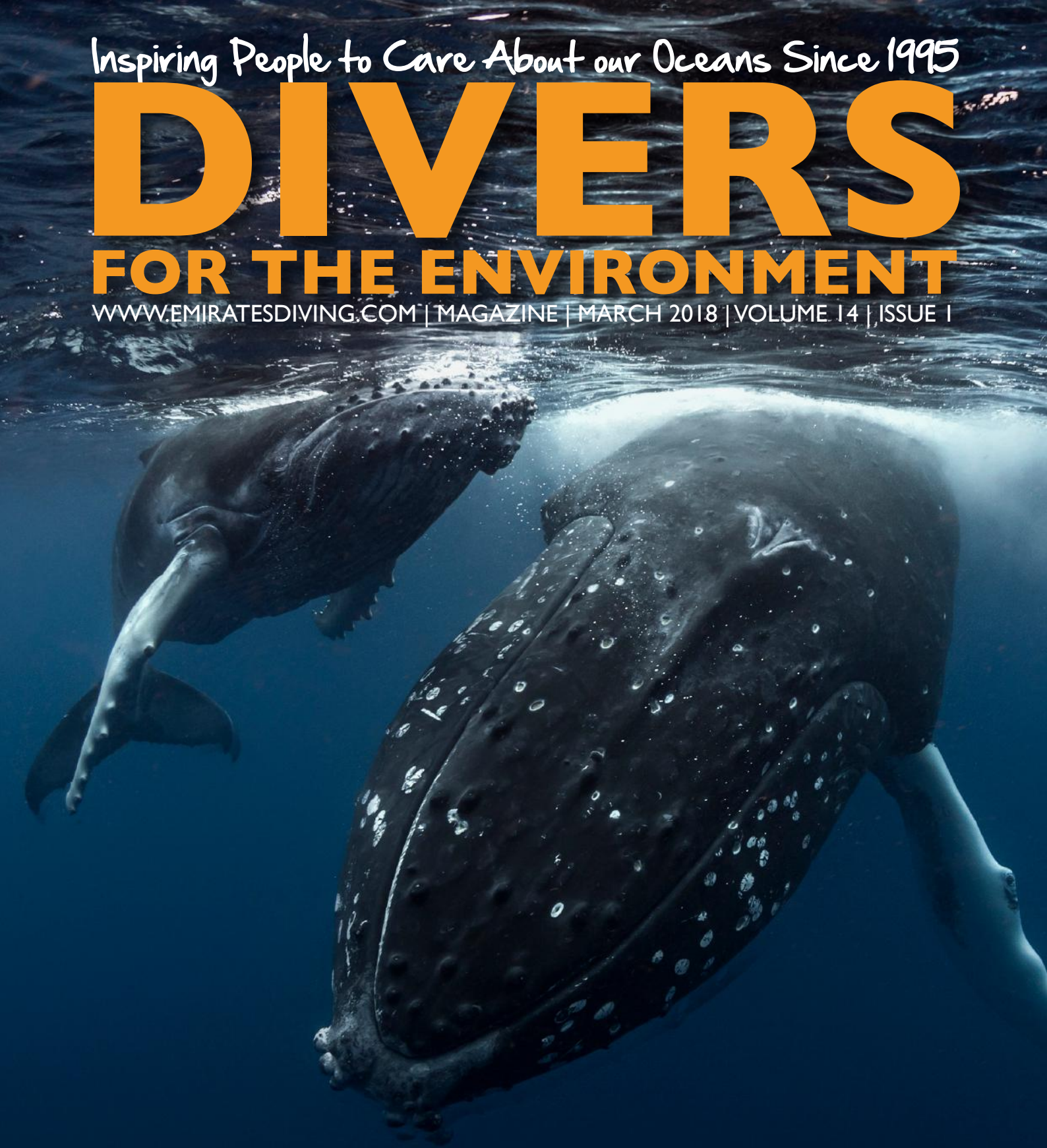
Inspiring People to Care About our Oceans Since 1995

DIVERS FOR THE ENVIRONMENT

WWW.EMIRATESDIVING.COM | MAGAZINE | MARCH 2018 | VOLUME 14 | ISSUE 1



THE HUMPBACKS OF TONGA

CHASING CORAL WITH VOX CINEMAS • **DIVE MIDDLE EAST EXHIBITION** • REEF CHECK UAE
DIGITAL ONLINE • YOGA FOR FREEDIVERS • **THE ULTIMATE SARDINE RUN** • DAN EUROPE

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EDA
جمعية الإمارات للغوص
Emirates Diving Association

REGULARS

NEWS

KIDS CORNER

REEF CHECK

FEATURES

UW PHOTOGRAPHY

DIVING DESTINATIONS

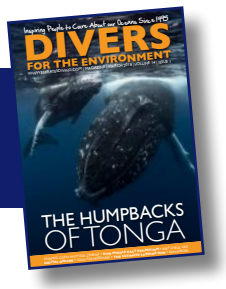
HEALTH

DIVERS FOR THE ENVIRONMENT

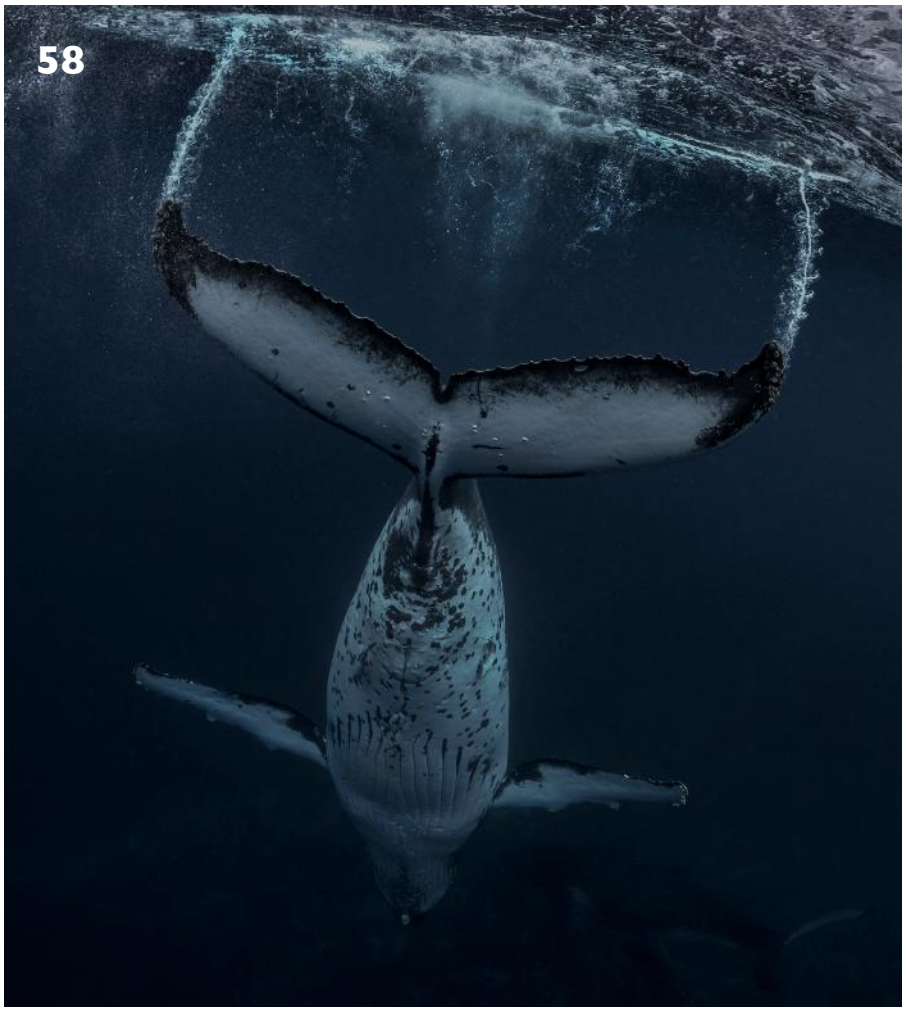
Please note that EDA's magazine, 'Divers for the Environment' includes articles written by individuals whose opinions', whilst valid, may or may not represent that of EDA's. The magazine is a platform for individuals to voice their opinion on marine and diving related issues. You are welcome to suggest an article for the next issue released in June 2018. Send all articles, feedback or comments to: magazine@emiratesdiving.com

COVER

PHOTO BY STEVE WOODS
Humpback Whales (*Megaptera novaeangliae*)



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.

COVER STORY AUTHOR & PHOTOGRAPHER

STEVE WOODS
Steve woods is an underwater photojournalist working in and around Indonesia as a conservation photographer. He founded the Gili Shark Foundation in Lombok, Indonesia and works for various other marine conservation organisations either on location or shooting/donating imagery to them. Steve's commercial clients have ranged from The Guardian, The Times, The Washington Post, New York Times, filming Americas Next Top Model underwater, Rough Guides, SCUBA Diver magazine, Dive magazine, as well as various other national and international publications. He has also contributed to a number of marine conservation documentaries focusing on Sharks and Manta Rays.
www.stevewoodsunderwater.com

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.

SIMONE CAPRODOSSI
Simone is an Italian underwater and travel photographer with a passion for diving and the sea. Simone uses his photography to support environmental initiatives and is heavily involved in local shark and turtle conservation projects.
www.simonecaprodossi.com

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.

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**

عـــــام
زايـــــد

YEAR OF
ZAYED

IBRAHIM AL-ZU'BI
EDA Executive Director

I would like to welcome you all to the March issue of 'Divers for the Environment'. 2018 is very special for the UAE and for EDA, it is the year of Zayed. The late Sheikh Zayed Bin Sultan Al Nahyan once said, "On land and in the sea, our fore-fathers lived and survived in this environment. They were able to do so because they recognised the need to conserve it, to take from it only what they needed to live, and to preserve it for succeeding generations."

The late Sheikh Zayed Bin Sultan Al Nahyan inspired our last 23 years of marine conservation and voluntarism and he will be our inspiration for years and generations to come. Years have been spent protecting a national treasure so that others may be able to enjoy it. That is what EDA stands for. By giving his blessing to establish this organisation in February 1995, the late Sheikh Zayed bin Sultan Al Nahyan, not only placed conservation as a priority for us to uphold but inspired us to bring about change ourselves. I want to take this opportunity to show my appreciation to all our members and staff for the dedication, loyalty and enthusiasm that they've demonstrated throughout this journey. Of course, none of what we have accomplished so far could have been possible without the leadership and visionary thoughts from our Board of Directors. I'm confident that the next 23 years will hold even more achievements we can be proud of.

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

DMEX – The leading Dive Middle East Exhibition will start on the 27th of February this year with a new temporary location at the Dubai Canal in Jumeirah. DMEX, where the diving community of the UAE and the region gets together alongside the Dubai International Boat Show to discuss diving updates and share the latest gear in dive equipment. I'm looking forward to seeing you all there.

I am looking forward to this year's Digital Online – EDA's Underwater Photography and Film Competition with lots of underwater photography and videography gurus participating and sending EDA amazing collections of the varied marine life from all the different places our members have dived. I want to thank the members of the jury and wish them luck in their tough job of judging all the amazing submissions, and I am looking forward to this year's awards ceremony.

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

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

Happy reading and dive safe!

Ibrahim Al-Zu'bi

Ibrahim N. Al-Zu'bi

AN EDA MOVIE NIGHT WITH VOX CINEMAS
CHASING CORAL
AND A Q&A WITH DR. AARON BARTHOLOMEW

On Wednesday, the 7th February, EDA and VOX Cinemas teamed up to proudly bring EDA Members the first EDA screening of 2018 by Exposure Labs, a company dedicated to both quality storytelling and powerful campaigns.

Chasing Coral was followed with an informative talk and Q&A of the research done on the corals in the Gulf by Dr. Aaron Bartholomew – PhD in Marine Science, College of William and Mary, USA, and a Professor at the American University in Sharjah.

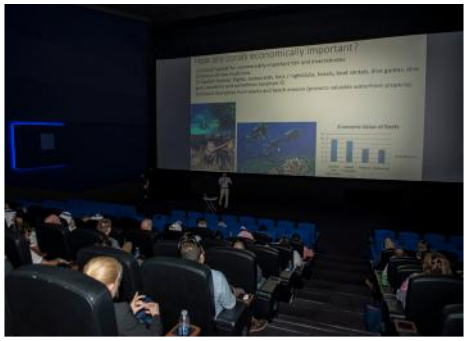
Dr. Aaron Bartholomew has taught general biology, ecology, evolution, fish biology, marine biology and senior research. His areas of research include coral and coral reef fish communities of Dubai, artificial reefs, predator/prey/habitat relations and marine ecology in general. Prior to his academic career, he was a post-doctoral researcher at the National Marine Fisheries Service in Miami, Florida, USA.

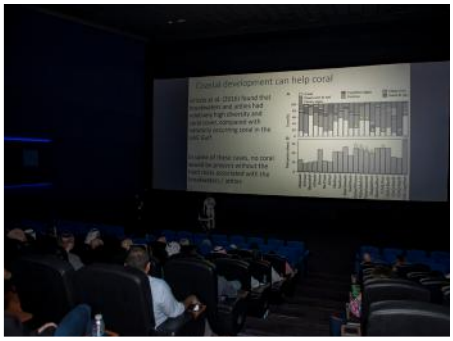
FILM SYNOPSIS | AVAILABLE ON NETFLIX

Coral reefs are the nursery for all life in the oceans, a remarkable ecosystem that sustains us. Yet with carbon emissions warming the seas, a phenomenon called "coral bleaching" – a sign of mass coral death – has been accelerating around the world, and the public has no idea of the scale or implication of the catastrophe silently raging underwater.

Enter Jeff Orlowski, director of Chasing Ice, which created irrefutable, visual proof of the melting ice caps. Orlowski's next project is similarly evidentiary and powerful. Chasing Coral taps into the collective will and wisdom of an ad man, a self-proclaimed coral nerd, top-notch camera designers, and renowned marine biologists as they invent the first time-lapse camera to record bleaching events as they happen. Unfortunately, the effort is anything but simple, and the team doggedly battles technical malfunctions and the force of nature in pursuit of their golden fleece: documenting the indisputable and tragic transformation below the waves. With its breathtaking photography, nail-biting suspense, and startling emotion, Chasing Coral is a dramatic revelation that won't have audiences sitting idle for long.


The organisms are:
1) Cnidarian animal, that capturing stinging tentacles, usually at night
2) Zooxanthellae unicellular algae, that photosynthesize create food.


How is coral economically important?


Coastal development can help coral


VOX


EDA


EDA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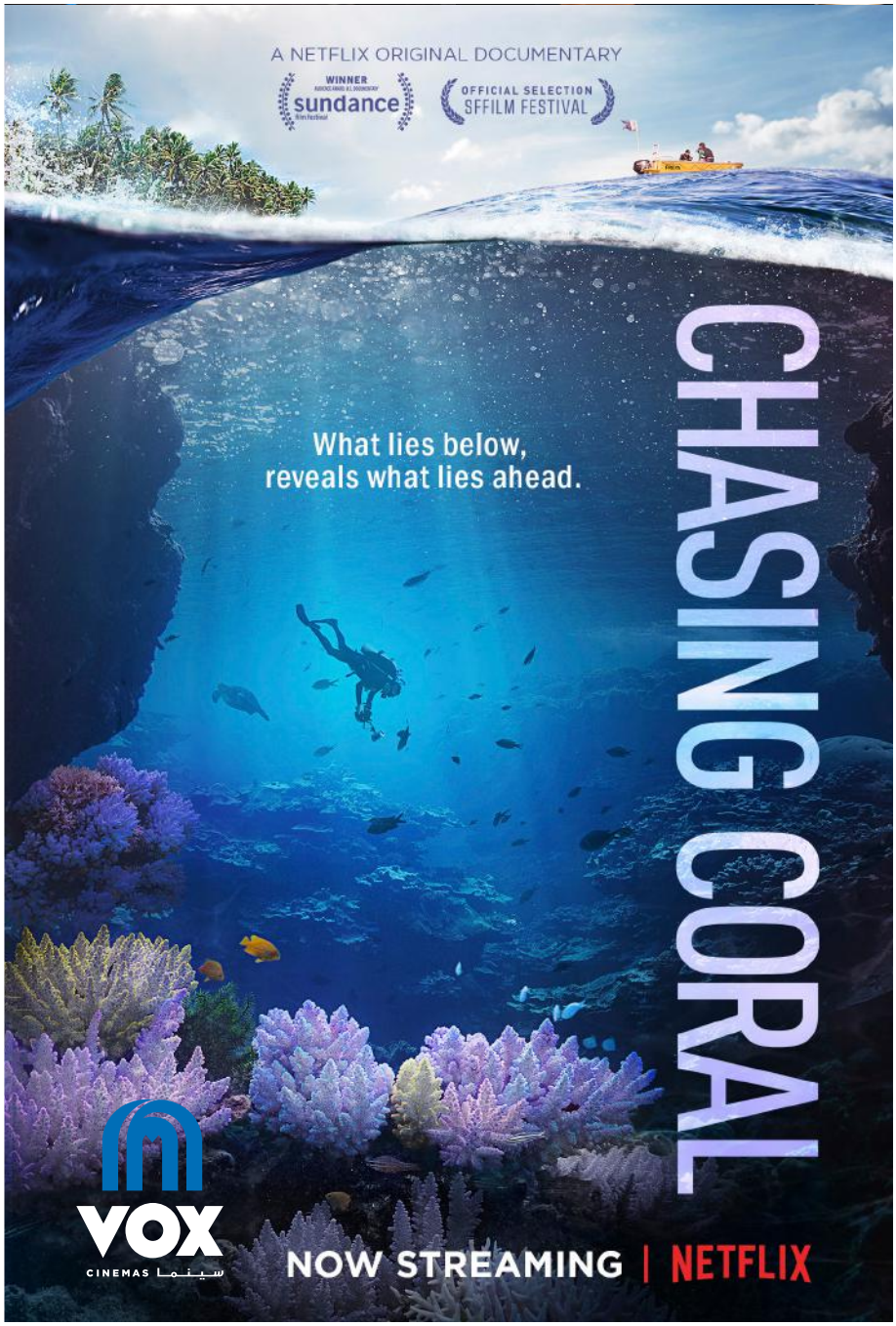

A NETFLIX ORIGINAL DOCUMENTARY
WINNER
sundance
OFFICIAL SELECTION
SFFILM FESTIVAL
What lies below,
reveals what lies ahead.
CHASING CORAL
VOX
CINEMAS
NOW STREAMING | NETFLIX

DIVE MIDDLE EAST EXHIBITION

DIVE INTO A MARKET OF 154,000 UNDERWATER ENTHUSIASTS

DMEX
DIVE MIDDLE EAST EXHIBITION

Anchored firmly at the centre of the UAE's diving community with 154,000 certified divers, DMEX celebrates its 12th year being co-located with the Dubai International Boat Show.

38% of DMEX visitors delay their purchases until they meet with industry experts at the event. Whether you are a world class diving destination, diving centre, equipment specialist or tour operator, DMEX is the perfect place to enter into an unrivalled audience of underwater adventurers.

27 Feb - 3 March 2018 | 3pm - 9:30pm

Dubai Canal, Jumeirah

AMIT
STAND NO: D-150, D-160, D-170

AMIT was established in 1981 with the sole intention to cater for the growing demand of two important aspects of the Middle Eastern society, the love of "Bahar" & "Barr" (Sea & Desert) as people call them.

The company import, export, distribute, supply and carry after sale services of underwater diving equipment and special equipment, providing clients the finest international brands, latest products and superior services.

SEA @ DEEP
STAND NO: D-52

Sea @ Deep is the first UAE Marine inspired jewellery and accessories online store, designed and handmade to reflect your passion of the ocean's treasures and sea life. Using silver and gold parts with original marine rope, bracelet rope or leather, makes your piece as authentic and unique as our original designs. Sharks, starfish, anchors, hooks, shackles and whale tails are a few from our wonderful collection. Visit our website to view all the collection and select your unique design. **www.seaatdeep.com**

DOLPHIN EXCURSIONS DJIBOUTI
STAND NO: D-24

DOLPHIN
EXCURSIONS DJIBOUTI

Dolphin Excursions Djibouti has led land and water tours in Djibouti since 1999. As the oldest dive operator and only PADI dive centre in Djibouti, we have the greatest amount of pleasure in leading dives around the beautiful gulf of Tadjourah. We have land tours to the beautiful Lac Assal and Lac Abbe. We also do liveaboard trips to dive between two tectonic plates and the Seven Brothers, or to see juvenile whale sharks. Visit Djibouti and let us show you the adventure you've always dreamed of!

EMIRATES DIVING ASSOCIATION
STAND NO: D-12

Inspiring People to Care About our Oceans Since 1995!

EDA is a non-profit voluntary federal organisation accredited by UNEP as an International Environmental Organisation. Our mission is to conserve, protect and restore the UAE marine resources by understanding and promoting the marine environment and promote environmental diving. Divers can prove extremely utile in conserving the marine environment through observing, reporting & preventing environmental abuse.

Come on over to say hello to the EDA team and collect a copy of EDA's 2018 March magazine issue, 'Divers for the Environment'.

For more information about EDA, go to **www.emiratesdiving.com**

AL BOOM DIVING
STAND NO: D-120

Dive into adventure with Al Boom Diving, the leading diving and watersports specialist in the GCC. Come and visit us at DMEX – D120 and discover our best ever deals on the latest and greatest diving equipment from world-class brands including Aqua Lung, Apeks and many more.

