau legacy and enough aircraft, submarines, warships and cargo vessels to last a lifetime of exploration? And in calm, warm and clear tropical water with plenty of marine life to complement the wrecks.

I know that after ten days, I have only scratched the surface of the lagoon and that I want to go back. I'm already planning my next trip.

CHUUK OR TRUK?

I really should write Chuuk, as this is the correct and current name of the state since Federated States of Micronesia (FSM) was formed in 1979. Chuuk means mountain or mountainous in the local tongue. Using Truk is like calling Sri Lanka: Ceylon or mentioning Myanmar as Burma. But I've decided to stick with the old name. The place was called Truk during the war and when the wrecks were rediscovered by the Cousteau team in 1969. Truk Lagoon is a well-known brand all over the diving world. So Truk it is.

TRUK MASTER

Truk Master is the newest liveaboard in Truk, welcoming aboard 16 guests for 7 or 10 nights in the Lagoon. The four decks provide ample space for relaxation, dive equipment and camera preparation. Truk Master also offers occasional trips in the Bikini Atoll. Truk Master is well equipped to cater for the needs of tech-divers on open and closed circuit. It is a huge challenge to run a liveaboard operation in such a poor and remote location, where everything has to be shipped from Guam. But the crew on Truk Master makes it look very easy and you almost forget how far from civilisation you are. Given the long-distance travel and the time difference, I definitely recommend the 10-night trips. You will still feel that you have only scratched the surface of Truk Lagoon.

www.masterliveaboards.com

DIRTY DOZEN

Throughout 2018 and 2019, Aron Arngrímsson will be offering a series of expedition style trips with Truk Master exclusively for technical divers. He has selected the 12 most interesting and lesser dived deeper wrecks for the Dirty Dozen trips in Truk. The first Dirty Dozen excursion in March 2018 is already sold out, but those interested in subsequent trips can get in touch with Aron through Facebook or mail him at **info@dirtydozen.org**. There are also Bikini expeditions in the pipeline.

THE FACTS:

HISTORY

Federated States of Micronesia (FSM) was founded in 1979 and includes the island states, Pohnpei, Kosrae, Yap and Truk (Chuuk). In total, the Federation consists of 600 islands.

Truk was under Japanese rule before and during World War II and formed a base for the Imperial Japanese Navy (IJN). The lagoon was attacked by American forces during Operation Hailstone in February 1944.

GEOGRAPHY AND CLIMATE

Truk is located in the northern Pacific, seven degrees north of the equator and is rarely exposed to hurricanes. The islands are mountainous (Chuuk means mountain or mountainous in the local tongue).

The average temperature is fairly stable year-round at 25-30 degrees Celsius. The weather changes all the time, and it rains heavily now and then, but often only for short periods. The water temperature is a comfortable 28-30 degrees year-round.

TRAVEL

Most people arrive via Manila, from where United Airlines operates a route to Truk across Guam. Guam is US territory and even if you are in transit, you must have entry clearance to the United States (ESTA).

CURRENCY

US Dollars

TIME ZONE

Both Truk and Guam are on GMT +9.

DIVING

The diving is relatively easy with only weak or no current. The visibility varies from wreck to wreck and seasonally. A 3mm wetsuit is sufficient, but choose a full suit and consider gloves and a hoodie if you are doing penetration.

Although the wrecks are the main attraction, there is plenty of nature to enjoy – both on the wrecks and on the outer reefs, if weather permits. Truk is ideal for all divers, with 70% of the wrecks lying within recreational depths, but it is a wonderland for technical divers with the ability to do extended bottom times and explore the deeper wrecks.

SCHEDULE

Truk Master offers four daily dives. The day starts with a light breakfast, followed by the first dive after which a full breakfast is served. Lunch is served after the second dive and then dive three and four in the afternoon. The normal modus operandi is doing two dives at each wreck, but on some wrecks sometimes three or even four dives are conducted. Most of the wrecks are fairly close together and the boat seldom moves for more than an hour. Technical divers tend to opt for fewer but longer dives. On a rebreather, it is tempting to do two or even three hours bottom time on the more interesting wrecks.

HEALTH

There is a basic recompression chamber in Truk and an even more rudimentary hospital. Serious DSC problems require evacuation to Guam. Make sure you have your diving insurance in order and that it covers emergency recompression transportation. Dive conservatively, make extended safety stops and drink plenty of fluids to prevent decompression sickness.

ELECTRICITY

110 volts in US style plugs. On board the Truk Master, the central European plugs have 220 V. Bring an adapter.