Find out about our daily diving and snorkelling trips and PADI courses. Our multi-lingual team of PADI Dive Instructors will be eagerly waiting to answer your questions.

Al Boom Diving operates dedicated dive centres in some of the most prestigious locations in the UAE including the spectacular Dubai Aquarium and Underwater Zoo. We also run dive centres in the very best hotel resorts, including Le Meridien Al Aqah Beach Resort, which offers unrivalled diving and snorkelling in the region.

www.alboomdiving.com

DELMA MARINE
STAND NO: D-144

Delma Marine was established in 1976 under the name of 'Delma Industrial Supply & Marine Services' (DISMS), making it one of the oldest marine companies in the UAE.

We're proud to offer our customers a variety of products from well known international brands such as: Beuchat and PETER Diving (diving equipment); Mercury Outboard, Stern Drive and Inboard Engines; Lewmar (marine accessories); Boston Whaler, Bayliner, Sea Ray and Quicksilver Boats; Ultraflex (steering systems); Marlow (marine ropes); Polyform (Buoys, Fenders and Floats); Bob's Machine Jack Plates; and International (marine paints).

For DIBS 2018, we're bringing you the very best of Bayliner and Boston Whaler boats – touch, experience and embark yourself on your new sea journey!

We'll also be showcasing Mercury engines. Well known for its outboard engines, Mercury provides services and parts for recreational, commercial and government marine applications. Whether you earn your living on the water, keep our waters safe, or simply live for it, our customers can rely on Mercury's broad range of hard-working marine products.

For DMEX 2018, we are going to highlight the latest Beuchat products. Delma Marine is the official supplier of Beuchat in the UAE, which is an international and well reputed diving brand that was born in 1934 in Marseille, France. Beuchat has evolved for the diving market and is currently working with a huge range of products: scuba diving, snorkelling, free diving, spear fishing, triathlon wet suits, and sports wear clothing.

Finally, we'd like to introduce the PETER Diving System, a brand born in Mallorca, Spain. Not only is it the lightest and most compact diving system on the market, it's innovation and simplicity makes it a revolutionary multi-user diving system that supplies air from the surface. You can maximise the PETER Diving System's versatility with many nautical applications such as yacht maintenance, emergency solutions and of course, on-board entertainment for your guests.

www.delmamarine.net

AL-CAN INTERNATIONAL LLC
STAND NO: D-48

Al-can is India's leading manufacturer and exporter of Extruded Seamless High Pressure Aluminium Scuba Diving Cylinders.

Our cylinders are manufactured as per the ISO 7866:2012 standard, and are made in our state of the art manufacturing plant based in Mumbai, India. Approved by Petroleum and Explosive Safety Organisation (PESO) Government of India, and are TPED and PIE Mark approved by Apragaz for the Export Market.

Al-can cylinders are the best choice for various gases because they maintain excellent quality and gas purity. Special internal treatments are available for precise needs upon request.

www.alcaninternational.com

MTM MARINE LLC
STAND NO: D-36

MTM Marine LLC supplies the marine industry and the watersports market with the world's most recognisable brands.

MARES, Scuba Schools International, KL Industries and WOW (World of Watersports), just to name a few.

Our passion, our brand's collective innovation, quality and reliability stands us a part from others, but the knowledge within the organisation that forms MTM Marine, truly sets the company ahead of its competitors.

The MTM team will share with you the unique experiences and the knowledge acquired through events, product trials, brand training and the many years being involved in the marine industry.

Our goal is to help you realise the full potential of the ocean, sustainably, safely and above all, for your pleasure.

PADI
STAND NO: D-40

PADI, the world's largest recreational diver training organisation, has issued over 25,000,000 certifications. PADI Members, comprised of approximately 6,500 dive centres and resorts and 135,000 dive professionals worldwide, issue nearly one million certifications each year, making underwater exploration and adventure accessible to the public while maintaining the highest industry standards for dive training, safety and customer service.

If you're feeling inspired about your next underwater adventure or want to get back into diving, why not sign up for your next course with one of our exhibiting Dive Centres and you will be part of a new exciting Prize Draw including:

- A Weekend at the Deepest Pool in the World, Y-40
- A Suunto Dive Computer (valued at €699)
- A Scubapro Regulator (valued at €259)

PADI Europe, Middle East and Africa
PADI Regional Manager: Teo Brambilla
teo.brambilla@padi.com
Email: customerservices.emea@padi.com
Website: www.padi.com

DIVERS DOWN UAE
STAND NO: D-46

Divers Down UAE is the only PADI Career Development Centre in the UAE, GCC and Northern Africa, and meets the highest requirement for training PADI professionals. Located in Dubai and the East Coast, inside the 5 star Miramar Al Aqah Beach Resort and Spa, Divers Down UAE has a fleet of 3 boats which can accommodate any PADI courses and customer needs. We also train divers beyond recreational limits with PADI TEC and CCR.

Divers Down UAE is proud to be the Distributer or Dealer for some of the best recognised products and manufacturers in the world. These include – Dive Rite, Waterproof, TUSA, Shearwater, Deep Blu and Dive Alert, as well as representing others. The shops and the online shop are the largest and best equipped in the GCC.

Divers Down UAE offers a full workshop facility for all of your diving equipment. In their specialised Dive Lab, they can repair regulators, wetsuits, drysuits, and anything else that you have that is related to diving. With over 25 years of experience, their technicians can get you back in the water, with no delay.

www. diversdownuae.com

SCUBATEC DIVING CENTER
STAND NO: D-10

Scubatec Diving Center is a PADI licensed 5 Star IDC Center. Established in 1994 and based Dubai, we are well known as one of the friendliest dive centers around. Our team will ensure that you gain all the knowledge and experience required to be a safe diver. Scubatec prides itself on the personal touches and prefers smaller groups on dive trips and courses so the Divemaster/Instructor can dedicate more time and attention to the individuals, ensuring that you the diver gets the best of our time. We fit the timings around your work schedule, enabling you to do the courses at your own comfortable pace.

Diving is one of the worlds fastest growing sports. Allow us, at Scubatec to show you the magic and thrill that the underwater world has to offer. With Scubatec you can be sure to have a memorable and exciting underwater experience.

We teach AIDA freediving courses and sell a variety of well known brands, such as Oceanic, MARES, Atomic, Bare, Sharkskin, Scubapro, IST, Suunto, Gopro and more. We have a full time repair workshop, air, nitrox, hydrostatic testing, scuba and snorkelling rental equipment, trips in UAE & Oman.

www.scubatecdiving.com

SEABREACHER UAE
STAND NO: D-14, D-16

SeaBreacher UAE has been regarded as one of the prime diving schools in Fujairah on the East Coast since 2016. We pride ourselves in high quality training and our dedicated team of PADI diving professionals have an excellent success rate, turning new divers into confident open water divers, making underwater adventures not only rewarding, but fun and safe. Located at the at Fairmont Fujairah Beach Resort, SeaBreacher is perfect for all levels of diving, especially training dives. If you're a qualified diver and just want to enjoy the beauty of the East Coast of Fujairah or the Musandam, our multi lingual team can offer you guided boat dives and show you the finest wrecks or colourful coral gardens. We can also arrange TEC dive trips to the U533 Wreck at 112 metres, Antita at 90 metres and Ines at 72 metres inclusive of mixed gases.

27 Feb - 3 March 2018 | 3pm - 9:30pm
Located at the Dubai Canal, Jumeirah

UNDERWATER CLEAN UP CAMPAIGN

OVER 957 KGS OF WASTE COLLECTED IN FOUR HOURS

BY **ENVIRONMENT AGENCY – ABU DHABI (EAD)**

Abu Dhabi, January 27, 2018: More than 957 kilogrammes of marine debris waste was collected in just four hours at the underwater clean up campaign organised by the Environment Agency – Abu Dhabi (EAD) in coordination with the Emirates Diving Association (EDA), and other partners at the Mina Port near the Fishermen's Wharf. Professional divers volunteered from several governmental and private entities, in addition to a number of licensed divers from different parts of the country who participated in the collection of marine debris in the water.

The campaign is one of a series of clean up campaigns planned to be organised by EAD under the theme, 'Together We Make The Difference' in 2018 to mark the 'Year of Zayed'. The campaign aims to clean beaches, dive sites, deserts and other habitats in different locations of Abu Dhabi's Emirate to ensure the environment is safe, clean and healthy, and to promote environmental awareness.

HE Razan Khalifa Al Mubarak, Secretary General of EAD said, "This initiative is one of the many other initiatives we are launching this year to commemorate the late Sheikh Zayed bin Sultan Al Nahyan, the founding father of the UAE, to emphasise the principles he advocated to protect the environment and natural heritage that is an important part of the UAE and the lives of its citizens, and residents".

"This campaign will not be the last, there are other campaigns to be organised throughout the year to protect our diverse ecosystem – in the sea, in the air, and on land – safe havens to live and thrive," she added.

HE Al Mubarak noted, "The Abu Dhabi Emirate has a wonderful mix of geological nature, valuable natural habitats and fragile species in both land and sea which needs protection. Saving our environment and fulfilling our obligations towards the natural environment must be the responsibility of all of us, at all levels of society to maintain the beauty of the Emirate's beautiful beaches, and cultural and heritage assets".

Commenting on the underwater campaign, Dr. Sheikha Salem Al Dhaheri, Executive Director of Terrestrial and Marine Biodiversity Sector said, "Choosing the Fishermen's Wharf to kick off our series of clean up campaigns was to highlight the importance of maintaining the cleanliness of our marine environment and increase public awareness about the negative impacts of marine debris on one's health and that of our wildlife."

"She emphasised the urgent need to take action and keep beaches and dive sites clear of marine debris to preserve, conserve and enhance the marine ecosystem for future generations. The message we are trying to pass is that marine debris is unsightly, but more importantly, it poses a potential threat to the health of humans and marine flora and fauna. Toxic materials can inhibit normal growth and reproduction, or even kill marine animals," Dr. Shaikha added.

The clean up campaign began at 7:30 am and continued for 4 hours at the Mina Port near the Fishermen's Wharf, until 11:30 am. The area was cleared of marine debris and litter, which otherwise would end up in the sea harming the UAE's fragile biodiversity, and affecting swimmers and fishermen's livelihoods.

Ahead of the clean up, participants were given the necessary information and diving rules, as well as a detailed explanation on how to fill out the forms with the waste collected.

Over 50 divers participated in the four hour campaign removing a huge pile of debris from the seabed in the fishing area. Plastic bottles, aluminium cans, food wrappers and containers, abandoned fishing lines, construction materials, as well as various other items which were picked up in the overall collection.

The campaign was organised in cooperation with a number of government and private entities, including Critical Infrastructure and Coastal Protection Authority – CICPA, who provided the boats to transport the divers involved in the campaign, as well as securing the water area. In addition, the Centre of Waste Management – Abu Dhabi (Tadweer) took the waste away to see what could be recycled. The Abu Dhabi Cooperative Society for Fishermen also participated in the campaign to raise awareness amongst fishermen. In addition, Abu Dhabi Ports, Abu Dhabi City Municipality (ADM), Department of Urban Planning and Municipalities, Abu Dhabi Police – Traffic & Patrol Directorate and NMC Speciality Hospital also all participated in supporting this campaign.

EAD CALLS ON FISHERMEN TO FISH MORE RESPONSIBLY FOLLOWING THE DISCOVERY OF FIVE DEAD DUGONGS

BY **ENVIRONMENT AGENCY – ABU DHABI (EAD)**

Abu Dhabi, February 17, 2018: Four dugongs, 3 males and 1 female, have been found washed ashore on Abu Dhabi's Saadiyat Public Beach in recent weeks, in what may be the biggest single die-off of one of Abu Dhabi's most vulnerable species. In addition, another dead dugong, an expecting mother with a fully-developed calf was discovered last week.

Following the incident, a team from the Environment Agency – Abu Dhabi (EAD) made up of species scientists and marine biologists, have been racing against time to determine the cause of death and to intensify monitoring of critical areas. The results of the investigation and necropsy indicate that the most probable cause of death was drowning in an illegal fishing net, locally known as Hiyali.

Abu Dhabi is home to the world's second largest population of dugongs, with around 3,000 found mostly in the waters around Bu Tinah Island, part of the Marawah Marine Biosphere Reserve. Dugongs, their foraging habitats and their migratory routes in the UAE have been protected under Federal Law No. 23 and No. 24 since 1999. The UAE is also a signatory to the UN Convention on the Conservation of Migratory Species making it an international commitment to protect dugongs.

Dr. Shaikha Salem Al Dhaheri, Executive Director of the Terrestrial & Marine Biodiversity Sector at EAD said, "This discovery is a harsh blow to one of Abu Dhabi's most vulnerable species and it may be the biggest single die-off of dugongs recorded in a decade. It once again affirms the vulnerability of these iconic species to human threats and the pressing need for fishermen to end irresponsible fishing practices. EAD's research has demonstrated that the majority of commercial and recreational fishermen are fully aware of the laws prohibiting the use of illegal nets and the protected status of dugongs in the UAE. However, in spite of the regulations in place and the awareness being raised, many fishermen continue to use Hiyali nets, because it is a particularly lucrative method of fishing."

"We will continue to prioritise the protection of dugong habitats and we will carry on ensuring that Abu Dhabi's waters are managed in a way that protects all marine species, in partnership with the Critical Infrastructure & Coastal Protection Authority. However, as the late Sheikh Zayed bin Sultan Al Nahyan, Founder of the UAE, stressed, environmental protection is not a matter only for government officials. It is an issue that should concern us all. And so, we call on all fishermen to fish in a responsible way," she said.

"In order to minimise mortality of dugongs during the winter season, we have already intensified our monitoring of critical areas within and outside marine protected areas and we have continued to meet regularly with fishermen calling on them not to use the illegal Hiyali net, not to leave fishing nets unattended and to report the locations of any abandoned fishing nets to EAD," she added.

It is important to note that commercial and recreational fishermen caught using illegal banned fishing gear and methods, will be prosecuted. First-time offenders can receive fines of up to AED 50,000 and/or an imprisonment term of not less than three months, while second-time offenders can receive fines of up to AED 100,000 and/or an imprisonment term of not less than one year.

EAD, with support from TOTAL and TOTAL ABK, has been studying and monitoring the local dugong population since 1999. These studies, which include satellite-tagging dugongs to study their migration patterns, have given EAD a better understanding of dugong behaviour and threats to the dugong population. Since it began its studies, EAD has investigated 153 dugong mortalities. By far, the most common cause of death has been suffocation from entanglement in illegal or abandoned fishing nets. Other causes of death have included habitat loss, marine pollution and collisions with speeding boats. Most of the mortalities were reported during the winter season, which coincides with an increase in the level of fishing activity.

INTERESTING FACTS ABOUT DUGONGS:

- Dugongs are the only marine mammals which are herbivore.
- The Arabian Gulf and Red Sea host around 7,000 dugongs.
- Dugongs have been traditionally persecuted by humans for their meat and oil.
- Dugongs are more closely related to elephants than to whales or dolphins.
- Dugongs are shy, secretive mammals.
- Dugongs are often referred to as "sea cows" because they feed almost exclusively on sea grass. They can eat up to 30 kg of sea grass daily and can weigh anywhere from 230-500 kg.
- Dugongs sometimes breathe by "standing" on their tail with their heads above water.

NEW INFOGRAPHIC BUSTS MYTHS ABOUT GLOBAL SHARK TRADE
THINK IT'S ALL ABOUT FINS AND CHINA? THINK AGAIN.

BY **PROJECT AWARE** PHOTOGRAPHY **DOMINIC ZIEGLER**

A new interactive infographic, from the environmental organisation, Project AWARE®, illustrates the full story of current, trade-related, threats to shark and ray populations based on the United Nations Food and Agriculture Organisation (FAO) 2015 report, "State of the Global Market for Shark Products" by Felix Dent and Shelley Clarke.

The appetite for shark fin soup has played a major role in shark overfishing and is often positioned as the main threat to sharks today. Recent data on international trade in shark fins and meat analysed in the report, however, reveals a global, interdependent market for a variety of shark products across scores of countries, including several in South America and Europe whose demand for shark meat places them among the world's top shark consumers.

"With so many shark species and products in trade, it can be difficult to get your head around what is really happening," says Dr Shelley Clarke, co-author of the FAO shark trade report and renowned shark fisheries scientist. "Understanding sources and trends is a critical step toward making sure the trade is sustainable and traceable, and the underlying fisheries are properly managed."

With technical assistance from Dr. Clarke, as well as Sonja Fordham, a shark and ray policy expert, Project AWARE created a visual representation of the report that debunks myths about the global shark trade and points the way to key improvements.

"We set out to make the findings of the landmark 2015 FAO shark product report more accessible and actionable," said Domino Albert, Project AWARE's Associate Director for Global Communications. "In addition to mapping out the top shark trading countries and routes, the infographic offers a close look at the challenges researchers face when studying these global markets, and highlights the measures necessary to increase trade traceability and sustainability."

The infographic reveals the significant growth in markets for shark and ray meat, as well as the countries and inadequately restricted fisheries associated with this largely under-the-radar trade.

"The shark fin trade is at long last receiving worldwide attention from the media, conservationists, and law-makers, but we must urgently broaden our horizons to also consider other threats to sharks and closely related rays," said Sonja Fordham, President of Shark Advocates International, a project of The Ocean Foundation. "We hope that Project AWARE's initiative will shine light on these emerging issues and channel public concern toward workable solutions, before it's too late."

The infographic and related information can be found here:
www.projectaware.org/globalsharktrade

ABOUT PROJECT AWARE

Project AWARE® is a global movement for ocean protection powered by a community of underwater adventurers. Project AWARE is an international registered non-profit organisation.

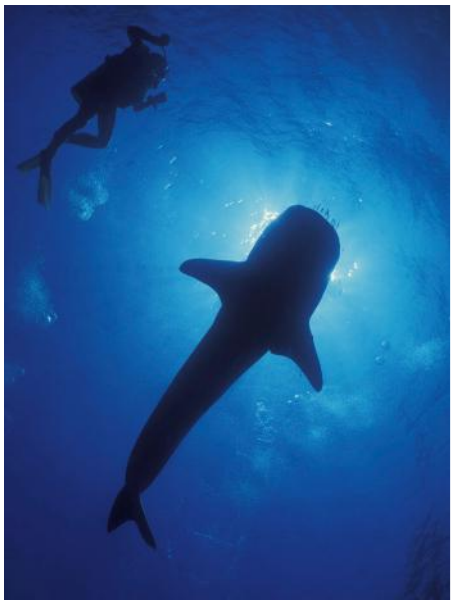
Project AWARE works with various shark conservation partners to use the power of international conservation agreements and management regulations for change and calls for national, regional and global science-based, species-specific conservation actions that heed all available scientific advice for limiting shark and ray catches, protect endangered species, and completely ban the removal of shark fins at sea.

KEY FACTS ABOUT THE GLOBAL SHARK TRADE:

- Hammerhead, Oceanic Whitetip and Blue Sharks are preferred for shark fin soup whereas Dogfish, Mako and Tope Sharks are preferred for meat.
- From the country of production to the country where the products are consumed, shark products are often imported and exported much more than three times.
- The vast majority of shark fins are destined for consumption in a relatively small selection of countries and territories in East and Southeast Asia. The world's largest consumers of shark meat are found in South America and Europe.
- Markets for shark meat are much more diverse and geographically dispersed than those for shark fins. European and North American markets such as the USA, Italy and France show a preference for dogfish species.
- Between 2000 and 2011, the annual volume for shark fin imports has decreased by 5% while the annual volume for shark meat imports has increased by 42%.
- Shark meat markets have expanded considerably due to a combination of demand growth and finning bans intended to encourage the full utilisation of carcasses.
- The world's major shark fin exporting producers are Spain, Indonesia, Taiwan Province of China, and Japan.
- Hong Kong is not a producer, and essentially the entirety of its outgoing trade consists of shark fins that have been imported from shark-catching countries or regional traders and then re-exported.
- Sometimes shark fins are reported as shark meat making the reporting imprecise and not reliable.
- Separate World Customs Organisation commodity codes should be implemented for shark fins and shark meat as a matter of urgency in order to continue meaningful trade monitoring.

FLY TO DIVE
THE LIVEABOARD OPTION

BY **PAUL SANT** PHOTOGRAPHY **WORLDWIDE DIVE AND SAIL**





"Eat, sleep, dive", this is the normal description given by avid divers who choose the liveaboard option when undertaking their dive vacations.

As a diver you always look for that perfect destination getaway, the ever elusive "National Geographic" dive, and the one on your top 10 bucket list.

In the case of a diver with a family, a destination that ticks all the boxes for those none diving family members, is of equal importance.

I have been fortunate enough to have dived (dove for our US divers) around the world, for work and for pleasure. In most cases I have been a lone traveller, not tied to another person's decision about where and what I should be doing. I often opted for hotels and Bed & Breakfasts, even hostels. I chose a dive centre when I arrived and hoped that they could cater to my needs. I did this mostly because I believed it was the cheapest option. Often it was cheaper than a liveaboard, but I was always disappointed by the quality of the diving and the dive centres. Because the dive boats are limited by their range, you often ended up diving sites that are frequented by many other dive operators, and worse, sites that are barren.

As a diver who's only interest is to just dive, a liveaboard ticks all the boxes and has all the requirements you may need. You do not require a swimming pool, gym, spa, kids club or a nightclub. So why waste money on a hotel or resort when you are not using those facilities? This said, in some cases, liveaboards also have all those things (except the nightclub) and this is what makes liveaboards a great option for those non-divers in your life.