PERMITS

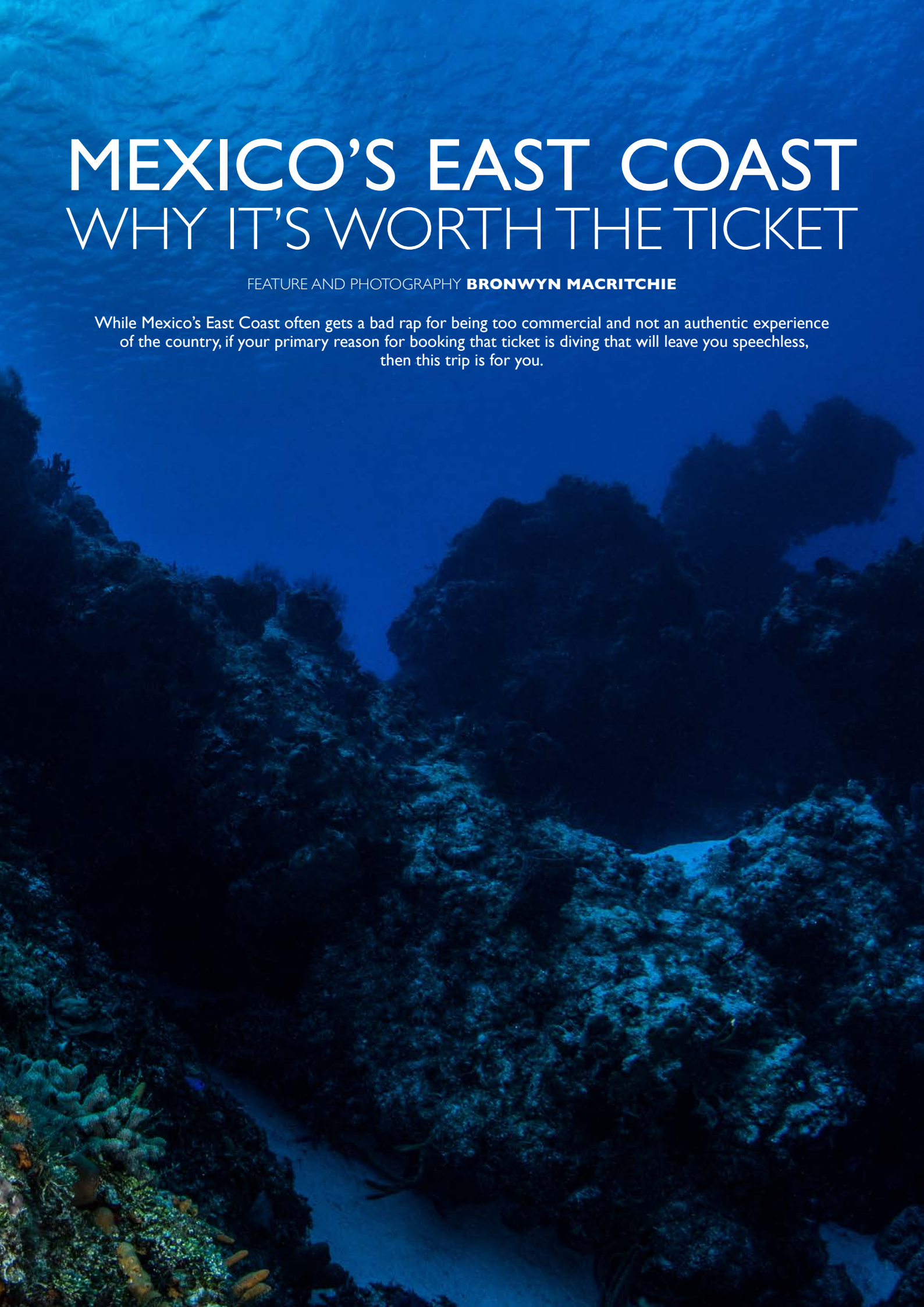
All divers visiting Truk must have an official diving license that currently costs 50 USD and is valid for 12 months. Master Liveaboards handles the administration, and the permit is included in the price. The 40 USD exit tax is payable in cash at the airport upon departure.

IMAGES TOP TO BOTTOM: Aron Arngrímsson (left) and Jesper Kjøller (right) in dry suits and rebreathers – the perfect tools for extended range diving on the wrecks in Truk Lagoon; Truk Master has a solid deco bar under the dive platform to offer stability during safety stops; All dive briefings are done in the spacious saloon on the third deck; M/Y Truk Master is the newest liveaboard in the Lagoon. She is a comfortable and spacious vessel with capable crew; Truk Lagoon is a tropical paradise, but also a very poor state.

MEXICO'S EAST COAST
WHY IT'S WORTH THE TICKET

FEATURE AND PHOTOGRAPHY **BRONWYN MACRITCHIE**

While Mexico's East Coast often gets a bad rap for being too commercial and not an authentic experience of the country, if your primary reason for booking that ticket is diving that will leave you speechless, then this trip is for you.



THIS PAGE: The VW Beetle in Cancun. **OPPOSITE PAGE:** Silent Evolution, Cancun.

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CANCUN

The perfect East Coast itinerary would see you start with a day or two in Cancun, where you can dive the legendary underwater museum. If this is your first experience diving on this side of the world, you will be enchanted by the opalesque tones of the sea on the boat trip to the site. Once underwater, the marine life in the area is a little sparse, but that isn't what you came here to see. The museum contains a number of 'exhibits', two of the most impressive being the collection of over 450 life size figures known as the Silent Evolution, and the Volkswagen Beetle which is also built to scale.