A liveaboard's sole purpose is to take you diving; the entire crew is there to ensure you have every opportunity to dive. The vessel is located in that destination because it is a dive destination. Not only is it a dive destination, it is a destination that they know every little detail about. Where to dive, when to dive, what to look for, where to find it and because diving is their passion, you know they will ensure some of this passion will rub off on you.

I know divers that specifically choose a destination in order to get images of a particular subject, whether that is a Nudibranch or a Whale. They expect the crew to find that subject for them, that is what's expected of a liveaboard. It affords you the diver, a guarantee. Most liveaboards are located where they are for the purpose of ensuring you the opportunity to get the image you paid for (unless you flood your camera).

There are divers that choose a destination because of the type of diving it offers, such as Bikini Atoll for its pristine wrecks, or Truk Lagoon for its Tec diving. These divers know and expect to be catered for; whether it's gas, stage tanks, scrubbers even DPV's and logistically it is easier for them than arranging a Tec dive in their local quarry.

Training is another fantastic reason divers choose liveaboards, from beginner to Divemaster, from Tec 40 to Tec 100, it's all available on liveaboards. It is a very efficient way to gain diving qualifications; all you need do is roll into the water and submerge.

Ok, now we move onto the non-divers…

Kids, what more could they want? Snorkelling, kayaking and pretending to be pirates on a real ship! In general there is always an abundance of activates for the children on land and sea.

Most liveaboards have "leg stretchers" on the small islands scheduled into the itinerary, these are not only a pleasant change from diving, but also a great way to persuade the non-diving adults to join you onboard.

For everyone onboard, divers and non-divers alike, the 3 (sometimes 5) meals a day, bar and fantastic company with other likeminded people, make liveaboard (let's call it a cruise) holidaying a fantastic option over the land based diving holidays.

Divers Down now offer liveaboard holidays worldwide, from Palau to Socorro Mexico, on some of the world's best dive liveaboards. We have experienced travel staff to help you choose the destination that is perfect for you and get you there (and back) with the smallest amount of work on your part.

Go on, jump onboard!

BECOMING A PADI INSTRUCTOR

Scuba diving is a sport enjoyed by many people; the passion for the sport and desire to share scuba diving with others is one of the major reasons people decide to take the leap, change their lives and become an Instructor. For many, becoming an instructor and working in some of the most beautiful places on earth is a much-needed escape from the standard '9 to 5' working life. It is a job that can provide a completely new lifestyle and be a rewarding career, as those in the industry will tell you, we truly change people's lives.

Becoming an instructor is easier than people think and the opportunity to take part time or full time courses makes it even easier to fit into your lifestyle. The course is a combination of online and classroom learning, practical training and evaluations. The most important thing to remember is that the course is a development programme; Course Directors, Staff Instructors and Dive Centre staff support and guide you through the training, sharing past experiences from their IDC courses and a wealth of experience from teaching students at a variety of different levels. This support creates an enjoyable atmosphere, where we continue to learn new styles and techniques, but also make life long friends in the process.

This year, the Instructor Development team at Divers Down are excited to conduct three IDC programmes, conducted at both locations in Dubai and Fujairah. The only PADI Career Development Centre in the UAE with three full time PADI Course Directors; Dave Griffiths, Michela Colella and Nicola Liddell, they are ready to share their knowledge of the diving industry and teaching.

As well as first class training, Divers Down offers an abundance of benefits for the new PADI Instructor; from offering instructor course preparation workshops and gaining teaching experience after certification, to discounts on scuba equipment, and offering the broadest range of continuing education courses in the UAE.

During the Dive Middle East Exhibition (DMEX), the Instructor Development team from Divers Down will be available throughout the week to discuss further details of the programmes and training schedules.

To get more information, email Michela or Nicola:

- michela.c@diversdownuae.com
- nicola.l@diversdownuae.com

42 SHARK SIGHTINGS

BY **FERNANDO REIS, SHARKS EDUCATIONAL INSTITUTE (SEI)**

In January, the Sharks Educational Institute (SEI) held two shark diving workshops in Dibba, Fujairah and Abu Dhabi to increase the knowledge and environmental awareness of divers interested in knowing more about sharks, and the conservation of fragile oceanic balance.

The first shark diving workshop was carried out on the UAE's East Coast on the Blacktip Reef Sharks of Dibba Rock's Marine Reserve. The second was run in the waters of Abu Dhabi, focusing on the local species of Arabian Bamboo Sharks.

Both workshops were comprised of a theoretical introduction to the shark species, their biology, ecology, and their behaviours, followed by a set of four dives in each shark species' habitat. It was during these four dives that we had the chance of some rare and amazing shark sightings.

The East Coast dives were conducted in collaboration with Freestyle Divers, based at the Royal Beach Hotel. During the 4 dives of the two day workshop, we had the opportunity to register 25 individual Blacktip Reef Sharks (*Charcarhinus melanopterus*). Although we did not get any useful photo IDs on the sharks sighted, we believe we still encountered at least 8 different sharks on a single dive. The selected diving area was a very small zone on the shore side of Dibba Rock where the reefs create a shallow water shelter for diverse reef fish species, which also use the area as a nursery.

For the second workshop, we collaborated with the Al Mahara Diving Center in Abu Dhabi and worked from a small dive site known as Bamboo Garden. During the two days of diving, we were lucky to see the beautiful Arabian Bamboo Sharks (*Chiloscyllium arabicum*) which we encountered 17 times. Surprisingly, we found there to be a very rich biodiversity in the area which deserves continuous monitoring and protection by becoming a Marine Protected Area. The biggest surprise of all was finding a female Bamboo Shark that measured a metre in length when all the published scientific research refers to a maximum length of 70 cm for this particular species.

In total, we counted 42 shark sightings during the workshops. All the divers practiced and applied the different measurement techniques, with non-intrusive activities developed for the field of marine education and conservation,

always targeting the importance of respecting sharks within their marine ecosystem.

In order to evaluate the workshops and their own learning process, the participants answered questionnaires at the end of each workshop and then received their shark diving certificates.

We received wonderful feedback from the participants who all had an amazing time and saw lots of sharks as well as learned many interesting facts about them; such as where to find them, how to approach them, measure them without disturbing them, and how to identify the sharks' gender. One participant from the Bamboo Shark workshop said, "Great course, I really enjoyed the passion from the instructors, and the fact that we saw a lot of sharks!".

The Sharks Educational Institute thanks the Emirates Diving Association for the consultations on setting up these training activities, and the Dive Centres' teams from Freestyle Divers and Al Mahara Diving Center, for their valuable organisational skills, and all the EDA members who actively participated in these Shark Diving Workshops.

Due to overfishing, and for many other reasons that cause the deterioration of marine habitats, it is understandable that others like ourselves at the Sharks Educational Institute, worry about the dwindling populations of some shark species. This is why we believe that sharing knowledge for better shark awareness is a step in the right direction for us to save them.

We hope to see you on the next Shark Diving Workshop! Keep an eye out for our updates.

FERNANDO REIS
Shark Advocate, Executive Director of the Sharks Educational Institute, Former President of the Canary Islands Shark Alliance, and Board Member of the Sharks Atlantic Platform.

For more information about the Shark Diving Workshops and other sustainable shark diving activities, please email: **info@sharksinstitute.org** or visit the Sharks Educational Institute website at: **www.sharksinstitute.org**

MY ARABIAN BAMBOO SHARK DIVES

BY **XANDER RUSSELL, PADI JR OPEN WATER DIVER (11 YEARS OLD)**
UNDERWATER PHOTOGRAPHY **PETER MAINKA** PHOTOGRAPHY **KATHLEEN RUSSELL**

My name is Xander Russell and I am an eleven year old PADI Junior Diver. Recently we had the chance to participate in the Bamboo shark diving workshop conducted by Mr Fernando Reis, the Executive Director of the Shark Educational Institute (SEI). I have loved the ocean since I was a baby. I guess its because both my parents are PADI Dive Instructors and since my sister and I were very young, we had always been in and around the sea, and the mangroves kayaking. So our love for the ocean grows as we get older.

The workshop was such an amazing experience that I recommend all divers to learn more about these incredible sharks. Mr Fernando taught us many useful tips and tricks while diving, about how to interact with sharks, how to measure them, and how to tell if they were male or female. We were given a lot of information about the Arabian Bamboo Sharks (also known as *Chiloscyllium arabicum*) and Arabian Grey Bamboo Sharks (*Chiloscyllium griseum*). The workshop made me want to help save the sharks even more because all sharks are in danger right now, and they are a big part of our ecosystem. As Jean-Michel Cousteau once said, "We are all connected to the ocean. Without healthy oceans, no life can exist; not even on land."

The workshop also taught us to better understand the myths which surround sharks, such as all sharks are dangerous, and the negative impact from the novel and film, "Jaws". These untruths gave humans an excuse to hunt and kill the sharks and even put a law in place to cull them in some countries. I believe this action is wrong and we must protect the sharks to keep the marine balance. Did you now the ocean provides 80% of our oxygen and plays other important roles for us?

The workshop taught us how to better interact with the different shark species that are out there and to not disturb them in their natural habitat. During the 4 open water dives we did at our local dive site in Abu Dhabi, we encountered up to seven Arabian Bamboo Sharks. My dive buddy, Torrin and I were thrilled to see them and using our shark sticks, we were able to measure the lengths and also determine whether they were males or females. On one dive, we mainly saw females, and on another dive, we saw a mix of females and a couple of swimming males. The largest length we recorded was an 80 cm female Arabian Bamboo Shark. Other divers measured a female to be one metre in length.

It was great to have Torrin – another Jr diver – with me because we can spread the message about protecting our local sharks and answer questions about them at school. The more we can talk about sharks, the more we can give sharks a voice to be heard.

I want to thank Mr Fernando and Miss Manuela for giving us the opportunity to learn so much about the local species. We plan to join the Bamboo Shark monitoring programme which will be hosted by Al Mahara Diving Center and SEI. I hope one day I can talk about sharks to other divers too. When I grow up I would love to be a marine biologist or a marine scientist. We have so much more to learn and I can't wait to get back into the waters of Abu Dhabi.

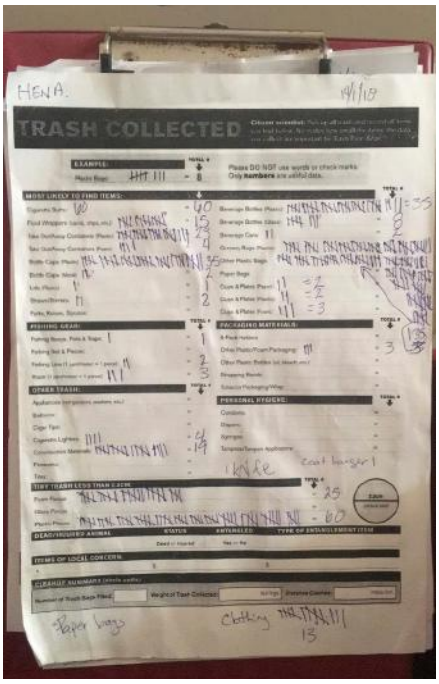
GLOBAL CITIZENS' CLEAN UP

BY **DANIEL ELIZONDO** PHOTOGRAPHY **HAADY, ALI AND KHALIL**

On January the 14th, 2018, members of the Global Citizens' group kayaked the mangroves of Abu Dhabi, intent on finding and removing rubbish from nature. Depending on one's point of view, they were not disappointed. Within a range of mangroves, not even spanning two kilometres, the members of the Global Citizens collected just over 1,000 pieces of non-biodegradable waste within the span of an hour and a half; however despite their efforts, more rubbish remains as more accumulates every day, and the mangroves continue to suffer.

Non-biodegradable materials such as plastic, rubber, and cigarette butts are extremely harmful to nature. These types of rubbish damage habitats by poisoning plants, soil, and destroying the beauty of nature. Non-biodegradable materials are also consumed by animals, poisoning and even killing them. Humans are also affected by the litter that tarnishes nature; fish and other animals that act as sources of food can be poisoned, meaning that humans can be poisoned too.

The average person produces roughly 2 kilograms (4.4 lbs) of rubbish everyday. Of these 2 kilograms, about 75% is recyclable, and only 30% of those recyclable materials actually are. The rest is either thrown away and sent to a landfill, or lost to nature. In all, the average person produces about half a kilogram (1 pound) of non-biodegradable waste each day that either ends up in nature

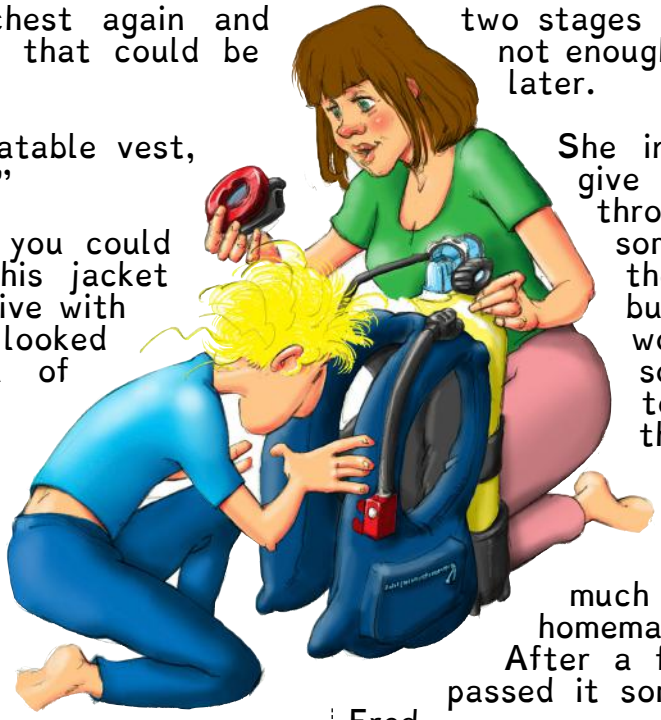


or added to a landfill, and with almost 8 billion people populating the Earth, the amount of accumulated waste is staggering. Regardless of how alarming the situation may be, the solution is simple.

Though it may not seem like it, every individual can make a difference. If a quarter of people that produce litter re-used plastic materials or recycled materials correctly, the amount of non-biodegradable waste would be reduced drastically. Aside from making better decisions with recycling, you can help by joining a local non-profit organisation determined to do clean ups. If you can't do that, then you can also spread awareness of the harm littering can cause. To recap, non-biodegradable materials cause extreme threats to nature, and everyone can help in one way or another.

THE TANK & ACCESSORIES

STORY BY PATRICK VAN HOESERLANDE ILLUSTRATION PETER BOSTEELS



Nella opened the chest again and showed them a vest that could be inflated.

Nella called the inflatable vest, "A BCD or a jacket."

She told them that you could attach a tank to this jacket and that you could dive with it. The two friends looked at each other full of anticipation.

Nella watched their curious eyes. Because they still had time, she decided to put the jacket and tank together. She fastened the jacket with a belt to the tank. She stuck the belt through a black, plastic thing with 3 openings. It was like the two halves of the strap were sewn together. Everything was fast and smooth. Fred wrote every step down while Skubba closely followed her actions. You could see that she had already done that a lot.

Then she screwed a strange thing she called a regulator, onto the cylinder. She told them that it was the first stage.

On that first stage, there were many tubes attached. Then she turned the tank's valve on and both boys heard a sound like air escaping out of a balloon. The tubes moved a little bit. It was as if they were alive for a moment.

Nella explained and showed how to use the air from the tank. She used it to inflate the jacket. Fred knew almost immediately why. "Archimedes," he said.

Nella was surprised that Fred knew this. For Skubba this was not surprising at all. He knew that his friend was smart.

On one of those hoses there was a thing that allowed you to breathe underwater. She called it a mouthpiece. The mouthpiece was stuck on the second stage. Skubba wondered why you needed two stages underwater. Was one not enough? He would ask Fred later.

She invited them both to give it a try and breathe through it. Skubba had some difficulties putting the thing in his mouth, but Nella told him he would find it easier soon enough. He had to put his teeth within the mouthpiece and lay his lips over the edge. He succeeded in doing just that. That thing worked much better than their homemade diving helmet. After a few deep inhales, he passed it somewhat hesitantly to Fred.

"May I dive with that?", Skubba asked.

"Yes, you will use it for diving," Nella said, "but first you have to learn how to use it properly in the pool."

His eyes sparkled. He would go diving with it!

Fred had listened well and could breathe with ease through the mouthpiece.

They followed another tube down to a dial which looked very much like a watch to them. The needle on the dial pointed to the number '200'.

"This is a pressure gauge. This allows us to see how much air there is left in the tank. The needle shows that there is 200 bar of air in the tank. That means that it is completely full."

"Aha", Skubba and Fred said together. Neither one of them had any idea what Nella was talking about.

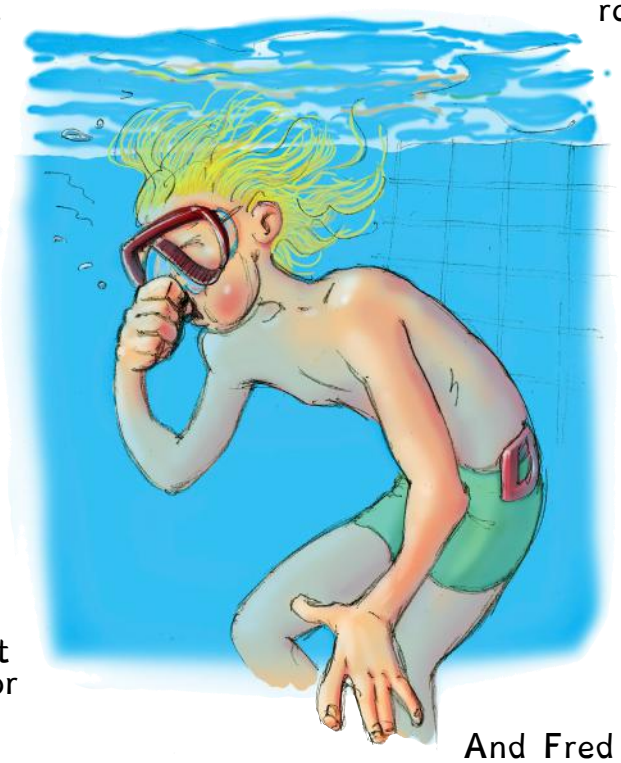
The friendly lady at the door shouted that they were allowed to go to the locker rooms. The swimming pool training would start soon. Before they could enter, they had to sign a form first. For safety.

WELCOME TO THE POOL

STORY BY PATRICK VAN HOESERLANDE ILLUSTRATION PETER BOSTEELS

Skubba and Fred were all geared up and checked in. The lady had told the boys that signing in was necessary for their safety. They were now ready for their first pool session.

The diving equipment's explanation had made Skubba even more enthusiastic about learning how to dive. He would learn to swim with fins, to use a mask, a weight belt, a BCD jacket and tank... just like a real diver. He longed for the moment he could dive in the lake, but Nella explained that he first had to learn how to use the equipment properly before he could do that. It was like learning to ride a bicycle for the first time. You can travel much further and faster with it than on foot, but to do so safely, you have to learn to cycle properly first. It is the same with diving.



He eagerly stood at the side of the pool for instructions.

"In diving, we must remember two things! When you rise, you must blow air out. Always!" Nella told them. "Lungs are like balloons. What happens if we overinflate a balloon?"

"It explodes," Fred said.

"Right, and what do we have to do to prevent it from exploding?"

There was a moment of silence. Skubba looked questioningly at his friend.

"We let air out?!?" Fred finally answered.

"Right, yes, that is why we let air escape out of our mouth when we go up underwater".

"Has anyone ever dived in a deep pool?" was her next question.

"Yes, I have," Skubba exclaimed.

"What happened to your ears?".

"They started to hurt a bit".

"That's because the water pushes against our ears when we dive to the bottom. We do not want to dive with painful ears, nor do we want to damage them, so we must pinch our nose and make round cheeks. Like this. Yes, you too."

"I feel something in my ears", Skubba said.

Skubba and Fred had already experienced a few pool sessions and they enjoyed it every time. This was diving! Skubba had the time of his life. It could not go fast enough. He wanted to learn everything as fast as possible: jumping from the side into the water, filling the mask with water and then emptying it, snorkelling...

And Fred stood by and tried to understand everything that happened underwater. After every session, he read up on it in books and on the internet so he could explain it all to Skubba the next day. He also asked Nella what they would do the following week so that he could prepare himself beforehand. This went on for four weeks until Nella called the boys with the next step. "Skubba, if you want to continue to learn how to dive, then you have to go and see the doctor."

"See the doctor? Am I sick?" he asked her.

"No, not because you're sick, but to be sure that you can dive safely," was her reply.

'Dive safely', these words continued to wander around through Skubba's head.

REEFS CALL OUT TO US

RE-ESTABLISHING REEF CHECK UAE MONITORING EFFORTS WITH AL MAHARA DIVING CENTRE

BY **REBEKKA PENTTI**

Life has a peculiar way of guiding our paths. Ten years ago, the wonders of the marine environment wowed me during my first scuba diving course through my school in Dubai. Love at first dive. Today I am a marine science graduate from Australia, with years of experience in coordinating and conducting more than 60 Reef Check surveys in Australia. Now back in my familiar waters in the UAE, I strive to make the best use of my lessons from down under and kick-start Reef Check UAE monitoring efforts again as the Marine Environment Specialist for Al Mahara Diving Centre. The local reefs need our attention and they need it fast.

Having previously lived and worked for 6 years in the UAE, I have the utmost respect for the unique local marine environment that was devastated by a large bleaching event last summer, which is known to withstand extreme environmental conditions. I am excited that my position as Marine Environment Specialist at Al Mahara Diving Centre offers me a seamless transition in conserving and exploring the UAE marine environment, to capitalise on my recent studies and experience from Queensland, where the world has its eyes on maintaining the marine ecosystem balance in the inevitable face of global warming. Increasingly, many reefs in the UAE are also in trouble.

Al Mahara Diving Centre has a strong focus on environmental outreach and education. In 2018, the third International Year of the Reef, Al Mahara Diving Centre recognises the need for the collection of long-term baseline data in order to check the overall health of our corals in the UAE against worldwide data collected by the globally standardised Reef Check methodology. While the UAE, and Abu Dhabi in particular, hosts some of the world's leading experts in coral research, there is need for systematic Reef Check surveys, as the Reef Check method provides globally comparable findings while empowering the community to take action. We are reaching out to the local diving community and citizen scientists on our eco diving initiatives, to re-establish data collection efforts. The Abu Dhabi sites to monitor, include: Al Dhabiyah, Sadiyaat and Ras Ghanada, but we hope to not limit the upcoming Reef Check surveys only to Abu Dhabi.

Are you interested in joining the Reef Check UAE volunteer monitoring team? Do you want to support this initiative? A successful Reef Check programme grows with the support of the community through grants and donations. While we gear up to run the upcoming training course we welcome any help from our environmentally conscious community members!

Please email **environment@divemahara.com** or call **050 111 8125**.

REBEKKA IN A NUTSHELL

- Rebekka Pentti
- Born in 1992 in Finland

EDUCATION

- Bachelor of Marine Science, Griffith University, Queensland Australia
- Bachelor of Science (Honours, 1st class), Griffith University

QUALIFICATIONS

- SEQ Project Coordinator for Reef Check Australia, 2015-2018
- PADI IDC Staff Instructor (#297616)
- Emergency First Response Instructor
- Disabled Divers International (DDI) Instructor)

- 115 Diver Certifications
- 1400+ Dives
- Wreck
- Enriched Air
- Deep
- Oxygen Provider
- Night Diver Specialties

REEF CHECK EXPEDITION FACILITATES CORAL REEF RECONSTRUCTION ON BANGKA ISLAND

BY **GIANFRANCO ROSSI, REEF CHECK ITALY**

Coral reefs are in trouble worldwide, and Bangka Island, Indonesia, is no exception. Climate change, unsustainable fishing practices, and pollution are threatening this wonderful area located in the heart of the Coral Triangle, the most biologically diverse marine region in the world. The Coral Triangle boasts the highest number of hard corals of any reef ecosystem, supporting a flourishing, prosperous marine life.

Reef Check Italy annually carries out an expedition at the Bangka Island outpost 'Coral Eye', with the goal of increasing participants' ability to identify the coral reef builders. This in turn leads to increased knowledge of biodiversity in that area and, if done systematically, to improved monitoring of the health of the reef over time.

The methodology applied uses the Coral Finder, a plastified volume that enables identification of the corals directly underwater, which can then be improved in the classroom. At the end of the exercise, at least 20 different coral genera will have been identified.

In recent years, a new serious threat has damaged the coral reefs of Bangka Island – iron ore mining. Fortunately, the local people have been successful in blocking further mining exploration of the island, but the damage has been done. A team of experts, Biorock Indonesia, in collaboration with the local Yayasan Suara Pulau Foundation and other stakeholders, are now restoring the coral reefs using biorock technology. This technology passes an electric current through salt water, favouring the slow fixation of calcium carbonate (aragonite) around a metal structure. When the minerals begin to cover the surface, the construction of the coral reef takes place.

Expedition participants fixed fragments of damaged corals, previously collected from degraded areas of the reef, to the mail of this pyramid-shaped construction. The objective is to facilitate the regrowth and transformation over time into a real natural reef, a worthy conclusion of global involvement proceeding from knowledge through recovery of a species more and more vulnerable to extinction.

REEF CHECK CALIFORNIA LAUNCHES CLIMATE CHANGE RESEARCH PROJECT

BY **DR. JAN FREIWALD, REEF CHECK CALIFORNIA**

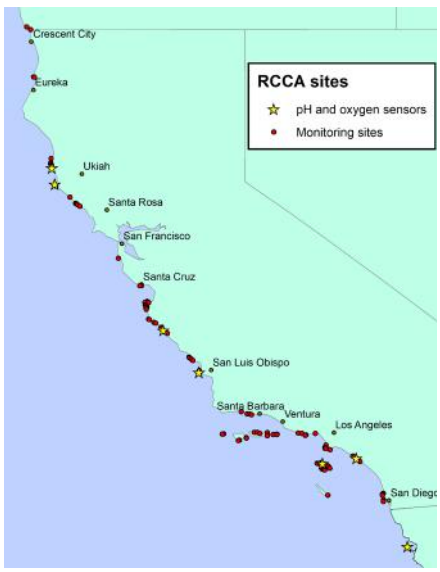
California sits at the frontlines of accelerating changes to the ocean such as acidification and hypoxia (low oxygen) due to global climate change. Governments are starting to realise that the costs of climate change will be huge. Rising global temperatures cause warmer ocean waters and elevated carbon dioxide (CO_2) levels in the atmosphere lead to increased CO_2 uptake by the ocean. In fact, over 90% of the heat that is trapped by increasing greenhouse gases and 30% of the CO_2 produced by fossil fuels is absorbed by the ocean, resulting in a faster rate of ocean acidification than has ever been seen in earth's history. Both of these processes occur on a global scale, but they are not happening uniformly across the globe. Some areas of the ocean are warming faster or becoming more acidic than others. Recent studies show that the North American West Coast will be affected by these changes earlier and more strongly than will other regions of the world. Increasing temperatures and acidity will fundamentally impact marine life along our coast. Not only will calcifying organisms such as shellfish have difficulty forming their shells, but acidification will also change how animals behave grow and survive. It is impossible to predict the exact consequences, but it is clear fisheries and aquaculture will be impacted and so will the people who depend on them. Some of these consequences are already apparent, for instance, oyster farms along the US West Coast have already experienced massive economic losses and even several have relocated to Hawaii where waters are less acidic. Fisheries will be impacted as species move when waters get too warm or as individuals get disoriented, can't feed or reproduce due to increasing acidity. California's fisheries generate $25 billion and support over 150,000 jobs. If they are impacted by climate change the effects will reverberate through coastal communities leading to job losses and drastic consequences for the wider economy.

Local ocean conditions, species' physiological responses and ecological feedback mechanisms will modify the effects of acidification and warming as they percolate through the ecosystem. But in order to understand the local impacts of these global changes, we need to study them on the scale of individual reefs and kelp forests. Reef Check has been tracking the health of kelp forest ecosystems along the California coast for over a decade now as part of the state's Marine Protected Area (MPA) monitoring programme. Inside MPAs where human impacts such as fishing are restricted, it is possible to assess the ecological effects of climate change in the absence of other human impacts and on a relatively small scale so that we can improve our understanding of how local conservation measures can mitigate global climate change. In 2017, Reef Check California began collaborating with Dr. Kristy Kroeker's Lab at the University of California Santa Cruz and researchers at the Monterey Bay Aquarium Research Institute (MBARI) to study climate change at locations and scales that are relevant to California's nearshore rocky reefs and kelp forests.

We have installed very accurate instruments measuring temperature, ocean pH and dissolved oxygen in kelp forests at Reef Check sites ranging from Mendocino County to southern California. We have installed pH and oxygen sensors in remote locations such as Point Arena (Mendocino County), the Big Sur Coast, Catalina Island and even in Ensenada, Mexico where little climate change research has been done. In addition, we have installed temperature sensors at most of our reef monitoring sites. Over the next few years, we expect to see water temperatures increase, water to become more acidic, and local low oxygen zones to become more common.

The instruments that measure pH are custom built at MBARI and have to withstand California's harsh ocean conditions year round. Installing them is not an easy task. In order to measure the changes directly in the kelp forest, we have to attach the sensors to the rocky reef seafloor. To do this, we send teams of divers, equipped with underwater pneumatic drills and lots of stainless steel hardware, out to the reef. While one diver drills holes into the rock, others swim back and forth to supply the scuba tanks needed to operate the air powered drill. Then, everyone screws stainless steel bolts into the rock to which the instrument is attached. Once all the bolts are tightened the sensor is calibrated and then ready to collect pH, oxygen and temperature data every 15 minutes. All of the information is stored in the instrument and downloaded when we return to the reef after a few months. The temperature probes can be installed during Reef Check surveys and record temperature every few minutes for over a year with high accuracy. They will be retrieved during our annual reef surveys. We have hired Kate Vylet to be our Climate Change Research Coordinator and to integrate this work with our citizen science monitoring. For 2018, we are looking forward to training our citizen scientists on how to retrieve the data and service the sensors.

This project, funded by the California Ocean Protection Council, will feed into the state's marine management and climate change readiness plans. We are increasing opportunities for public participation in climate change research by involving Reef Check California's large network of volunteer citizen scientists in this project. In the long run, the integration of this project with our MPA monitoring programme, will ensure the longevity of our new climate change research and save California money. This work will improve our ability to judge the effectiveness of the state's MPA network and better track the impacts of climate change on kelp forest ecosystems and associated fisheries.



REEF CHECK MALAYSIA
RECEIVES TOP ENVIRONMENT AWARD

BY **REEF CHECK MALAYSIA**

Reef Check Malaysia (RCM) was recently presented with the award for best Non-Governmental Organisation in Pahang State. The state's Department of Environment recognised RCM at its annual National Environmental Day celebrations in Kuantan, citing RCM's work supporting local stakeholders on Tioman Island, its collaborative efforts with government agencies to identify and react to local threats such as oil spills and ghost nets, and its ongoing school education programme.

Commenting on the award, Programme Manager Alvin Chelliah said, "RCM is proud to receive this award. However, we must remember that none of our achievements would have been possible without the help and support of the Tioman Dive Operators Association, Tioman Marine Conservation Group, Department of Marine Parks Malaysia, and the local community. We hope that more stakeholders will get involved in the management and protection of Tioman's marine resources."

Norhasniezah bt Razali, RCM's Community Liaison Officer, accepted the award on RCM's behalf. Born and brought up on Tioman, she works to improve communications between various local stakeholders. She is also responsible for encouraging resorts on the island to adopt green operating practices as part of the ASEAN Green Hotels programme. "This award makes all the hard work worthwhile, and reflects well on the islands' tourism operators who are trying to reduce the impacts of their operations on the island's ecosystems," according to bt Razali.

CALIFORNIA FISH AND GAME COMMISSION CLOSES LAST REMAINING ABALONE FISHERY IN CALIFORNIA

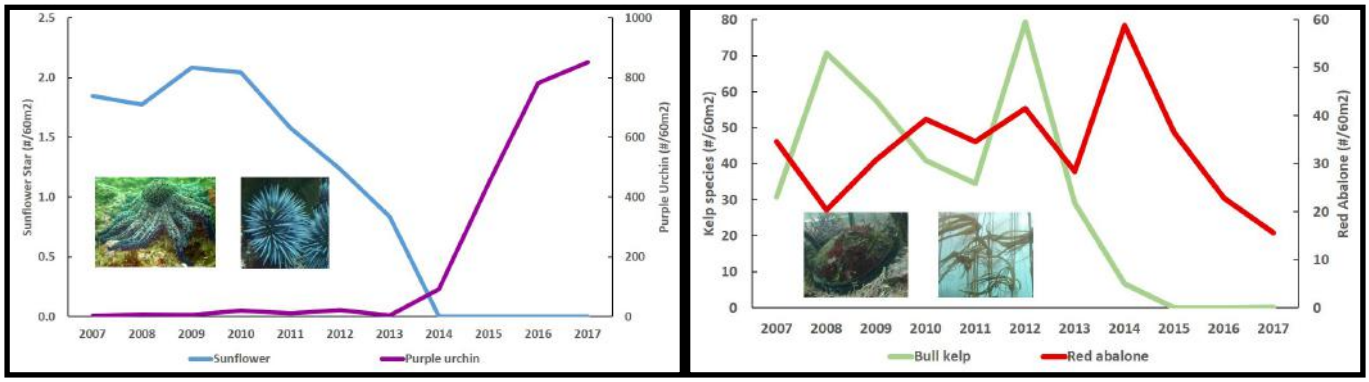
BY **DR. JAN FREIWALD, REEF CHECK CALIFORNIA DIRECTOR**
AND **DAN ABBOTT, CENTRAL CALIFORNIA REGIONAL MANAGER**

On Thursday December 7th, the California Fish and Game Commission unanimously voted to close the Northern California recreational red abalone fishery for one year. Reef Check, in collaboration with the Partnership for Interdisciplinary Studies of Coast Oceans (PISCO), provided red abalone and ecosystem data that helped the Commissioners make an informed decision. Their decision was made in response to deteriorating ecosystem conditions along the North Coast experiencing a collapse of the kelp forest and abalone densities far below the minimum density required by the current fishery management rules to allow fishing. However, the Commissioner did not make this decision lightly given how economically important the abalone fishery is to communities along the North Coast and how valued abalone fishing is as a cherished tradition by divers and shore-pickers throughout California. Given the fishery's importance, the December Fish and Game Commission meeting was well attended and only after an engaged debate with the public did the Commissioners decide on a cautionary course of action in order to protect the resource with the hope that this will provide a sustainable fishery in the future.


Photo by Dana Roeber Murray

The decision to close the last remaining abalone fishery in California was made against a historical backdrop of failing abalone fisheries. In the past, fisheries were not closed until populations were too low, so that even after decades of protections, populations have still not recovered to levels that could support a sustainable fishery. Abalone are slow growing and often go several years without spawning, which makes them susceptible to overharvest and slow to recover from overfishing. Abalone need to be in close proximity to successfully spawn and are relatively stationary so if populations get thinned out, the remaining individuals may not be able to produce offspring, even if they are healthy. These factors contributed to the overexploitation of other abalone stocks in the state which resulted in the closure of all abalone fisheries south of the Golden Gate in 1997. Sadly, even this drastic action seems to have been too late. Although populations have increased in the intervening 20 years, stocks are still considerably below levels that could support a sustainable fishery. The red abalone fishery in northern California was allowed to stay open because, unlike the southern abalone fisheries which allowed the use of scuba equipment and commercial take, the abalone fishery north of the Golden Gate was recreational only and was limited to shore pickers and breath-hold divers. This reduced the number of abalone that were taken to sustainable numbers and provided a deep water refuge below free diving depths. Today, it is clear that the management of this fishery did not cause the collapse of the abalone populations along the North Coast and that this closure is the result of unprecedented environmental change in Northern California's kelp forests.

The problems in the North Coast's kelp forests began in 2013 when Sea Star Wasting Disease decimated sunflower star (*Pycnopodia helianthoides*) and giant spined star (*Pisaster giganteus*) populations. At the same time as the onset of the wasting disease, the main large species of kelp on the North Coast, bull kelp (*Nereocystis luetkeana*), disappeared. It is likely that climate change and the unusually warm oceanographic conditions referred to as the "Warm Blob" played a role in reducing growth of kelp and/or leading to reproduction failures. Regardless of the initial reason, the deterioration of kelp forest ecosystems is the result of the combination of these events. In Northern California, sunflower stars are the main predators of sea urchins, and their decline has had wide-spread consequences for the kelp forest ecosystem. The loss of bull kelp and sea stars was followed by a sharp increase in purple urchin abundance. Urchins play an important role in kelp forest ecosystems but when their numbers explode, these voracious kelp consumers quickly turn areas of lush kelp forests into barren rock and prevent kelp forests from growing back. This has a cascading



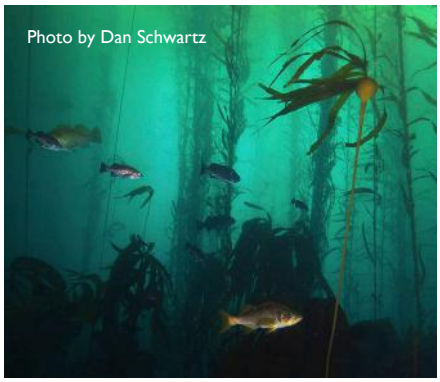


Photo by Dan Schwartz

effect on other species that depend on kelp for food and habitat, including many species of fish and invertebrates such as abalone. Like urchins, abalone feed on kelp and the loss of kelp has left the abalone population starving and dying. All of these ecosystem changes, including the disappearance of sea stars, increase in urchins, loss of kelp and decline in abalone were documented in Reef Check's data which was presented to the Fish and Game Commission prior to their decision on the abalone fishery.

Reef Check witnessed the first warning sign in 2014 when we observed abalone leaving their protected refuges in cracks and crevices, moving out on to the open reef and into shallower water in search of food. This was followed by observations of under-nourished abalone and finally, dead abalone were observed on the ocean floor and washed up on beaches with some areas littered with dozens of empty shells. Since then, urchin densities have increased over 100-fold. Urchins are more resilient to the loss of their food than abalone and can survive for a long time without feeding. Therefore, it is unlikely that we will see a return of healthy kelp forests and healthy abalone populations until the sea urchins decline. Returning predators, disease or changes in environmental conditions could all cause sea urchin populations to collapse. In the meantime, the California Department of Fish and Wildlife has been conducting feasibility studies on removing urchins from small areas to maintain small patches of healthy kelp so that when a large scale change occurs, there is enough kelp to reseed the miles of coast that are currently barren.

The Commission decided to close the red abalone fishery in response to this environmental disaster in order to manage for long-term sustainability and to reduce additional pressure on the surviving populations. It is hoped that the remaining healthy abalone will help the recovery of the population so that the fishery can be reopened. The Commission will review their decision in 2018 when new data will be available and a new Fisheries Management Plan should be in place. Reef Check plans to continue to collect data on the health of the North Coast's kelp forest and to support sound, science-based management of the red abalone fishery.

2017 YEAR IN REVIEW

BY **REEF CHECK**

Help from Reef Check supporters this year allowed us to achieve our 2017 goals in education, research and conservation. We are very grateful to those who contributed to our successes in 2017.

TROPICAL PROGRAMME HIGHLIGHTS

- Our surveys by citizen-scientists in over 50 countries show that there is light at the end of the tunnel for the 3rd global bleaching event – it is finally coming to an end.
- Our Caribbean teams are now surveying the severe reef damage caused by this season's two huge hurricanes – this will have implications for future coastal erosion and current food supply.
- We certified 496 new EcoDivers in 22 countries around the world.
- EcoExpeditions were conducted in the Bahamas, French Polynesia, Indonesia, Malaysia, the Maldives, Oman, and Thailand.
- New Reef Check (RC) organisations were established in Brunei, Colombia, the Maldives, Oman, and the Mediterranean.
- We designed and led a training programme for new ocean conservation leaders in Shenzhen, China.
- The Government of the Dominican Republic awarded management of La Caleta Marine Park to RC DR, and the RC DR Director Dr. Ruben Torres won the global CORAL prize for coral reef conservation.
- RC Thailand Coordinator Dr. Suchana 'Apple' Chavanich was awarded the 'N.K. Panikkar Medal' from the UNESCO-Intergovernmental Oceanographic Commission.
- We designed a management plan for the first marine park in the south of Haiti.

CALIFORNIA PROGRAMME HIGHLIGHTS

- We surveyed over 100 sites in and out of Marine Protected Areas (MPAs) statewide.
- We added new sites around Catalina Island, in Humboldt and Del Norte counties.
- We started a statewide climate change research project with academic partners to monitor ocean acidification, hypoxia and water temperature in California's kelp forests.
- RC California launched the EMBARC onboard marine biology education programme for 500 middle school students in Marina del Rey.
- Our results were used to help describe the status of northern California's marine reserves and helped the Fish and Game Commission to better protect declining abalone populations there.
- Over 300 volunteer citizen scientists were trained and certified for California.

REEF CHECK GOALS FOR 2018

- Promote coral reef outreach for the 3rd International Year of the Reef in 2018;
- Use our finfish data to help manage low-data fish stocks;
- Expand the EMBARC education programme to reach 1000 middle and high school students in our community;
- Release a 'Report Card' on the status of reef ecosystems in California and internationally;
- Integrate kelp forest monitoring across the California-Mexico border.

Please help us to continue Reef Check's global efforts to educate young people and to conserve what we love. Your generous contributions make what we do possible. **www.reefcheck.org/make-a-donation**

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Sunday, 7th January 2018

SUBMISSION ENTRIES CLOSE:
Sunday, 29th April 2018 @ 11:59 PM (GST)

AWARDS & EXHIBITION NIGHT:
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FEATURE CREATURE

ARABIAN CARPETSHARK (*CHILOSCYLLIUM ARABICUM*)

FEATURE **IUCN RED LIST 2017** PHOTOGRAPHY **SIMONE CAPRODOSSI**

RED LIST CATEGORY & CRITERIA: NEAR THREATENED

Scientific Name: *Chiloscyllium arabicum* (Gubanov, 1980)

Common Name(s): English – Arabian Carpetshark, French – Requin-chabot Camot, Spanish – Bamboa Arábiga

Synonym: *Chiloscyllium confusum* (Dingerkus & DeFino, 1983)

Taxonomic Notes: This species was first described by Gubanov and Schleib (1980) but Dingerkus and DeFino (1983) described it as a separate species, *Chiloscyllium confusum*, without mention of *C. arabicum*. Compagno (1984) provisionally recognised *C. arabicum* but noted that it was apparently very close to *C. punctatum*. Dingerkus and DeFino's account clearly establishes this species as being separable from *C. punctatum* (Compagno 2001).