COZUMEL

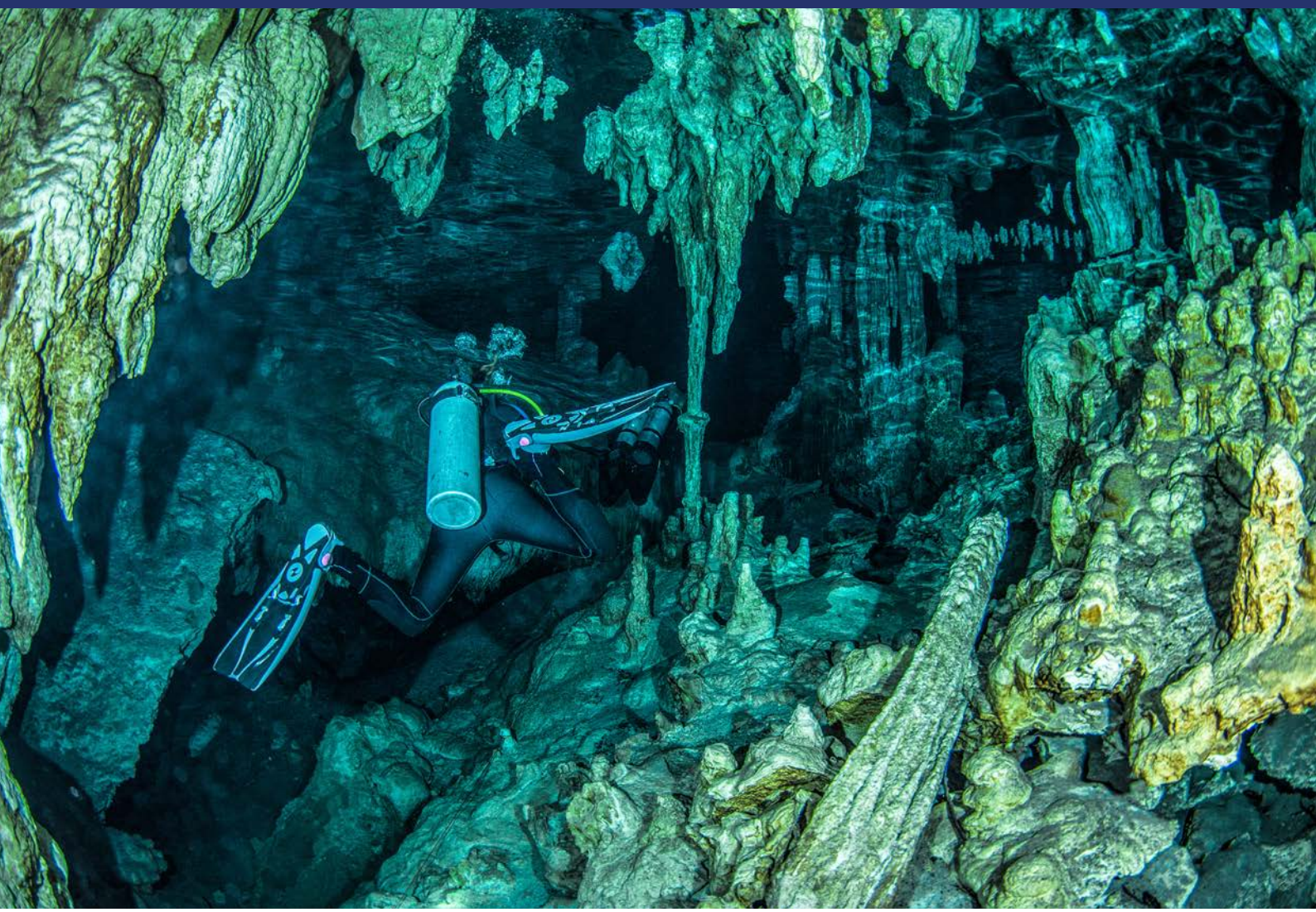
After Cancun, you can make your way to Playa Del Carmen to get the ferry to the island of Cozumel. While the centre of town on the island is certainly commercialised, with a lot of American franchise bars, there are still areas where you can get away from the crowds and enjoy some quieter, local-run restaurants and bars. The diving in Cozumel is some of the clearest water you may ever experience, with visibility reaching over 50 metres on a good day and at least 20 metres on what the dive crew considers a bad day. Nurse sharks can be seen on almost every dive, hawksbill turtles abound, and if you're lucky you might see some green turtles or even a loggerhead. Macro fanatics won't be disappointed either, an abundance of flamingo tongues, arrowhead crabs and pygmy pipefish to name a few will make that lens worth bringing. The aptly named splendid toadfish is something you have to find on a trip to Cozumel, as it is endemic to the island's waters and cannot be found anywhere else in the world. The underwater topography that surrounds the island is almost as spectacular as the marine life, and you could easily spend weeks diving the island without ever feeling that you had had enough. Cathedral is an exhilarating dive for advanced divers who enjoy overhead environments, with a swim through that starts at 15 metres before bringing you all the way down to 35 metres before you see light again. If wrecks are your passion, the Felipe Xicotencatl has become home to a plethora of marine life and makes for an enchanting dive, with the added underwater experience of getting to wave to passengers in the submarine safari as it passes you by.