This species has been widely misreported as *C. griseum*, at least in the Arabian Gulf; the distribution of these two similar species (and any overlap) requires clarification.

Year Published: 2017

Date Assessed: 2017-02-09

Assessor: Moore, A.

Reviewer(s): Jabado, R., Pollom, R. & Kyne, P.M.

Contributor(s): Ebert, D.A., Bineesh, K.K., Fernando, D., Akhilesh, K.V. & Kyne, P.M.

Facilitator/Compiler(s): Jabado, R., Kyne, P.M.

Justification: The Arabian Carpetshark (*Chiloscyllium arabicum*) appears to be reasonably common; however, its distribution requires clarification as confusion with congeners such as the Grey Bamboo Shark (*Chiloscyllium griseum*) may lead to a revision of distribution. This small benthic shark is not targeted but appears to be a major bycatch element of trawl (and other) fisheries, although it is hardy to trawl capture and aerial exposure, and may have relatively high post-capture survival rates. Apparently it is little utilised in the Arabian Gulf, but probably is used in Pakistan and India.

The species is threatened by habitat loss and degradation throughout its range. It is known to have a close association with coral reef habitats, which are particularly prone to anthropogenic degradation and there is evidence that such habitats have been severely degraded or lost in some parts of the Gulf, in addition to stress placed on these systems by climate change. More generally, it is exposed to widespread habitat loss and modification, not least in the Gulf (e.g., modification of the Tigris/Euphrates system), coastal developments and effects to benthic communities from demersal trawling throughout much of its range. It is also known to accumulate organic pollutants such as PAHs.

The threats of fishing and habitat degradation are likely to continue into the future and increase in intensity and coverage (for example, fishing pressure continues to increase in India and elsewhere). As a result of these combined factors, this species is assessed as Near Threatened (nearly meets A2cd) based on inferred continuing population declines approaching 30% in the last three generations (~27 years), particularly as a result of habitat loss. Given that this species is often discarded (in the Gulf at least) and a proportion of discards may have a relatively high survival rate, a threatened category is not yet warranted, but the species is suspected to meet Near Threatened (nearly meets VU 3cd) over the next three generation period (2017-2044). There is a need for quantitative distribution and abundance data.

Previously published Red List assessments: 2009 – Near Threatened (NT)

Range Description: The Arabian Carpetshark is endemic to the Arabian Seas region and is common from the Gulf to Pakistan and India. Records of this species from Oman require confirmation. Another Chiloscyllium species, which is similar to the Arabian Carpetshark and possibly undescribed, may occur in northwestern India (R.W. Jabado pers. comm. 07/02/2017).

Countries occurrence: Native: Bahrain; India (Gujarat, Kerala); Iran, Islamic Republic of; Iraq; Kuwait; Oman; Pakistan; Qatar; Saudi Arabia; United Arab Emirates

FAO Marine Fishing Areas: Native: Indian Ocean – western

Population: Currently there is no information on the population of this species. Further research is needed in order to determine population size and trends in abundance. Given the species' regular occurrence as bycatch, and declines in coastal habitats in the region (particularly in the Gulf), the species is suspected to have undergone a past population decline of ~20-30% with a similar future population decline suspected over the next three generation periods (2017-2044) (see Threats section for reasons).

Current Population Trend: Decreasing

Habitat and Ecology: The Arabian Carpetshark occurs in coastal waters in coral reefs, lagoons, rocky shores, muddy bottoms and mangrove estuaries from 2-100 m. This shark is less than 10 cm total length (TL) at birth, but grows to a maximum length of 80 cm TL (Weigmann 2016). Females mature at 52 cm TL and males at about 55 cm TL (Moore and Peirce 2013). The species is oviparous, with single egg cases developing in each uterus. It appears to be closely associated with coral reefs. Age data are not available, but generation length is estimated as 9 years using data from the similar-sized White-spotted Bambooshark (*C. plagiosum*) (Chen et al. 2007).

Systems: Marine
Movement Patterns: Unknown

Use and Trade: This is a hardy species that is taken as bycatch mostly in trawls and stake nets, it is usually discarded at sea. The species has low market value. It may be taken for the aquarium trade.

Major Threat(s): This is a hardy species that is taken as bycatch mostly in trawls and stake nets; it is usually discarded at sea. The species has low market value. A shrimp bycatch study undertaken between 1987 and 1989 in Kuwait suggests that of the 34,750 to 55,500 tons of bycatch quantities, more than 98% were discarded with the discarded fish comprised of 14% carpet sharks (Ye et al. 2000, Chen et al. 2012).

Habitat degradation is likely to be an important factor. The Arabian Carpetshark is known to have close association with coral reef habitats, which are particularly prone to anthropogenic degradation and the effects of climate change (Carpenter et al. 2008, Normile 2016). In the Gulf this includes changes due to the damming of the Tigris-Euphrates river system in Turkey and the drainage of the Iraqi marshes (Al-Yamani et al. 2007), chronic and acute (e.g., war-related) releases of oil, rapid large-scale coastal development (e.g., megastructures in the UAE), and changes to benthic communities from demersal trawling. Coastal land reclamation has accelerated in this area in recent years and, as a result, coastal reefs and other habitat have been destroyed. For example, this has resulted in the almost total loss of mangrove areas around Bahrain (Morgan 2006a).

High levels of polycyclic aromatic hydrocarbons (PAHs) and benzo [a] pyrene reported from this species from Kuwait (Al-Hassan et al. 2000). In India, declines in general catch rates, biomass, recruitment and shifts in regular landing patterns in inshore fisheries have been linked to steep increases in the fisher population, number and efficiency of craft and gears, and associated fishing effort, as well as the degradation of coastal habitats (mangroves, coral reefs, etc.) caused by pollution of coastal waters, urbanisation, coastal developments, etc. (Morgan 2006b). Although no specific data are available it is reasonable to assume that this species has been impacted.

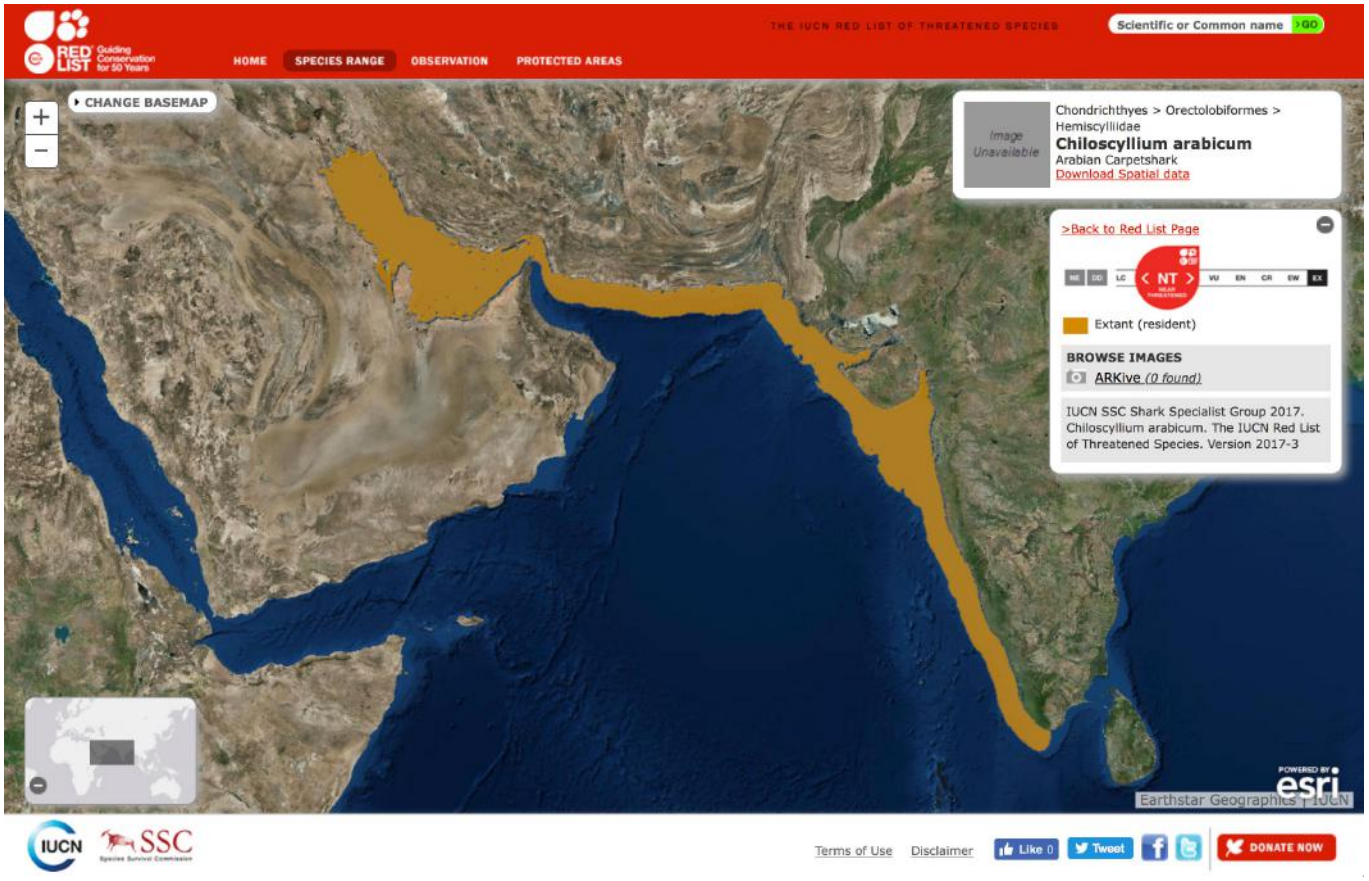
The species is commonly used in aquaria, e.g., in Kuwait (Tony McEwan Kuwait Scientific Centre pers. comm. to A.B. Moore 30/09/2006), although this is not thought to represent a threat to populations.

Conservation Actions: There are no species-specific conservation measures in place. Some countries across its range have banned the targeted fishing for sharks (e.g., Kuwait and Saudi Arabia). Seasonal bans on shark fishing are in place in Iran (from March to August) and the UAE (February to June). The UAE, Qatar and Oman have banned trawling in their waters (since 1980, 1993 and 2011, respectively) while Iran, Kuwait and Saudi Arabia have seasonal trawl bans that might benefit the species. However, incidental catches frequently occur in other fisheries (e.g., gillnetting).

Research is needed to determine distribution, population size and trends in abundance to further assess status and any future conservation needs.

Effective monitoring of fisheries is required, as is the effective implementation and management of marine protected areas. An education programme on sustainable fishing and bycatch mitigation is needed for fishers.

Citation: Moore, A. 2017. *Chiloscyllium arabicum*. The IUCN Red List of Threatened Species 2017. **www.iucnredlist.org**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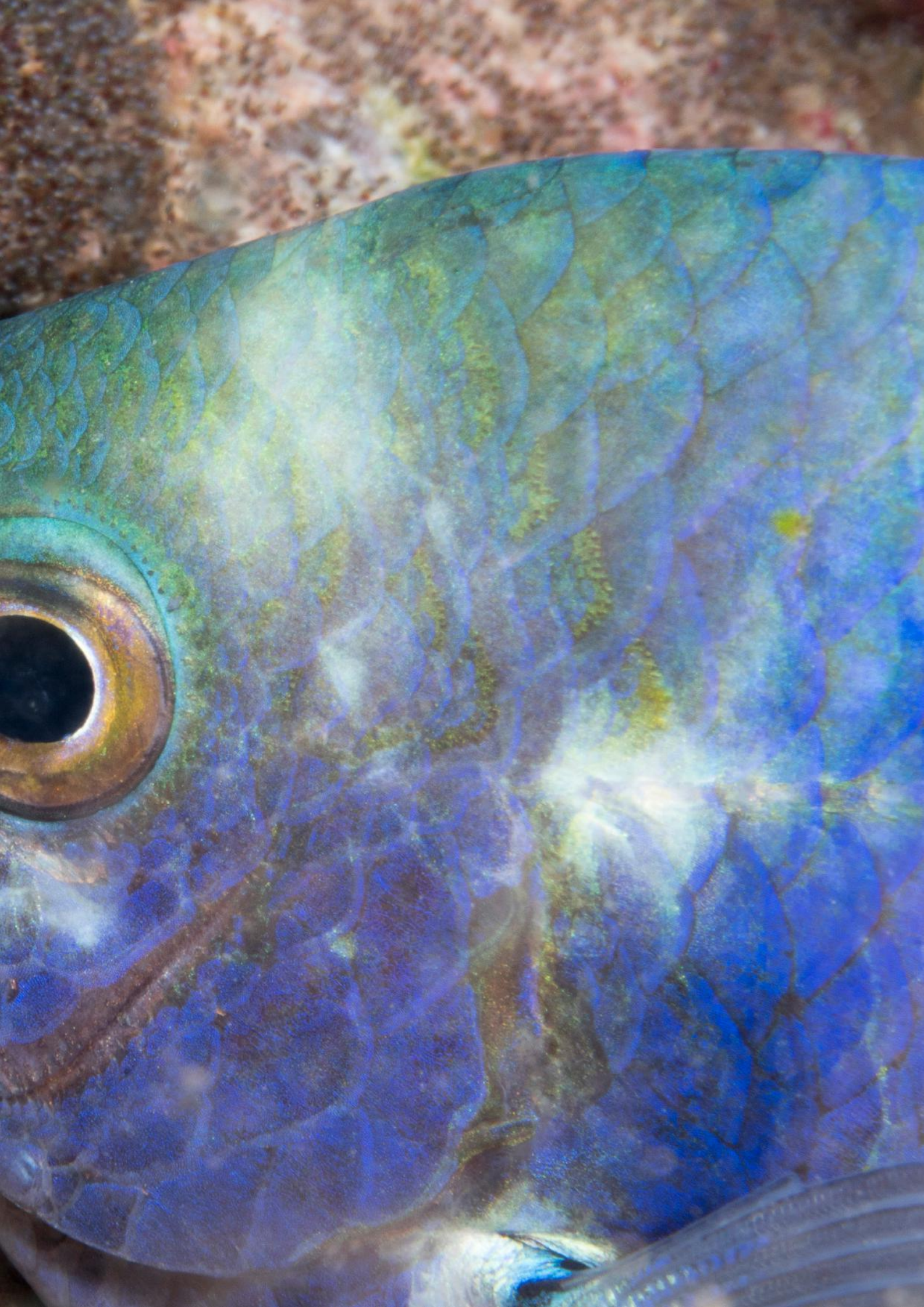
THE SERGEANT MAJOR

FEATURE AND PHOTOGRAPHY **ROB BUURVELD**

Now that we knew what to look for, we could easily spot the egg patches guarded by the dark blue coloured males. With the higher magnification now available to us, we could also see the different stages of development more clearly.



ABOVE: A Sergeant Major with the normal colouration (actually fairly light in this case). **OPPOSITE PAGE TOP:** The dark vertical bars give it its name, similar to the bars on a military uniform. Note the dark blue colour of the male fish positioned in the front. **OPPOSITE PAGE BOTTOM:** A male Sergeant Major guarding the eggs.

Most divers have all seen lots of Sergeant Major fish (*Abudefduf saxatilis*), especially during their dives in the UAE. They form large aggregations while feeding during the day and hide themselves on the reef or in-between rocks by night. They are called Sergeant Majors because of the vertical black bars on their sides, which look like the bars on a military uniform. They are normally a nice colourful addition to the reef scene, but recently we got a chance to learn and see a bit more about this species.

On a dive trip to Snoopy Island near Dibba, Fujairah, we noticed some green and reddish patches on the rocks. We didn't pay much attention to them until we heard someone mention these were patches of Sergeant Major fish eggs while we were in-between dives. That sounded interesting! With the camera already set up, we added a super-macro converter to it and went out for the next dive. The patches were indeed eggs and were guarded by Sergeant Major fish continuously moving over them, chasing other fish away and seeming to "brush" over the eggs with their bodies. It was very interesting to see this kind of behaviour and we took quite a few photos.

Weekend dives always seem to come to an end far too quickly and before we knew it, we had to pack up and head back to Dubai. After downloading the photos, we got the chance to look at the eggs in more detail and we could see a big variation between the different egg patches we had photographed. Some were a solid red colour, others were more green and looked to be in a more developed state. We decided to book more dives for the following weekend, and in the meantime spend some time researching the species beforehand.

There turned out to be a lot of information available on the internet about the Sergeant Major. The egg patches are guarded by the males who change to a dark blue colour while taking care of the eggs. Reading up some more, we learned that the egg patches consist of about 200,000 eggs, each less than a millimetre in diameter. Ok, that explained why we had such a hard time getting a nice shot of the eggs; they were too small, even with a super-macro converter!

The eggs start off as solid red ovals and once fertilised, they become a greenish colour with a red yolk. It takes 4-5 days for the eggs to hatch and that happens an hour after sunset. After hatching, the larvae (about 2.4 mm long) will set off out into the big wide world.

Having a much better idea of what we were looking at from our last dive, we were now even more motivated to go diving again. Prepared with the information we had gathered and equipped with an additional diopter to be able to zoom in even further with the camera, we set out to Snoopy Island. Now that we knew what to look for, we could easily spot the egg patches guarded by the dark blue coloured males. With the higher magnification now available to us, we could also see the different stages of development more clearly.

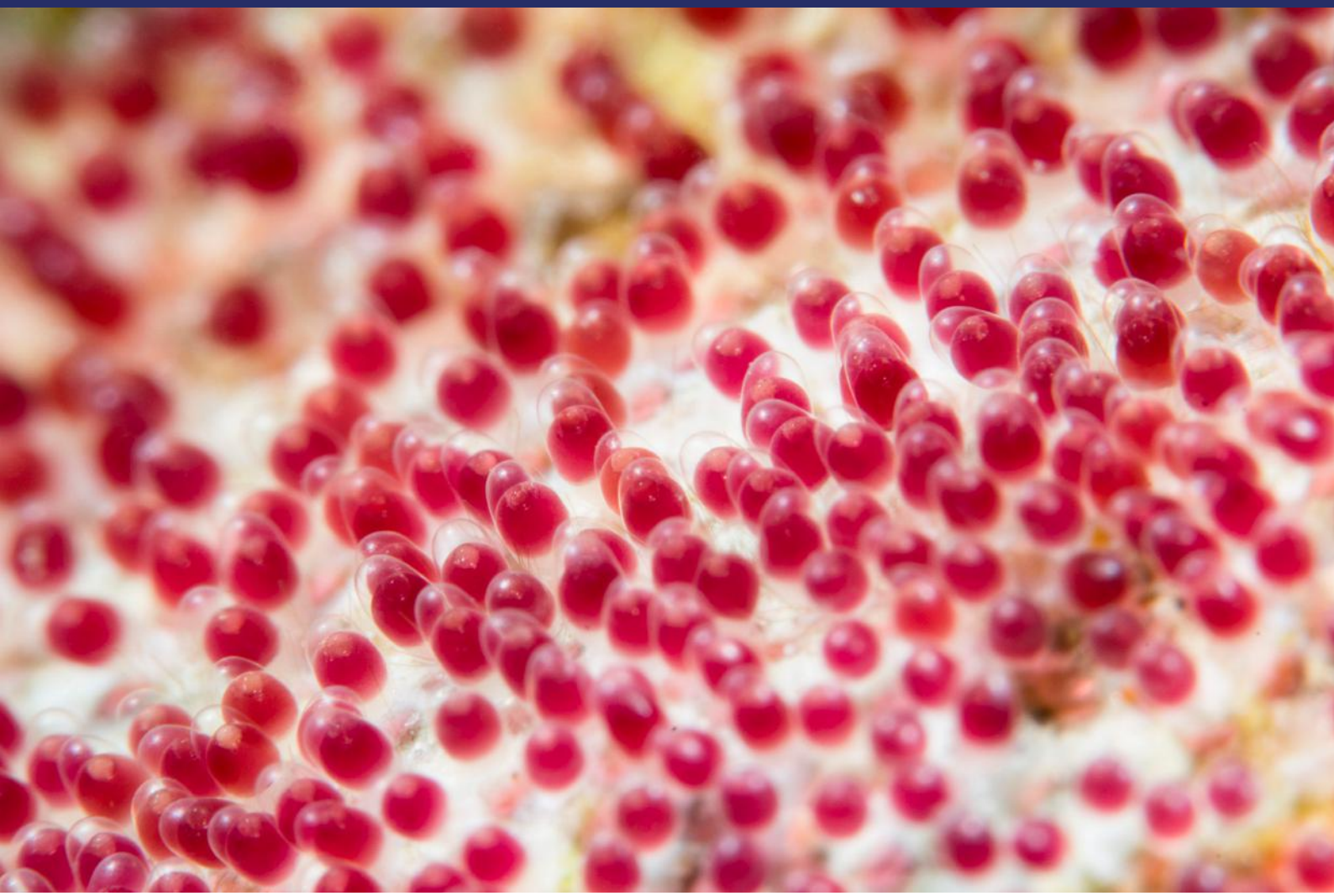
Different patches of eggs were at different stages, from the solid red oval in the beginning stage, to the final stages where we could distinguish eyes and tails of the larvae in the eggs. Then, for the most exciting part of the cycle; would we be able to see and photograph the actual hatching of the eggs?

During the day dives, we searched for the egg patches that were most developed, hoping they would hatch that same evening. We set up for the night dive and made sure we were in place at the most promising patch of eggs in time. And then, one hour after sunset, it happened; we were at the right place at the right time and saw the actual hatching of the eggs. The larvae wriggled themselves free of the eggs, they seemed to peer around for a second or two and then took off. Such an amazing sight, we almost forgot to take photos. It was over far too fast, and then nothing was left but the empty egg shells.

This was a great experience, we learned a lot about the Sergeant Majors, and along the way realised how important it is to do research if you want to take photographs that show behaviour. Especially the hatching of eggs. Without knowing this happens an hour after sunset, you could end up waiting a long time to catch it, if at all. We still have a nice project ahead; we would like to photograph the courting and spawning too, and maybe the development from juvenile to mature adult – but that will be for another day.

Reference: www.sms.si.edu/irlspec/Abudefduf_saxatilis.htm

TOP: A nest, consisting of about 200,000 eggs. The eggs are attached to the rocks with an adhesive layer. **BOTTOM:** Eggs in the final stages of development. The eyes are fully formed and you can see the actual shape of the fish (the string of black dots are the underside of the tail) in the egg.

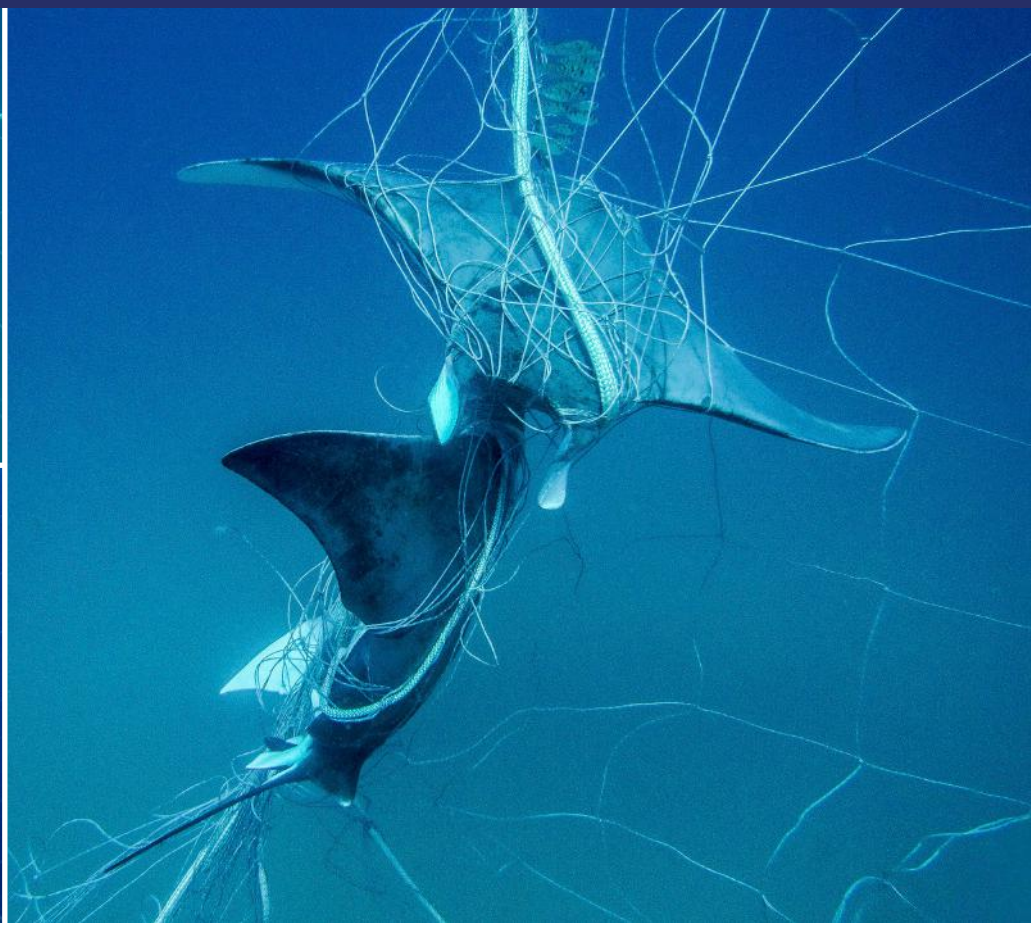


TOP: Fertilised eggs in the early stages. Each egg measures 0.5-0.9 mm. **BOTTOM:** The larvae hatching. This occurs after 4-5 days, one hour after sunset. It's an amazing sight; the larvae breaks free from the egg, looks around for a few seconds, and then they're gone.

AUSTRALIAN SHARK CONTROL PROGRAMMES
PROVIDE LITTLE MORE THAN A FALSE SENSE OF SECURITY

FEATURE **NATALIE BANKS** PHOTOGRAPHY **SEA SHEPHERD**

During the three years that the shark nets were removed, there were no human-shark encounters at these beaches. No shark encounters, despite there being no shark nets in the water!



Shark control programmes in Australia are sadly demonstrating that they are not all they appear to be. The major shark control programmes in Australia run in two states on the eastern side of the continent in New South Wales and in Queensland and started with the introduction of shark nets in the 1930's in the popular city of Sydney.

With over 60 people dying from blood loss as a result of shark bites since the mid-1800s, the New South Wales Premier in 1935, Bertram Stevens felt something needed to be done. At the time there had never been a shark control programme introduced anywhere, so Stevens took the advice from fishing experts and agreed to a two-year trial of mesh nets. The idea grew legs and was expedited upon plans for the celebration of Australia's 150th Anniversary celebrations on 26 January 1938. No one of course wanted to have news of a shark attack while the delegation attending the ceremony were in town.

So in October 1937, 18 of Sydney's beaches were installed with a 305 metre long shark net.

Three months later and only 24 days before the commemoration, on 2 January 1938, the first of 43 unwanted shark encounters took place at a netted beach in Sydney, when Ernest Barker was thrown in the air, after a shark bumped his surf ski at Cronulla Beach.

Despite this, the nets remained in place, until January 1943, when the nets were removed from Sydney beaches so that the fisheries vessels that were used to service them, could be used by the Americans in the Second World War.

During the three years that the shark nets were removed, there were no human-shark encounters at these beaches. No shark encounters, despite there being no shark nets in the water!

This led to the then Premier of New South Wales, William McKell, to make a statement in the Sydney Morning Herald that no Premier has dared to say since, despite scientific findings, shark nets are, "quite valueless." McKell preferred alternative measures to shark nets, signing off on experimental shark repellents to be used in conjunction with shorter shark nets (152 metres long) in 1946, stating, that "if meshing alone were used, I fear it would prove to be of little value. Worse, it would possibly lull the public into a sense of false security, leading to diminished watchfulness and possibly to tragedy." This was 72 years ago, and scientists continue to echo these sentiments today, to no avail.

Five years later, the failings of shark nets would again be proven, when in 1951, New South Wales recorded its worst year of shark encounters at netted beaches, with three separate incidents, including the fatality of local surf ski champion Frank Olkulich (21) who was fatally bitten at a Newcastle Beach called Merewether while treading water.

Despite this, shark nets continued to be touted as the best solution to reducing shark encounters in New South Wales, even as more incidents took place at netted beaches. In 1962, Queensland authorities must have had its doubts on the success of shark nets however, as they introduced 24 drum lines in addition to shark nets to the Gold Coast region.

New South Wales authorities continued on with its failed shark meshing programme (SMP) extending them in 1972 to nine additional beaches, after thirteen year old Raymond Short had his right leg severely bitten while body boarding at Coledale Beach by a 2m white shark in 1966. This is despite the fact that at the time, 14 unwanted shark encounters had occurred in the 19 years of shark meshing at netted beaches.

By September 1992 the total number of netted beaches in New South Wales had grown to 51. In the 25 years, there has been 24 unwanted shark encounters at netted beaches in NSW; almost one per year*. This includes the shark incident on 12 February 2009 at Bondi Beach when Glen Orgias (33) lost his left hand after being bitten by a 2.5m white shark while surfing and the severe bite that Andrew Lindop (15) received by a suspected 2.6m white shark at Avalon Beach on 1 March 2009.

These two incidents took place just before the New South Wales Department of Industries publicly released its report into the meshing programme and the environmental impacts as part of amendments to the Shark Meshing Bill passed in November 2008. The report, detailed that from September 1990 to April 2008, there were 3,259 marine animals caught

within the shark nets that were considered by-catch. These include 1,292 hammerhead sharks, 1,269 stingrays, 259 angel sharks, 107 port jacksons, 52 dolphins, 47 turtles, 40 thresher sharks, 15 grey nurse sharks (critically endangered and have been protected in New South Wales since 1984), six whales, four seals (vulnerable and protected), a penguin (protected) and a dugong (protected). In addition 100 white sharks (vulnerable and a protected species since 1999) were caught in these years. Despite accounting for a third of the catch, hammerhead sharks are not a target species and have not been implicated in a single attack in NSW since 1900.

Although the report does not define the species of the whales captured, a Hansard transcript from the New South Wales Legislative Council, on 17 November 1999, states that, "in the past 50 years… a total of three baleen whales have been caught in the net… including two humpbacks… and one minke whale… and one killer whale."

For all of this by-catch, the report further goes on to advise that the overall number of shark attacks was the same (61) in the 37 years before and after the shark mitigation programme, and that in the last 35 years, there has been an increase in that rate of some 28%. Additionally, the period from January 2000 to March 2009 saw 52 unwanted shark encounters, almost twice the rate of attacks between 1930 and 1939.

With shark numbers decreasing in commercial catches in New South Wales, and within the SMP, the reasons for these increases in shark encounters are not due to the increase in the number of sharks, but more likely attributed to the increase of people using Sydney's coastal waters through a population rise from 1.4 million residents in New South Wales in 1901 to over 6.9 million residents in 2008, as well as the increase in tourists. It is interesting when looking at these numbers however, that despite the five-fold increase in the state's population, the increase in unwanted encounters is less than 30%.

What is also interesting, is that when a segmentation of the unwanted shark encounters is analysed, the rate of unwanted shark encounters at the Central Coast's ocean beaches (the most recent location to receive shark nets) has increased since the shark nets have been installed, from 1 incident every 22 years, to 1 incident every 4.4 years.

Authorities continue to debate shark nets, with politicians continuously referring to the decrease in fatalities since the nets were installed. However there is scientific research and evidence claiming that the shark nets are not at all the reason behind the decrease in fatalities. Since 1937 there has been amazing advances in medicine and technology, with researcher David Caldicott publishing a study in 2001, stating that the survival rate for shark bites is 80%, due to better on-scene treatment and antibiotics.

The Fisheries Scientific Committee (FSC) and the New South Wales Scientific Committee, has continued every year to raise concerns about the Shark Management Programme (SMP) to the New South Wales Government since 2009. The FSC has urged the Department of Primary Industries (DPI) to remove the statement that they have made yearly that the SMP is, "effective at providing a safer environment for swimmers" claiming that, "this statement is unsubstantiated because it is not based on a scientific comparison between meshed and unmeshed beaches of shark numbers, interactions or attacks." The Committee has also attacked the lack of detail in annual reports by DPI, stating that, "without sufficient detail there can be no rigorous review, or transparency in the outcomes of the programme." And they are right. Over 1,000 kilometres of New South Coast (or 90% of the state's 721 beaches) is unmeshed, yet attack rates are miniscule.

Knowing this, it is indeed heartbreaking to see the New South Wales Government introduce the Shark Meshing Programme into the pristine waters of northern New South Wales in December 2016.

Updated figures of by-catch caught in the Shark Meshing Programme from 1950 to 2016 in New South Wales show that, 18,367 marine animals have been entangled in the shark nets. Shark nets which are so badly designed, that sharks can swim around and over them and have not prevented 43 unwanted shark encounters. New South Wales ocean lovers deserve better than 1930's technology that lull the public into a sense of false security.

*These encounters exclude those as a result of fishing.

YOGA FOR FREEDIVERS
SARA'S STORY

FEATURE **PATRICK VAN HOESERLANDE**
MAIN PHOTO **GRANT GRAVES** PHOTOGRAPHY **JAN VAN EETVELT**

Do not rush into personal records, but accustom your mind to the new sensation. Freediving is about finding the balance between muscles, flexibility and mind by fitness, yoga and meditation.

I've followed the advanced freediver course and succeeded in the certification tests, but I did not attend the yoga sessions. They had not been organised in time, so I became a freediver without any real experience of the mental preparation needed of this sport. You cannot talk or read about apnea without broaching the subject of yoga, so I had to do something about having missed the sessions. When the opportunity to meet and greet a world record holding freediver arose, I was quick to secure my spot. Within a few weeks, it was time to leave for Brugge, where the event was being held.

Standing in the parking lot next to the fitness centre where the session was about to take place, I felt a little uneasy but with no apparent reason known to myself. I've read about yoga and what it can do for you, but as a believer of hard science, I'm rather sceptical of all other things. We have a magnificent biological computer between our ears and science has only scratched the surface of its possibilities, but I'm hard to convince unless there is solid proof. Nevertheless, I try to keep an open mind until convinced before I take my shoes off and take the stairs to the next level.

In preparation of this event, I've been reading about Sara Campbell. She was a PR expert working hard in London to meet life's expectations. After a few years, she felt something was missing and took up meditation and yoga. She started freediving under the impulse of a friend and soon made a name in the sport.

Having read her curriculum vitae, I've tried to imagine what she would look like, a habit I cannot stop. In doing that I was certainly influenced by the image of the last record holding freediver I interviewed. In my mind the posture of a record holder is a tall, slim and sharp looking person. His or her formidable lung volume must be supported by long, powerful legs.

With this image, I step into the room where the event is about to begin. The room wants to invite you to be at ease and to relax, but the loud music coming from a spinning class a floor below us cries out a different invitation. I look around and see no one who matches my mental description. I discover other attendees in rather loose clothes equipped with a mat and some strange brick. The invitation mentioned to bring a fitness mat, but compared to what the others had brought with them, mine looked more like a napkin. Well, this is my first yoga session so I feel I can be excused for all the mistakes I will make and my negligence of the customs among yoga adepts.

But where is Sara? I hear English coming from a small group standing near the middle of the room. Looking at the members, I try to discover who it is speaking with a British tongue. I close in to greet her and to my surprise, Sara is not at all how I had imagined her. She's a small, normal looking person with greying hair. I sense a strong, warm personality with an air of calmness quite characteristic for somebody who has yoga as a philosophy to live by. She radiates passion and genuine interest in others. The moment I shake her hand, I feel assured that she's the record holding diver I've read about.

We're invited to sit down and relax. I look around and recognise divers I've met during some of the sessions in NEMO33 and TRANSFO. Looking at how they sit in a very relaxed way, some on that strange brick, they must, unlike me, have participated in the yoga sessions. Sara starts with a video of her world record dive of 104 metres constant weight. She invites all to hold our breath during the projection of the dive. My personal record static apnea flirts with the 3 minutes, not the 4. Not risking a blackout in a room full of colleague-divers, I decide not to follow her suggestion and to keep breathing. Luckily she doesn't ask us to copy her behaviour at the turning point, the moment she was under the influence of depth narcosis.

Before sharing her insights into deep diving, we get a quick overview of her life. Experiencing a non-eventful, tranquil youth, she stumbled into a normal lifestyle although felt that something was missing. She was quite successful in the unforgiving PR world in London, but left a trail of multiple failed relationships, a miscarriage, an abortion and stressful hours of working leading to chronic illness, and a complete breakdown while preparing for the London marathon.

That this kind of continuous mistreatment of life could not go on became clear when she was diagnosed with a stress-related digestive disorder. Her doctor maintained the rest of her life's symptoms with medication, including daily doses of steroids. She did not accept that there was no cure, so she started her journey to find one herself.

She started exploring acupuncture, nutritional therapy, meditation, yoga – which she found boring – singing and dancing. After some emotional days with lots of crying, it dawned on her that the illness was the culmination of years of self-neglect in favour of other worldly things. Self-destructive activities most of us do to cope with day-to-day life: poor eating habits, over-exercising, over-working, binge-drinking, looking for love in all the wrong places, compulsive shopping, trying harder…were claiming their toll. Another moment of truth was during a week in Greece where she was introduced, rather by accident, to chanting. Although sceptical at

the beginning, chanting added that bit to yoga to free her emotions.

The illness broke the smoke screen of pretending invulnerable. There was no way to ignore the signal for much needed change. While threatening and painful, it enabled her to reflect on her life and to make drastic change happen. The final tipping point was the birth of her sister's baby boy late 2004, a great moment that brought back some painful moments due to her miscarriage a few years earlier. She decided to take a week off to pull herself together before rejoicing this event. To make peace with her inner self, she stayed in a peaceful Bedouin town tucked away between the mountains of Sinai and the Red Sea. This was the ultimate place for anyone looking for peace.

After a few days, she came in touch with her inner self and during a horseback riding trip, she decided this was her new home. There was no rational explanation, just a feeling, an intuition that it was the right thing to do. No rationalisation, just an emotional decision. If it didn't work out, the worst possible scenario was to return to the her current life with a dependence on medication. She was at a crossroad in life and returning to Dahab was the better option.

In the irony of things, she got pregnant in the weeks after her escape to Egypt to ease the pain over her miscarriage. Her blessed situation could have given her the excuse to stay in London and forget about her intuitive decision, but she accepted life's challenge and moved to Dahab within two months. Her second pregnancy gave her a clear wake-up call and she was determined to see it through.

Life in Dahab was not without its struggles and challenges, but she managed to stay in contact with herself and to live without medication. Yoga gave her a resting point and the possibility to recharge her batteries. Convinced of the positive effects of yoga, she held sessions. Observing her ease to hold her breath during those sessions, a friend pushed her to take up freediving to assist her as a safety diver. Soon Sara was bitten by the freediving bug and attracted by the spiritual side of the sport. She started going deeper and deeper, pushing her own limits. Some nine months later, with a delay after recovering from Hepatitis A, she held three world records and the woman with the deepest record in the world. She had found her home and her destiny. But yoga was the thing that kept her going on.

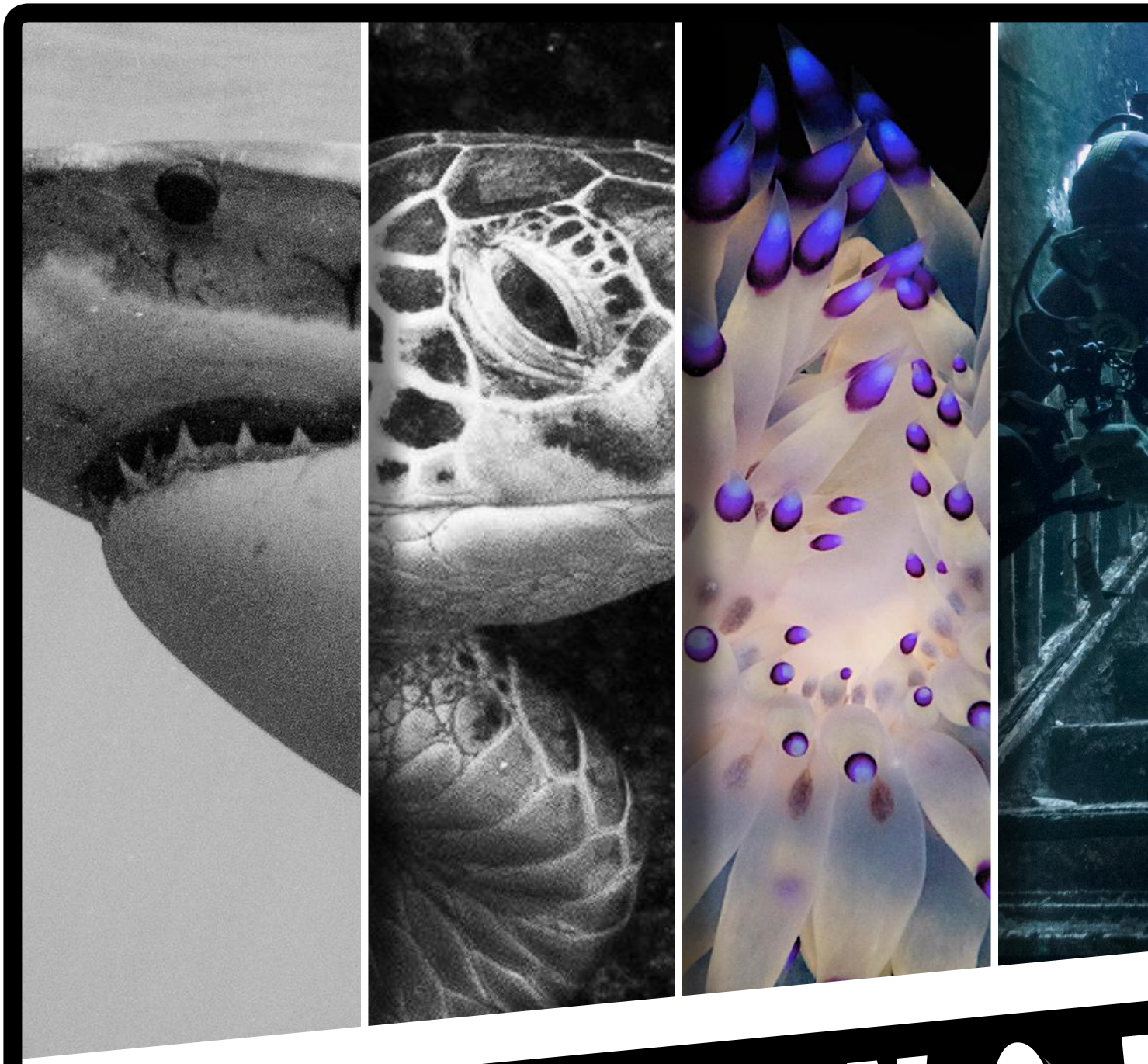
"But you are so short," is one of the most heard comments. As yoga is at the origin of her free diving exploits, she's convinced that meditation and a good inner balance are key to freediving. Most people's minds are a mess and they don't know it. The common freediver thinks that the more you practice the better you get, but that's all wrong. Intellect doesn't solve freediving problems, it is the cause of most of them. If a freediver stops thinking about the dive, all will be smooth. Our body has the wisdom to freedive, we just have to accept it and stop thinking about it. We have to relax and let our body do its thing. Consider your mind as a passenger on your body's dive. Communicate with your body. Believe in it and do not try to manage our mammal dive reflex.