ISLE MUJERES

Very close to Cozumel is Isle Mujeres (island of the women) where those who are desperate to see a whale shark can make a day trip between May and September. However, you are not permitted to dive with the sharks, and reports of serious overcrowding with snorkellers and boats that have little consideration for these incredible creatures leave one wondering whether this is truly the best place to experience their beauty. Between December and April, large aggregations of sailfish and marlin frequent these waters to chase huge bait balls of sardines that are passing through. For experienced divers, this is thought to be one of the best places in the world to encounter these usually very elusive predatory fish, and choosing a dive operator with care could deliver an unforgettable experience.

PLAYA DEL CARMEN

When you have had your fill of Cozumel (which I believe I never will have), you can board the ferry again and settle down in Playa Del Carmen for a few days. From Playa you can choose to do some boat dives, although these may leave you a little disappointed after the beauty of Cozumel. However, if it's winter, you have the chance of diving with bull sharks in this area. Try to choose your dive operator carefully, as some run their shark diving operations with very little respect for the sharks. Selecting someone that keeps shark conservation in mind and uses a scent trail rather than actually feeding the sharks is a good route to go.



THIS PAGE: The Cenotes' (sacred wells) incredible stalagmites and stalactites in fresh water are a unique diving experience; Arrowhead Crab, Cozumel; Splendid Toadfish, Cozumel.
OPPOSITE PAGE: The beautiful reefs of Cozumel surrounded by crystal clear waters.

THE CENOTES

Playa itself is an enchanting little town to spend some time in, and is the base for diving one of Mexico's East Coast's most famous features, the cenotes. Cenote means 'sacred well', and these are underground cave systems filled with fresh water. They were formed by the collapse of limestone in the area, and the ancient Mayans believed these to be windows into the underworld where they came to communicate with the gods. This rich history, coupled with the often crystal clear water from which you can see exquisite caverns filled with incredible stalagmites and stalactites, make for one of the most unique diving experiences on offer. There are estimated to be over 30,000 cenotes, though many of them remain unexplored and only a handful are open to swimmers and divers. Two of the most famous are Dos Ojos (the two eyes) which has two large caverns connected by a very long swim-through, and Angelita, which features a layer of sediment so thick that divers cannot see their own legs once they begin to descend through it. If you fall in love with cenote diving, you can spend at least a week in the area, diving the open cenotes until you have had your fill.

With this many incredible experiences within such a small area, passionate divers will never regret the longer flight or the jet lag required to add these unforgettable dives to their logbooks!

SCUBA DIVING
IN THE DOMINICAN REPUBLIC

FEATURE **SLAVA NOOR – WWW.THEPINKFINS.COM**
PHOTOGRAPHY **CSABA NAGYZAMBO**

The land of non-stop latin music, dance and of course, the most romantic beaches I have ever come across.


Coral Point Diving
Playa Barco

The highlight of my summer adventures was definitely a trip to the Dominican Republic – the land of non-stop latin music, dance and of course, the most romantic beaches I have ever come across. I was pleasantly surprised to find out how diverse the country was and how many recreational sports were available for the varied holiday makers visiting the country – windsurfing, surfing, horseriding, golf – are only a few of the activities offered. Scuba diving was on top of my list, and I was excited to find a good dive centre recommended by a fellow diver.

Dive instructors from the Coral Point Diving centre in Bayahibe helped me plan three days of diving while I was there, and I was thrilled to start my underwater adventures. The diving in the area revolves around local coral reefs and "two and a half" wrecks, as Valerio, a dive instructor at Coral Point Diving jokingly added.

Bayahibe is a Carribean paradise with temperatures around 28°C year round. The turquoise blue waters are rich with diverse marine life. I was happy to see lots of familiar faces – loads of rays, a few lionfish, lobsters, porcupine fish, moray eels, as well as my firsts, such as scorpionfish, spotted drums (*Equetus punctatus*) and a sea snake.

Spotted drums are very elegant fish characterised by their elongated first dorsal fins and black and white patterned bodies. The scorpion fish that my buddy had spotted, reminded me of the stonefish I had seen before, but they can easily be confused with each other and are both equally venemous, so I took a photo of it from a safe distance and continued my dive.

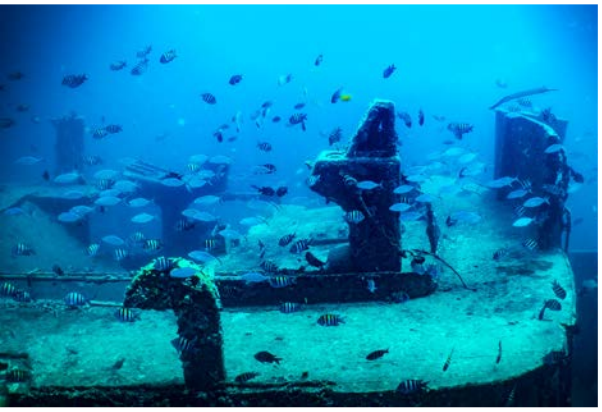
What made me really ecstatic, was seeing a baby lionfish – I did not know how tiny they could be and the one I saw was nothing short of adorable! Visibility varied between 8 and 16 metres during the dives and we enjoyed photographing our new friends.