She advises to freedive with eyes closed to better listen to our body and to block off all senses, except feeling. The sixth sense, our mind, is the last one we have to put at ease and succeeding that is 80% of the dive. A good freediver trains to no longer respond to his or her mind. We have to retrain our brain. When encountering a problem, go back up a few metres to stop and relax. Why is there a problem? Do not try to muscle it out but understand the cause. On the next dive, stop and stay head down. Relax. Thereafter, stop, relax and go 2 metres deeper. Do not rush into personal records, but accustom your mind to the new sensation. Freediving is about finding the balance between muscles, flexibility and mind by fitness, yoga and meditation.

After hearing these convincing arguments, one has to attach some credibility to words of a world record holder, and she invites us to try some exercises. Now I have to step out of my comfort zone. Listening to somebody talking about yoga is easy, but doing the exercises is something completely different. When I see other attendees fully engaged in the exercises, I decide to give it a try. Struggling to find a relaxing position and the mindset to participate fully, I do my best to copy what I see. Despite her advice not to "think" about it, my brain is attempting to grasp what I'm engaged in. It is not capable to apprehend the situation while my body seems to enjoy it.

When she explains her mantra, I've got a suspicious feeling that she will ask us to sing it. And yes, she finishes her explanation with the invitation to chant the mantra. I've lost track of my comfort zone, but the group pressure is too much not to pretend. I stumble into actually producing some of the words. My mind is still not grasping what's going on.

The mantra exercise ends the evening. I feel sweat tripling down my back and I'm wondering where that comes from. Are yoga and relaxation more active than I imagined? After saying good night, I take off back to Antwerp. While driving home, I try to give all that I heard, a place. Freediving is pushing your personal boundaries. Maybe that means breaking out of your brain patterns to explore the less logical parts of yourself? Something to reflect on.



PHOTOGRAPHY &

ENTER DIGITAL ONLINE 2018

EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION

DEADLINE: Sunday 29th April 2018 @ 11:59 pm (GST)

FILM COMPETITION

DIGITAL ONLINE

جمعية الإمارات للغوص

EMIRATES DIVING ASSOCIATION

PHOTOGRAPHY AND FILM COMPETITION

DIGITAL ONLINE 2018

EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION

OUR FAVOURITE EVENT IS BACK ON!

SUBMISSIONS OPEN: SUNDAY, 7th JANUARY 2018 | **SUBMISSIONS CLOSE:** SUNDAY, 29th APRIL 2018 @ 11:59 PM (GST)

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

DIGITAL ONLINE'S MAIN OBJECTIVES ARE:

- To develop the human interaction with the underwater environment and highlight the beauty of its flora and fauna.
- To gather information on the number of underwater photographers in the UAE (both professional and amateur).
- To discover new promising underwater photographers in the UAE.

Digital Online is open to all photographers and videographers of all skill levels with a valid EDA membership status. EDA membership must be renewed if expired or acquired to take part.

EVENT BY EDA

EDA
جمعية الإمارات للغوص
Emirates Diving Association

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ABOUT DIGITAL ONLINE

Digital Online was realised in 2009 by Marcelo Mariozi, a professional underwater photographer who had previously been involved in the organisation and set up of underwater photography competitions in his native country of Brazil.

As there were no other underwater photography competitions existing in the UAE at the time, Digital Online was introduced by EDA for resident photographers to develop a relationship and human interaction amongst those unfamiliar with the underwater world environment. The competition holds both local and international marine life categories to offer variety between our local and international diving enthusiasts.

The film category was introduced as an extension to the competition in 2012 to share our underwater world through motion pictures and deliver a better understanding of the habitats and surroundings.

The event, now in its 9th year, sees the continuous and steady growth of new underwater photographers taking part and joining our regular yearly participants. The enthusiasm and passion strives on, and the drive to bring our underwater world's conservation to the forefront increases over time. The purpose of Digital Online is to keep our underwater world visible by displaying its hidden beauties and to exemplify its importance to all life on Earth through the powers of its ecosystems.

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

THE SPONSORS

We would like to thank all our devoted and new sponsors for taking part in Digital Online 2018's event, for without them, the competition would not take place.

We would like to give a big shout-out to BFC Travel Management, Philippines Department of Tourism, Azure Dive Resort, Le Meridien Al Aqah Beach Resort Fujairah, Al Maha Desert Resort & Spa, Millennium Resort Mussanah Oman and Sea Oman Dive Centre, Grand Stores, The Dive Centre, Al Mahara Diving Center, the Beach Rotana Abu Dhabi and the InterContinental Hotel Abu Dhabi, Al Marsa Musandam, MTM Marine LLC, Divers Down, EDA, Pier Uno Dive Resort, Freestyle Divers, Al Boom Diving, Fairmont Fujairah Beach Resort, The Palms Dive Center and SeaBreacher UAE.

THE JUDGES

We would also like to thank Andy Murch, Simon J Pierce, Imran Ahmad, Simone Caprodossi and Jonathan Ali Khan for being Digital Online's asset guest judges.

We are privileged to have such talented photographers and film makers volunteer their time to take part in this event.

COMPETITION CLAUSE

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

THE DIGITAL ONLINE RULES AND GUIDELINES 2018

RULES AND GUIDELINES

- Digital Online is open to all photographers and videographers of all skill levels with a valid EDA membership status. EDA membership must be renewed if expired in order to take part.
- Each competitor can only win one prize or prize package.
- Winners will choose their own prize.
- Participants are obligated to follow environmental conservation regulations and to respect the underwater world during the process of taking their stills and video. Be advised that any damage to the protected underwater world, including the disruption of the natural habitat of the marine life, provocation through touching, displacing, feeding or annoying, is prohibited and will disqualify the images or the photographer/videographer.
- By entering the competition, entrants declare that they own copyright of the submitted photographs and films and it entails an automatic acceptance of all the rules. EDA reserves the right to publish images in the 'Divers for the Environment' magazine, EDA's social media pages and on the EDA website. Images will also be used in any future promotional material for EDA events and competitions royalty free, but copyright remains with the photographer. Use of images or video will require no additional written or verbal permission from the photographer or videographer.
- Competition organisers will take the utmost care in handling digital files submitted to the competition. However, competition organisers will not be held responsible for any loss of the submitted material at the time of uploading images. No media such as CD's, DVD's, memory cards and sticks will be returned to the participants.
- Images (photos or videos) must not have already been submitted to previous Digital Online Competitions.
- Photos and videos must be taken underwater unless specified in a category description.
- Manipulation is restricted to colour correction, brightness, contrast, sharpening and cropping. The Digital Online judges reserve the right to examine untouched images if requested.
- Removing backscatter is allowed to an extent, this does not include the removal of subjects such as fish or divers or cutting and pasting sections of images from one to another.
- The finalists will be announced and their work displayed at the exhibition and award ceremony in May 2018 (Date and Venue TBC). Participants who do not make it to the evening of the event will be asked to collect their prize from the EDA offices.
- Prizes will be announced in March 2018.
- We pledge to run this photography and video competition ethically and with integrity. Our judges have volunteered their time to help. The photographers' details remain hidden to the judges during the judging process.
- All judge's decisions are final.

REGISTRATION AND UPLOADING ENTRIES

- Submissions have been entered from Sunday, 7th January 2018.
- The entry deadline is Sunday, 29th April 2018, at 11:59 pm (GST – Gulf Standard Time).
- Participants must be valid EDA members. Submit entries via email to **photo@emiratesdiving.com** with the requested category detail information.
- File names should include photographer's name and the category:
  - Name-Macro.jpg
  - Name-WA.jpg
  - Name-UAE.jpg
  - Name-BW.jpg
  - Name-Compact.jpg
- Photo entries must be saved in jpeg format and should be sized between 2000 and 6000 pixels in the longest dimension. Please limit your images to a maximum file size of 5MB. Images will be viewed on a monitor and should be in the AdobeRGB 1998 or sRGB colour space.
- Video submissions must be in mp4 format and can be sent via We Transfer or Dropbox with the Videographer's name as the file name.
- The preferred method of entry is electronically, however, if this method is not possible due to slow internet connection, you are able to submit via DVD, memory card or stick. Please note, media will not be returned.
- You will receive an email to confirm your registration and photo/video upload. If you do not receive one within 24 hours, your email may not have made it through and you may need to try again.

Good luck to everyone taking part in Digital Online 2018! Dive safely and have fun!

***NOTE:** HOW PRIZES ARE AWARDED
Once the judging is complete, the winners will be able to choose a prize available to them on the list they will receive via email. Digital Online Judges award a 3-way point system to each photograph/video consisting of Technique, Composition and Impact which is added to give the photograph's or video's total grand score. Best of show with the highest points will get first choice. 1st place winners by highest score will choose a prize before all other winners, 2nd place winners before 3rd place winners, etc. Please note, each individual can only win one prize or prize package.

PHOTOGRAPHY CATEGORIES

Photographers may enter one photo per category.

Details to include with each photo submission:

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

1. **MACRO** (DSLR/MILC ONLY)
   Definition: Photographs taken with close-up equipment, portraying underwater flora and/or fauna. The photographer may not crop the original more than 20%. The original image may be requested.

2. **WIDE ANGLE** (DSLR/MILC ONLY)
   Definition: Photographs taken with a wide-angle lens (or adapters that provide an equal field-of-view), with or without human presence, portraying the natural beauty of the underwater environment.

3. **BEST OF THE UAE** (DSLR/MILC & COMPACT)
   Definition: Any underwater subject taken in the UAE and the Musandam.

4. **BLACK & WHITE** (DSLR/MILC & COMPACT)
   Definition: Black & white photography is timeless and elegant. Focus on tonal contrast, shapes and textures and the composition of the shot.

5. **COMPACT CAMERA** (COMPACT ONLY)
   Definition: Point & shoot photographers only.

VIDEO CATEGORY

Title: WHAT LIES BENEATH

Definition: Looking for films of all genres – documentaries, narratives, shorts and animation films. Film subject must focus on all aspects of our underwater world including but not limited to, ocean exploration, wildlife, environmental, conservation and oceanography. Lengths including credits: 5 minutes or less.

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

DIGITAL ONLINE 2018 SPONSORS AND PRIZES

Digital Online's 19 Prize Sponsors are giving this year's lucky winners 24 prizes to choose from!

NOTE: Participants are only able to win one prize each. Entrants with multiple winning entries will be given priority in the points awarded.

1. BFC TRAVEL MANAGEMENT (2 Prizes)

1. Destination Package – 4 days/3 nights in Terengganu, Malaysia.
   Includes accommodation, breakfast, diving (2 days), airport transfers and transportation between dives for one person.

2. Destination Package – 4 days/3 nights in Aqaba, Jordan.
   Includes accommodation, breakfast, diving (2 days), airport transfers and transportation between dives for one person.

2. PHILIPPINES DEPARTMENT OF TOURISM

1. **AZURE DIVE RESORT**
   Destination Package – 4 nights/5 days accommodation in a Superior Deluxe Room with private balcony or terrace in Dauin, Philippines.
   Includes breakfast, 6 dives package, boat, O_2 tanks and PADI Dive Master. Taxes included. Valid from 31st May 2018 to 30th May 2019. | www.azuredive.com

2. **PIER UNO DIVE RESORT (2 Prizes)**
   Destination Package – 4 nights/5 days accommodation for one in a standard room in Anilao, Batangas, Philippines.
   Includes 6 boat dives and full board meals. Valid until 15th March 2019. www.pierunoresort.ph

3. AL MARSA MUSANDAM

2 Night Liveaboard Trip in the Musandam
Prior booking is required. Subject to availability, confirmation of trip and the clearance from coast guard. Equipment and Dive Tax not included. Not available during holidays. | www.almarsamusandam.com

4. GRAND STORES (2 Prizes)

1. [Qudos] Action Light by Knog
   Waterproof up to 60m, 3 light modes with 70-400 lumens. For use with GoPro, action cameras with a GoPro conversion mount and DSLRs.

2. Rollei Actioncam 525 Black
   - **WiFi Action Camcorder with 4k Video Resolution with 25 fps**
   - **160° Super Wide Angle Lens**
   - **Integrated WiFi with up to 10 metres range**
   - **Incl. 900 mAh lithium-ion battery**
   - **Incl. Underwater / Protective Case for depths up to 40 m**
   - **Remote Control for Wireless Shootings up to 10 metres**
   - **Battery Runtime of up to 50 minutes (without WiFi)**

5. BEACH ROTANA ABU DHABI & AL MAHARA DIVING CENTER
A complimentary two-night stay for two persons inclusive of buffet breakfast and internet connection, and 2 dives (tank and weights included) with Al Mahara Diving Center.

6. INTERCONTINENTAL HOTEL ABU DHABI & AL MAHARA DIVING CENTER
A complimentary double room, two-night stay, inclusive of buffet breakfast and 2 dives (tank and weights included).

7. LE MERIDIEN AL AQAH BEACH RESORT & SPA
One night weekend stay in a Superior Room inclusive of a Breakfast Buffet at the Views Restaurant for two persons.

8. AL MAHA DESERT RESORT & SPA
Complimentary one day access to pool and spa facilities inclusive of 3 course A La Carte lunch for two persons at Al Diwaan Restaurant. A Luxury Collection Desert Resort & Spa.

9. MILLENNIUM RESORT MUSSANAH AND OMAN SAIL DIVE CENTRE, OMAN
Two nights stay in superior sea view room with daily breakfast included and two days diving, for two. Valid until March 2019.

10. THE DIVE CENTRE
Two dives for two people at The Dive Centre – Sandy Beach.

11. MTM MARINE LLC (3 PRIZES)

1. MARES Loop 15X Regulator
   1st Stage: DFC port, Pre-oriented ports, INT – DIN connection, ACT valve, Compact Size and 2nd Stage: Can be mounted on the right or the left side, Freedom of movement in all directions, "Under the shoulder" hose position, Integrated sagittal VAD (S-VAD), Twin exhaust valves, Oversized silicone purge button.

2. MARES X-Stream Fins
   ABS plus buckles and perforated pull tab, Riddled foot pocket avoids "parachute effect", Next generation OPB, Tri-material blade construction reduces turbulence, Channel thrust technology.

3. MARES Cruise Backpack
   Telescoping handle, Large sturdy wheels, External fin pockets with drainage system, Adjustable external compression straps, Ultra-light buckles, Air mesh handle, Padded shoulder straps, Integrated front pockets, Lightweight, Compact.

12. DIVERS DOWN
Diver Propulsion Vehicle Course: Glide over reefs and buzz around during your Diver Propulsion Vehicle course with Bonex Ecos and Aquapro L Underwater scooter.

13. AL BOOM DIVING
2 dives on East Coast (Fujairah) with full equipment for 1 person.

14. FREESTYLE DIVERS
DPV (Diver Propulsion Vehicle) Course for two people. The one day course will take place at Dibba and will include theory, the equipment, the boat trip and the certification cards.

15. EMIRATES DIVING ASSOCIATION (4 PRIZES)
A beautiful A3 landscape hardcover photo book of The Best of Digital Online 2011-2017.

THE PEOPLE'S CHOICE AWARDS PRIZE SPONSOR

16. Sea@Deep Marine Art (4 prizes from EDA) | www.seaatdeep.com

THE DIGITAL ONLINE JUDGES

ANDY MURCH | BIG FISH EXPEDITIONS
Wildlife Photographer

Andy Murch is an award winning wildlife photographer and the founder of Big Fish Expeditions. Specialising in images of marine predators over the last two decades, he has probably photographed more shark species than any other diver. Andy's images and shark stories have appeared in hundreds of books and magazines around the world from titles as varied as Scuba Diving, FHM, the New York Times, Digital Photography Magazine and the Journal of Zoology. Andy is the creator of the ever expanding Shark and Ray Field Guide on Elasmodiver.com and the driving force behind the Predators in Peril Conservation Project.

Elasmodiver Shark and Ray Picture Database: www.elasmodiver.com
Marine Life Images: www.marinelifepics.com
Predators in Peril Project: www.PredatorsInPeril.org.

WEBSITE: www.bigfishexpeditions.com
FACEBOOK: Big Fish Expeditions

SIMON J PIERCE | MARINE MEGAFAUNA FOUNDATION
Marine Conservation Biologist & Underwater Photographer

Simon is a marine conservation biologist and a Co-Founder and Principal Scientist at the Marine Megafauna Foundation. Most of his work focuses on the world's largest fish: the whale shark. He also works with other threatened species, particularly sharks, rays, sea turtles, and for the protection and management of important marine habitats. He acts as a science advisor for the Wildbook for Whale Sharks global photo-identification library, and also a Director of Wild Me, the non-profit organisation which oversees it's development. Finally, he's a Member of the IUCN Shark Specialist Group, an invited group of experts that synthesises scientific knowledge and assists in the development of global conservation strategy for these fish. Since 2012 he has become increasingly interested in photography as a way of documenting his work, and for communicating his enthusiasm for nature and wildlife in general. His photographs and videos have been published by a wide variety of media outlets, including New Scientist, the Washington Post, Scientific American, BBC Wildlife, Discovery, Earth Touch, Huffington Post, Yahoo, Rough Guides, and Sport Diver.

WEBSITE: www.simonjpierce.com
FACEBOOK: Simon J Pierce Photography

SIMONE CAPRODOSSI | ENVIRONMENTAL SUPPORTER
Underwater Photographer

Simone is an Italian underwater photographer based in Dubai for the last 10 years. Despite a corporate professional life, he is a photographer, traveller and diver at heart, and dedicates all his spare time to covering new destinations and chasing unique animal encounters in remote parts of the world. In addition to being the Overall Winner of Digital Online consecutively for the past two years, his photography has been awarded in prestigious global competitions and published internationally. He is a main feature contributor to the EDA magazine and has covered several destinations with EDA from Sipadan to Sudan, and Malapascua.

He likes to use his photography to support environmental initiatives and he is involved in several shark research and conservation projects such as Sharkwatch Arabia and the Gulf Elasmo Project.

WEBSITE: www.simonecaprodossi.com
FACEBOOK: Simone Caprodossi Photography

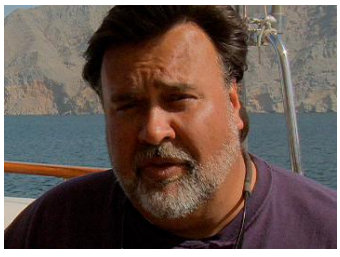
IMRAN AHMAD | ESCAPEINC. DIVE & PHOTOGRAPHY
Professional Photographer

Imran Ahmad has been capturing the magnificence of life both above and below the water's surface for over 20 years. A celebrated and internationally published professional photographer, Imran is committed to showcasing, preserving and protecting the ocean's environment and its surroundings. Clients can find photographic solutions for corporate, commercial, wildlife, creative arts, publishing, photo clinic and underwater projects. A graduate from Middlesex University with a Bachelor of Arts in Film making, he is the brand ambassador for RGB Lights (Japan), and a member of the Ocean Artist Society.

PUBLISHED BOOKS
- Seychelles Unexpected Treasures (Underwater Photo Art)
- Ocean Tapestry (Underwater Photo Art)
- Hidden Sanctuary (Mabul & Sipadan Underwater Look Book)
- PURE Series

WEBSITE: www.escapeinc.com.sg
FACEBOOK: Imran Ahmad Photography

JONATHAN ALI KHAN | WILD PLANET PRODUCTIONS
Managing Director



JAK is a topside wildlife and underwater cameraman, producer, director and editor with a strong passion for the natural world having worked on a wide range of unique projects in the region and is recognized as an authority on environmental, conservation and diving related issues. His fascination with filming all started after years of working as a photojournalist and shooting underwater stills. His primary interest is in marine subjects that led to the creation of Ocean World Productions in 2003. In 2008, JAK left Ocean World Productions in order to focus entirely on natural history TV development, leading to the recent creation of Wild Planet Productions.

WEBSITE: www.wildplanetfilms.org
FACEBOOK: Wild Planet Productions

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

Ally has worked with EDA since December 2004 when she created and introduced the quarterly magazine, 'Divers for the Environment', as magazine Producer, Editor and Designer. She branded and helped foresee the development of Digital Online – EDA's Underwater Photography and Film Competition from its launch in 2009 and has since managed the event. Ally keeps busy within her fields of passion, always looking to fill gaps with improvements, developing EDA's brand, designs and managing all the EDA social media and FAM trips. As a qualified PADI Instructor, she utilizes the experience within everyday life at EDA.