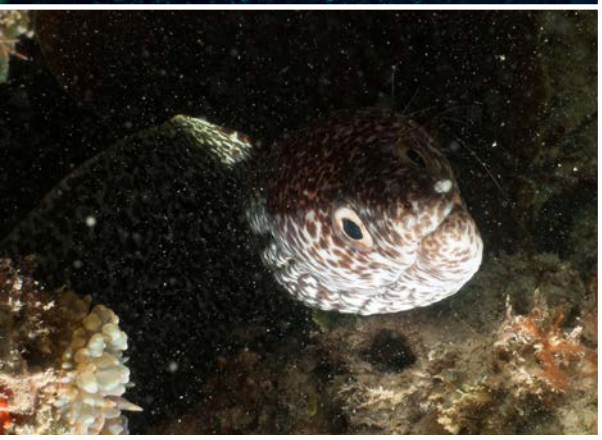
Wrecks in Bayahibe attract both new divers, as well as the tec divers. The small one, Matthew, is roughly sat at a depth of 13 metres and is about 14 metres long. Although it is a small wreck, it was fun going around it. There was a big lionfish infront of it happily posing for photos and acting calmly and confidently, as though a host receiving his guests.

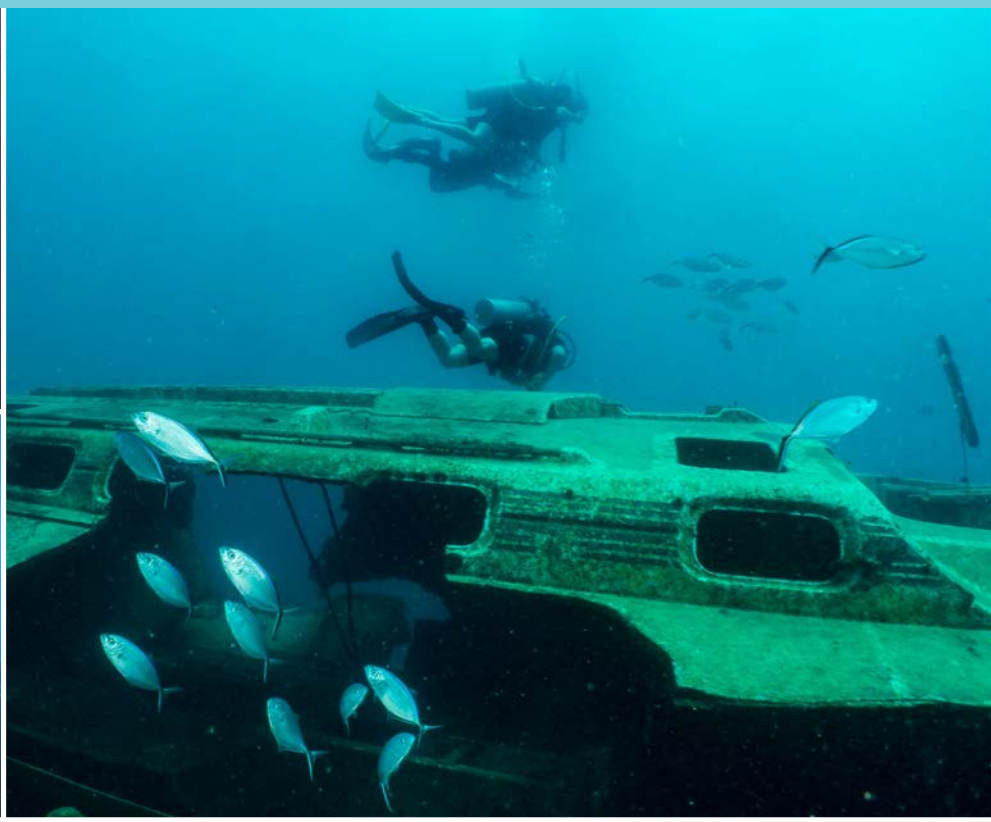
Atlantic Princess is more exciting if you are a qualified wreck diver as you can go inside. The rooms are safe to explore and doors are either taken out or wide-open. Small stingrays, crabs, shrimps and schools of colourful fish can be found in this dive spot.

St George is the wreck to dive, especially for those with the deep diving specialty or the tec divers. Sunk at the depth of 44 metres, this ship was built in Scotland in 1962 and was used to transport barley between Norway and America. Later it was abandoned in Santo Domingo Port and was renamed after the hurricane Georges that hit the Caribbean in September 1988. It is located half a mile off the Viva Dominicus beach and a perfect dive spot for divers with more experience and a need of adventure.

The Dominican Republic is also known for manatees and humpback whales, so if you are lucky, you may see them during your H_2O adventures in the Carribean.







Coral Point Diving

For more information, contact:
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Tel: +1 829 574 9655

Coral Point Diving is the only PADI Career Development Centre (PADI CDC) in Bayahibe and one of the largest Scuba diver trainers in the Dominican Republic. It is located 3 minutes walk from the famous Dreams La Romana Resort & Spa. Book early and save.

www.coralpointdiving.com

MEDICATIONS FOR DEPRESSION AND FITNESS TO DIVE

FEATURE **LAURIE GOWEN**

DEPRESSION: WHO GETS DEPRESSED?

It's not as uncommon as you may think. Even divers get depressed. Some of the more frequently asked questions on the DAN Medical Information Line concern medications divers take for depression and how these drugs can affect their fitness to dive. According to the National Institute of Mental Health, each year more than 17 million Americans experience a period of clinical depression. Fortunately, with appropriate treatment, nearly 80 percent of those diagnosed with depression experience significant improvement. Depression isn't simply in your head: it affects both body and mind. Symptoms of depression vary from person to person, as does their severity. Obviously, those individuals who are out of touch with reality, are suicidal or have hallucinations should not dive. Also, any condition that could affect one's physical or rational decision-making ability would not be safe for the diver or a dive buddy. However, many people dive successfully while they take medication and receive treatment for everyday depression.

SYMPTOMS OF DEPRESSION

According to the National Depression and Manic Depression Association, some symptoms of depression include:

- Prolonged sadness or unexplained crying spells;
- Significant changes in appetite and sleep patterns;
- Irritability, anger, worry, agitation, anxiety;
- Inability to concentrate, indecisiveness;
- Unexplained aches and pains;
- Recurring thoughts of death and suicide.

For divers, here's an extra consideration: some of the symptoms associated with depression could also mimic those of decompression illness (DCI). Unexplained aches and pains or an inability to concentrate could make a differential diagnosis very difficult. Diving at depth is not a place to lose focus on the immediate dive tasks: following the dive plan, monitoring one's air supply or just being an observant dive buddy. Should divers with depression be cleared to dive? Yes and no: each diver should be considered on an individual, case-by-case basis. Factors should include each diver's medical history, type and dosage of the medication, the individual's response to treatment and motivation for diving. In-water safety for the diver and buddy is the primary consideration.

TREATING DEPRESSION

Part of the treatment for depression can include the use of central nervous system (CNS) medications that have varying but similar side effects. Dozens of antidepressant medications currently on the market effectively treat depression. Each group has its own distinct properties that react chemically in the brain. Unfortunately for divers, some medications have side effects similar to the symptoms of decompression illness. Side effects such as visual disturbances, weakness, dizziness, lack of coordination, numbness and tingling, when occurring after a dive, may require evaluation for possible DCI. Sometimes finding the optimal medication involves trial and error. People should never change dosage or discontinue medication without direction from their physicians. Individual reactions and effective therapy may take several weeks, even months to achieve, so any diving would have to be postponed until the patient has adjusted to the medication.

The following are the most common medications used in treating depression:

SSRIs (selective serotonin reuptake inhibitors)

Although SSRIs typically cost more than other antidepressant medication, they tend to be relatively safe for divers. They do, however, have a side effect of drowsiness; this can influence the safety of the dive. SSRIs may also cause increased bruising or bleeding. Divers can experience barotrauma to ears, sinuses, lungs and have many opportunities to injure themselves on dive boats. Under normal conditions, these injuries would be unremarkable, but antidepressants can cause an increase in bleeding. If the diver is also taking medications such as aspirin or

ibuprofen, bleeding could be exacerbated. And in higher doses, there is evidence that SSRIs may cause seizures, which have a high probability of drowning if they occur during a dive.

MAOIs (monoamine oxidase inhibitors)
MAOIs should not be taken with certain foods*, and taking certain medications with MAOIs can cause increased blood pressure. Possible side effects of MAOIs are dizziness and drowsiness. Dizziness typically comes from standing up from a reclined position too quickly (called orthostatic hypotension). After a dive, these side effects could be troublesome. Since medications affect a chemical reaction in the brain at ambient pressure (on land), we may be concerned about the side effect being influenced by increased partial pressure of nitrogen or potential nitrogen narcosis at depth.

TCAs/HCAs (tricyclics/tetracyclics/heterocyclics)
Dizziness, drowsiness, and blurred vision may be among side effects from TCAs/HCAs. Any medications that affect concentration, decrease alertness or impair decision-making are not compatible with safe diving.

Other antidepressants such as Wellbutrin(r) or Zyban(r) (generic name for both is bupropian), Desyrel(r) (generic name: trazodone) and Effexor(r) (generic name: venlafaxine) may produce seizures or seizure activity by lowering the seizure threshold. Additionally, fainting, excitability and difficulty breathing are among the rare side effects of venlafaxine. Bupropian may have side effects of agitation, CNS stimulation, seizures, psychosis, dry mouth, headache, migraine, nausea, vomiting, rash, tinnitus, muscle pain and dizziness. Obviously, a diver with these symptoms could experience safety risks.

For divers, there is little available research about diving with depression or diving while taking antidepressants. When divers taking CNS medications report problems while diving, most commonly come of nitrogen and the side effects of the drugs. The diver should discuss the possibility of seizures with a doctor. Every case should be evaluated independently, with honest communication from the diver or prospective diver, a physician and the training organisation. Divers who respond well to medication over a long period, have appropriate decision-making abilities and are cognizant of potential side effects, may be considered for some types of diving. This should be a joint decision reached by the diver and physician.

* Usually foods that are aged or fermented. These foods contain an amino acid called tyramine which, when inhibited by MAOIs, can lead to a hypertensive crisis.

PFO AND DIVING

FEATURE **PETAR DENOBLE**

In June 2015, in Montreal, Canada, the Undersea and Hyperbaric Medical Society (UHMS) and DAN welcomed the most knowledgeable professionals to the Patent Foramen Ovale and Fitness to Dive Consensus Workshop. The topics discussed were how to diagnose a PFO, how to lower the risks involved, and of course how PFO relates to divers. To read more about it, download the proceedings from the Patent Foramen Ovale and Fitness to Dive Consensus.

A PFO can occur only after birth, if the Foramen Ovale fails to close properly. This happens in about a quarter of the population, even if most people never realise it. The Foramen Ovale is a hole in the wall between the right and left atria of the heart. The size of the hole and the amount of blood that flows varies. In some people the blood flow never stops, while in others it only flows following strenuous activity, such as lifting weights; but it could also happen after equalizing using the Valsalva maneuver, after coughing, or defecating.

The most dangerous type of PFO for divers is a PFO with RLS, which is a spontaneous right-to-left shunt. This could result in a paradoxical embolism, that occurs when a clot (thrombus) passes from a systemic vein to a systemic artery and causes a stroke. After a dive, venous gas emboli (VGE) are present in the blood, so the risk is greater. The symptoms of a paradoxical embolism caused by VGE are usually the ones associated with both neurological or cutaneous decompression sickness (DCS).

The risk of DCS for recreational divers with a PFO is quite low, but one of the questions the workshop tried to answer is how to identify the ones who are at risk and what to do about it. The guidelines state that divers who have had more than one episode of DCS with cerebral, spinal, vestibulocochlear or cutaneous manifestations should be tested for a PFO by experts in the field.

Divers at risk of DCS with a PFO have three options to reduce such risk. The first is to stop diving, the second is to dive conservatively and avoid straining themselves after the dive, and the third is to close the PFO, even if this does not guarantee that a DCS will never occur again. Here you find some useful tips on how to dive conservatively (AlertDiver.com/Conservative_Diving).

After a PFO closure, the minimum time that a diver needs to stop diving is at least three months. The tests should confirm that the hole has completely closed, and also the patient must have stopped taking antiplatelet medications. It is important to keep in mind that DCS is caused primarily by a significant dive exposure (depth, time, and ascent rate). Anyone engaging in extreme diving is at risk of getting DCS, even if they do not have a PFO.

REFERENCES: © Alert Diver – Q4 Fall 2016

ENTANGLED IN KELP ALGAE

FEATURE **BRITTANY TROUT**

THE DIVERS

On his first-ever night dive, Sam, an uncertified and inexperienced diver with fewer than 15 lifetime dives, descended to catch lobsters with two other uncertified divers (Dave and Tim). The three descended, while a fourth diver (Ron) planned to freedive and assist with hauling in the anticipated lobster catch. A fifth diver (Eric) remained on the boat. (Note: All names are fictitious.)

THE INCIDENT

Dave's tank slipped out of his BCD strap five minutes into the dive. He alerted Tim of the issue and signaled that he was going to surface to adjust his gear. Dave and Tim went to the surface, while Sam, unaware of their decision, continued with the dive. When Dave and Tim returned to the boat, they realised Sam had not followed them and were unsure of his location. They conducted a brief surface search and concluded he must still be at depth. While freediving, Ron saw Sam entangled in kelp at approximately 7.5m. Sam was still wearing his mask, and his regulator was in his mouth. He was conscious and fighting to free himself from the thick kelp.

Sam began to panic, causing him to flail and become even more entangled. After several unsuccessful attempts to free Sam from the thick kelp, Ron returned to the surface and alerted the others that Sam was entangled and needed help. Eric responded with scuba gear from the boat. Unfortunately, by the time Eric got there, Sam was no longer wearing his mask, his regulator was not in his mouth, and he was not breathing. Eric cut Sam free and brought him to the surface. Another boat that had heard the distressed calls for help was there to pull Sam out of the water. CPR was started immediately, and Sam was transported to a local hospital, where he was pronounced dead.

FATALITY ANALYSIS

Understanding the root causes and the series of events leading to a dive fatality is important for the prevention of future incidents. Investigators recovered the dive gear, which they tested and found to be working properly. The tank contained more than 2,000 psi on recovery, indicating that Sam did not run out of air; however, his regulator was found out of his mouth when he was recovered.

The trigger in this case was kelp entanglement, which made this dive an emergency and began the chain of events that led to the fatality. Sam's panic served as the disabling agent, causing him to engage in irrational behavior that did not help to resolve the entanglement and led him to drop his regulator. Losing his regulator caused him to suffer asphyxia and drown.

DISCUSSION

The decedent, Sam, was not a certified diver. He had some previous dive experience, but he lacked proper training and had never conducted a night dive before the fatal dive. Dave and Tim also lacked formal training and certification even though they had more experience. Formal scuba training through certifying agencies equips divers with knowledge along with the skills necessary for safe diving. Training prepares a diver to respond calmly and confidently to emergency situations. Diving that involves unique risks – in this case, night diving, lobster hunting and kelp-forest diving – requires additional training, preparedness and appropriate equipment. Acquiring certifications for such environments is recommended.

Diving in kelp requires streamlined equipment to reduce the risk of entanglement and a cutting tool to resolve possible entanglement. Sam was not carrying a cutting tool, and it is unknown whether his equipment was streamlined. In addition to being responsible for one's own safety by obtaining the appropriate training for specifically risky environments, it is also wise to dive with a divemaster and/or rescue diver trained to react in emergency rescue situations.

Buddy diving means diving in pairs, not in an odd-numbered group. Pair diving is the best practice to prevent buddy separation. In a group of three or more, miscommunication among dive buddies is more likely even for trained divers, because it can be unclear who has been in communication with which buddy. In this incident Dave and Tim communicated the ascent to one another, but Sam remained unaware of the situation. This may have contributed to Sam's panic because he could not locate others to help free him from the kelp.

A medical emergency or equipment failure did not trigger this incident. It was caused by a foreseeable factor for which the divers were not prepared. Although a lack of formal training may have contributed to this fatal incident, there are other valuable lessons in this tragedy that certified divers should not overlook.

UPCOMING EVENTS

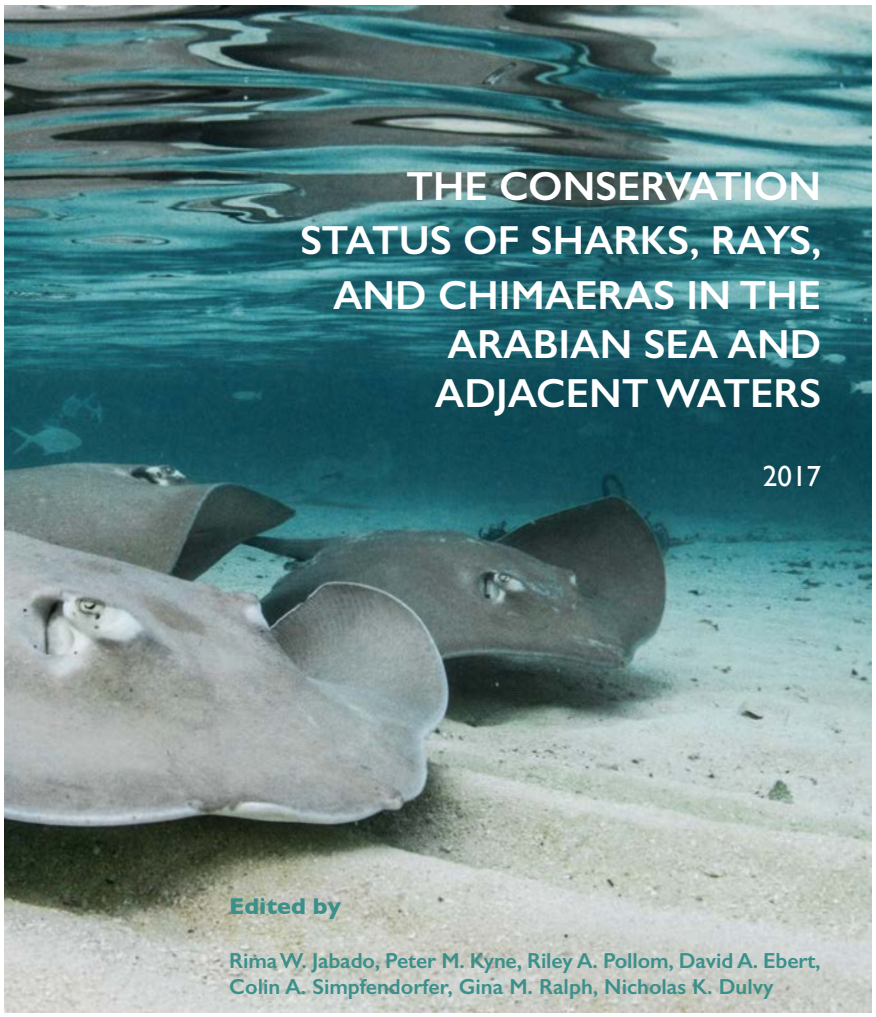
CLEAN UP ARABIA 2017

Saturday 4th November 2017

EDA's 22nd Clean Up Arabia's main event will take place from Le Meridien Al Aqah Beach Resort and Spa, and other consecutive clean ups throughout the rest of the week are all in partnership with the UAE Ministry of Climate Change and Environment and the local municipalities.

We will keep you updated with all the event schedules and activities within the following month.

IMPORTANT UPDATE ON THE STATUS OF SHARKS, RAYS AND CHIMAERAS IN THE ARABIAN SEAS REGION



Results from the 2017 IUCN Regional Red List assessment of 153 species of chondrichthyan fishes (sharks, rays, and chimaeras) are out. They indicate the Arabian Sea and adjacent waters are home to some of the most threatened chondrichthyan populations in the world. The assessment highlights the need for urgent action to conserve populations and habitats, because more than half of the species (78) are considered threatened with an elevated risk of extinction within the region. Download it here: **https://goo.gl/UMAvJo**

EDA
جمعية الإمارات للغوص
Emirates Diving Association

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Secretary General | Jamal Bu Hannad
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MISSION STATEMENT

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

LEGISLATION

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

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

PUBLISHED BY

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PRINTED BY

Al Ghurair Printing & Publishing LLC

In partnership with

UNITED ARAB EMIRATES
MINISTRY OF CLIMATE CHANGE
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EDA is a non-profit voluntary federal organization and is accredited by UNEP as an International Environmental Organization.

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