WEBSITE: www.emiratesdiving.com
FACEBOOK: Emirates Diving Association

SURPRISED & MYSTERIOUS

FEATURE AND PHOTOGRAPHY **OLA KHALAF**

I find myself responsible as a diver and a photographer, to show people what they may not be able to see for themselves. We never know what to expect when we dive or what we're going to see, so getting that one special shot can be put down to pure luck or just being at the right place at the right time.

L-R: Whip Coral Goby (*Bryaninops yongei*), Oman Clownfish (*Amphiprion omanensis*), Curly Nudibranch Sea Slug Gastropod (*Phyllodesmium poindimiei*), Yellow-spotted purple-ringed Dorid Nudibranch (*Goniobranchus annulatus*). **OPPOSITE PAGE:** Camel Cowfish (*Tetrosomus gibbosus*) and Jayakar's Seahorse (*Hippocampus jayakari*).

SURPRISED: The word I use when I am underwater. I have been diving for 4 years now and still today, I am just as surprised on each and every one of my dives.

MYSTERIOUS: How I describe the underwater world. We have limited time to explore small parts of this world at a time.

People everywhere are always amazed to see fish in aquariums. Some keep aquariums in their homes to enjoy the small part of this peaceful world for themselves. What about diving in a real aquarium, to visit the fish and other creatures in their natural habitat in the sea?

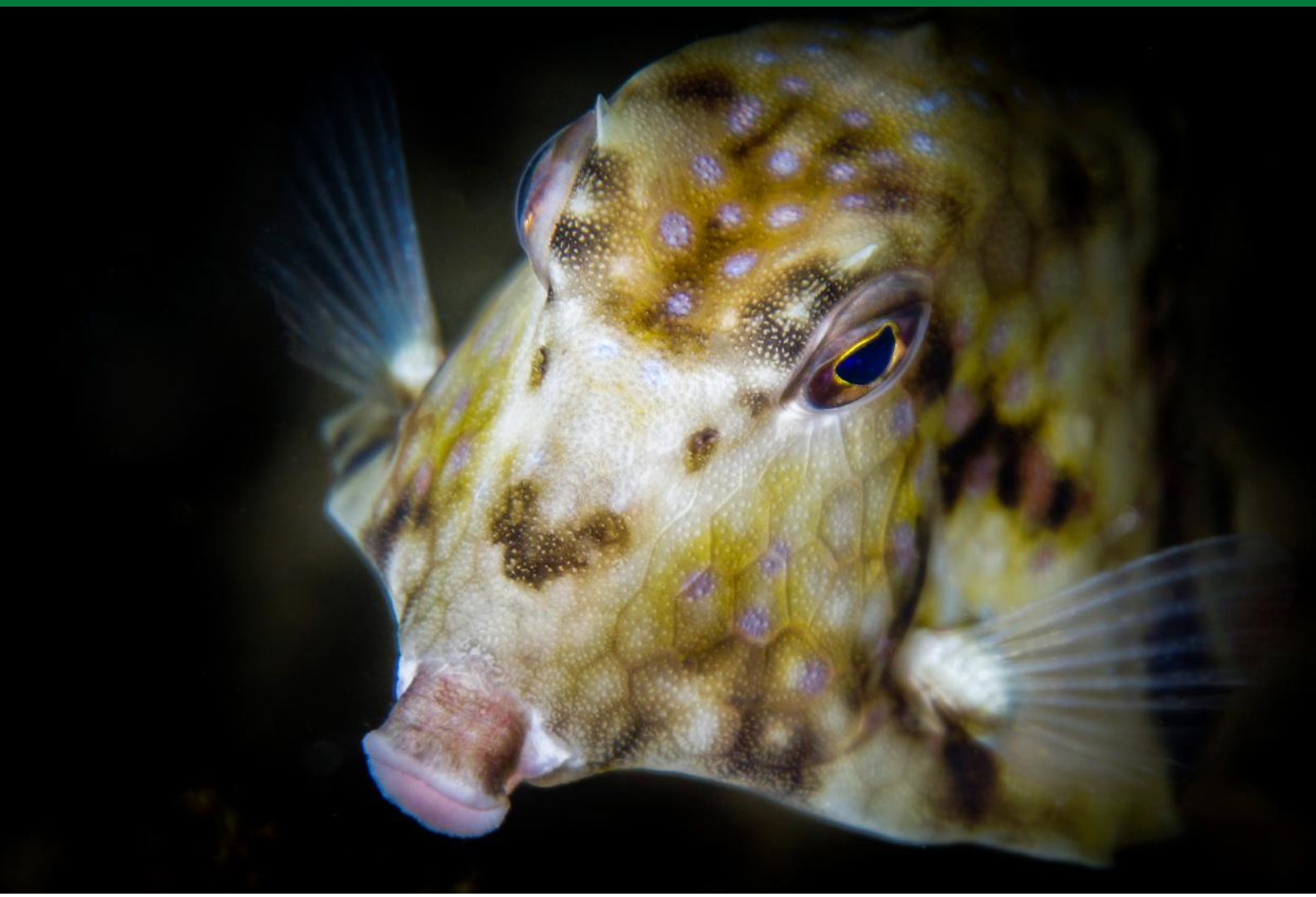
A small coral on a reef becomes a whole big world when you observe the small fish and other creatures living within it. I still have so much to capture with my camera, I've only managed to get a very small part of what I've seen underwater.

I find myself responsible as a diver and a photographer, to show people what they may not be able to see for themselves. We never know what to expect when we dive or what we're going to see, so getting that one special shot can be put down to pure luck or just being at the right place at the right time.

As an Arab female diver, it was very challenging for me to take on such a tough sport, but with a lot of practice and support, I successfully managed to become a diving instructor within two years.

I have worked as a photographer for the past 19 years, so my experience gave me the eye to see things differently when I became a photography instructor. Combining diving and photography was not easy in the beginning, both hobbies were difficult and expensive.

Underwater photography is everything but easy. You need very good diving skills, in addition to very good photography skills. I started off by shooting some videos with my action cam and people around me were fascinated with the underwater world. On each dive I observed so much beauty and I thought this



TOP: The Bluestriped Fangblenny (*Plagiotremus rhinorhynchos*) **BOTTOM ROW:** Tasseled Blenny (*Parablennius thysanius*)

must be shown everywhere. I started with a compact camera and I faced the main problem underwater, the lack of colours at depth. The result gave me greenish videos and photos, which was not what I wanted to show. With a lot of help from experienced underwater photographers around me, I was guided and started using underwater strobe lights (Flash) and wow… my photographs were colourful and comprehensive, it was exciting.

Using underwater photography equipment is very challenging and confusing sometimes. There are many factors that can change your plan. The sea's current, visibility, backscatter in the water, water temperature, and the creatures behaviour and speed can also be extremely difficult to shoot.

The compact camera was Ok for me to begin with, but it limited my ability for high quality photos. I decided to take a step forward and purchase a Mirrorless camera. For underwater photography, the camera is the easiest part. Financing a good housing, strobes and a macro lens was the big part. Putting them together to start taking photos, was the most challenging.

I added to my equipment step by step. One strobe was enough in the beginning to get the area of focus lit up. For macro, I managed to buy a magnifier to get closer to my subject and show more detail. After a while, I got another strobe in order to control the light in a better way. A lot of equipment can help get better quality images.

Trying to innovate with light is the best part for me, using different light positions, using a snoot (small aimed light source) can create magnificent ambience in a photo. That is how a photographer creates his/her own style.

My husband is my biggest support. As a Zoologist, he helped me ID the creatures I was photographing so I could know and understand them more. I learnt what they ate, where they lived and that helped me allocate

L-R: Ghost Goby (*Pleurosicya mossambica*) **BOTTOM ROW:** Geometric Moray Eel (*Gymnothorax griseus*), Scorpion Fish (*Scorpaenidae*), Cuttlefish (*Sepiida*)

a lot of my subjects.

I started to dive in the United Arab Emirates which is very rich and yet still has much more marine life to discover. There are many dive sites to explore and I believe we can still find never seen before creatures in this area.

After my photography on the UAE's marine life was published in the National Geographic Alarabiya, I received a lot of requests to conduct an underwater photography course for divers. It was a great opportunity for myself to teach divers how to take professional photographs, using professional equipment, and to introduce them to photography as well. I learned something new from each one of them and we exchange knowledge all the time.

We have so many photographers sharing their work to show people the hidden beauty in the UAE's underwater world, which in turn spreads awareness to protect this beautiful world.

When I find a good photo after a dive, I always tell myself, I know I can do better, which is what keeps me keen to dive again and keep shooting. My tip for all the young photographers out there is practice, practice and practice some more. That is the ticket to good underwater photography.

ABOUT

Ola Khalaf is a PADI Instructor working for the Hamdan Bin Mohammed Bin Rashid Al Maktoum International Photography Award as an Underwater Photography Instructor and a Research and Development Specialist.

Website: www.hipa.ae

FOLLOW

Facebook: facebook.com/ola.khalaf.5203

Instagram: www.instagram.com/olakhalaf

THE HUMPBACKS OF TONGA

FEATURE AND PHOTOGRAPHY **STEVE WOODS**

As you quietly swim towards the whales, huge shadows start to slowly appear ahead of you. The first time you see a whale underwater, it is hard to comprehend the size and the beauty of these ocean giants. They are huge. Not only are they huge, but they are incredibly graceful in their movements.

The Kingdom of Tonga is very difficult to get to. Situated in the huge desolate expanse of the South Pacific, it is around 2,800 km from New Zealand and 800 km from Fiji. The country (which means 'South' in many Polynesian languages) is the southern most archipelago of central Polynesia covering roughly 289 square miles and comprising of around 169 islands, 36 of which are inhabited. Each year, Humpback Whales (*Megaptera novaeangliae*) migrate up from the plentiful but frigid waters of Antarctica and arrive in the warm protected waters of Polynesia around July. The female Humpbacks that migrate to Polynesia, come to give birth to their calves. They likely became pregnant here last year, returning near the end of their 11 month gestation period to give birth to a single calf. The mother then has the task of generating enough milk for the calf to ingest between 400 and 600 litres of milk per day. This is an incredible feat being that the mother will most probably not feed until they return to the feeding grounds of the Antarctic many months later. The milk she produces for the calf is pinkish in colour and is roughly 50% fat which allows the 1.5 tonne, 4/5 metre calf to put on around 50 kg every day. This phenomenal growth rate is maintained between 6 and 10 months, continuing to feed on milk as they travel south together to Antarctica. Once weaned at around 10 months, the calf will feed alongside its mother on plankton and small fish until they separate when the calf is about a year old – which may happen once the pair have completed the return journey back up to the waters of Polynesia.

The second reason why Humpbacks show up in Polynesia in such numbers, is so they can reproduce. Huge courtship battles called 'Heat Runs', can consist of between 2 and 20

males charging through the water, all vying to get the attention of a single female. As each adult can grow to 16 m and weigh up to 40 tonnes, it is not for the faint hearted to be in the water as they charge past. The heat runs can last for hours and stretch over many tens of kilometres, coming to a conclusion only when a male has succeeded in pairing off with the female, or the female shows enough disinterest that the males give up. Copulation has only been documented once, which lasted only a few minutes.

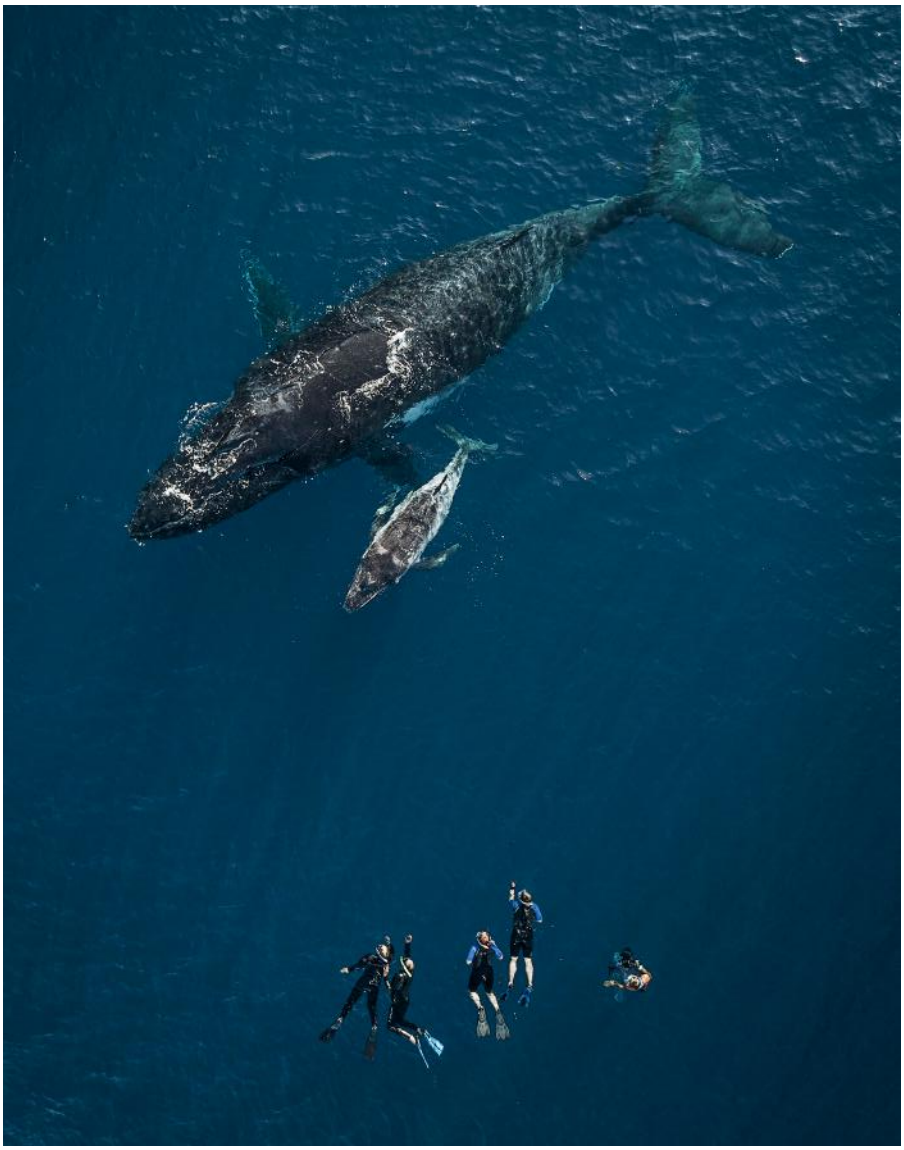
Tonga, as with many other island countries, was a whaling nation up until the Tongan whaling ban in 1978. The Humpback numbers were decimated by around 90%. Since then the numbers have steadily risen again and now estimates put the Tongan population at around 2,300-2,500 individuals.

Whilst it is possible to swim with Humpbacks in many places in Polynesia, Tonga is the most popular. Even though it is difficult to get to, it is the easiest option and has a relatively good infrastructure to cater for tourists. There are two main areas that operate whale encounters. The Ha'apai group of islands which is around 180 km north west of the main island of Tongatapu (serviced by internal flights and a ferry) and Vava'u which is 310 km north west.

Based out of Vava'u, I was on a two week trip to photograph the Humpback Whales. Having worked on many different projects and in many different countries, I can safely say that I think this is one of the most wonderful experiences that we can get from the oceans. Being in the middle of nowhere, looking for Humpback Whales to photograph for days on end is as close to paradise as I think you

can get. Typically, we would start out at dawn, grab a quick coffee and head out to the outer islands and reefs. Everyones' eyes were glued to the ocean looking out for the telltale bright orange bursts of light as the sunrise catches the blows of humpbacks in the distance. This could go on for hours as we motored around the islands from north to south. Sometimes, however, we were lucky and would spot whales early in the day. An early spot is always great for the moral on a boat, it keeps people energised and excited. Once whales are spotted, we decelerate the boat making the engines quieter in order not to disturb the whales, and drift closer. From around 100 m, we would observe the whales, sometimes for hours in order to see how they behave and react to our presence. Sometimes the whales are clearly not interested in interacting with us so we leave them in peace and go on with our search. If the whales seem placid or if they actually seem to seek out our attention, we would then send our licensed whale guide out into the water alone to see their reaction. Some would simply swim away ending that interaction as it is nearly impossible to swim after a whale, so they are firmly in control of any interaction you have with them. Some will stay where they are and some will actively interact with the guide. If the guide feels that we aren't disturbing the whale, then up to 4 people will quietly slip in and swim 50-100m over to the whales.

As you quietly swim towards the whales, huge shadows start to slowly appear ahead of you. The first time you see a whale underwater, it is hard to comprehend the size and the beauty of these ocean giants. They are huge. Not only are they huge, but they are incredibly graceful in their movements. They slowly but powerfully dance through the water. On numerous occasions, we would discover that we were in the water with a huge mother and her very young calf. The mother would invariably be resting, rising every 5-10 minutes to take another breath and then sink a few metres below the surface of the water to rest again. Sometimes the mother would be 'sleeping' shutting one eye as she rested one half of her brain then doing the same with the other eye. She is aware of you and is unperturbed by your presence. The calf however would usually be very interested, swimming over to take a good look at the weird humans in the water and actively playing with us. This would involve barrel rolling underwater, slapping its pectoral fins near us or using its caudal peduncle to tail slap. Once the calf became hungry again you could see it nudge its mother, sometimes opening its mouth to communicate to her that it was feeding time again. The pair would then slowly sink so that the calf could feed. Sometimes there would be an 'escort' close by, keeping an eye on the mother and the calf from a distance. It was originally thought that this was a male, however new research shows that this can also be an older female that has already raised many young herself,



acting almost like a midwife. It is thought that Humpback Whales may also undergo menopause similar to Orcas and Short-Finned Pilot Whales. Whatever the situation, it is clear that the escort is observing and protecting the mother and her calf. Sometimes, interactions such as these can last for hours. Making sure not to stress the animals, we would be in the water for around 20 minutes every hour for a few hours, and then we would leave them alone. Usually, working with large wild animals as a photographer you have to be incredibly quick, always prepared for the next shot and waiting for the right situation to happen. This, however, is very different. You have ample time to compose and recompose the image you want to shoot, predicting when the whales will surface to breath. The most unpredictable subject is always the calf.

On one occasion, we were just about to head back home after spending a wonderful morning with a mother, her calf and her escort when they became incredibly interactive. All three of them started waving their pectoral fins around and barrel rolling underwater. Measuring up to 5m, the Humpback Whale has the largest pectoral fin in the animal kingdom though they never once touched us as they waved them vigorously around in the water. This was clearly on purpose and it was amazing to see just how aware they were of their own size next to us.

If multiple blows were spotted moving across the horizon, then we would know that there was a heat run in progress. This is a whole different ball game. Once we observed their behaviour, speed and direction, we would edge ahead of the pack and slip into the water dropping down as the whales charge past at speed 'chasing' the female. This is a serious adrenaline rush.

As well as the Humpback Whales, we were lucky enough to swim with some Sperm Whales and Pilot Whales that we spotted. We also had a wonderful encounter with a Whale Shark and some Mobula Rays whilst we were on the lookout for Humpbacks. The water temperature ranges from 26°C-29°C and the visibility is generally very good, ranging from 10-40m. I would strongly suggest staying for a longer expedition of around 8 days as you will then be pretty much guaranteed to get some wonderful in water encounters.

STEVE WOODS
PHOTOGRAPHY

Facebook: @SteveWoodsPhotographer
Instagram: steve_woods_photography

www.stevewoodsunderwater.com

CRITTERS À LA CARTE

LEMBEH STRAIT IS MUCK DIVING'S GROUND ZERO

FEATURE AND PHOTOGRAPHY **JESPER KJØLLER**

If you are into diversity and species, biological surprises and not least, macro photography, I cannot imagine a better place to spend a week or two. The muck magic of Lembeh Strait is simply contagious.

The Halimeda Ghost Pipefish (*Solenostomus halimeda*) is easy to miss, as it makes a convincing impression of a chunk of Halimeda algae.

Ocellated Tozeuma Shrimps (*Tozeuma lanceolatum*) can be found everywhere in the Strait, but they are hard to spot without the help of a skilled guide.

North Sulawesi in Indonesia is an epicentre of biologic diversity. Hidden between debris and rubble on the volcanic sandy bottom of Lembeh Strait, you can find the strangest creatures. It is all about having sharp eyes. Maybe this tiny piece of seaweed is really a rare critter? Or maybe it's just a tiny piece of seaweed?

Dive into Lembeh is the newest dive resort along the Strait. It offers very easy access to all the legendary dive sites in Lembeh by combining the comfort of a resort with the practical convenience of a liveaboard.

Diving in Lembeh Strait is a little bit like diving in the Red Sea – only in a completely opposite sense. Here, the lifeless desert landscape above water is replaced by lush rainforest and swaying coconut palms. Below the surface, however, there are no colourful coral reefs, but a black-grey sandy bottom, which at first glance looks rather dead.

But suddenly the local dive guide stops and points at something with his metal prodder. I feel how my brain feverishly browses through my mental index of underwater creatures. Images of fish, crabs or snails are quickly formed and rejected again in search of a match. It is about finding the right outline and size. Here life forms assume shapes and camouflages that you do not think possible. Suddenly the carousel stops in my brain's slide projector. I've found a match – it's a skeleton shrimp! An alien looking creature, no bigger than a finger nail. It fuses perfectly into the coral branch it is sitting on – that is why I could not see it at first. I settle down and begin the process of getting a good focus through my 105 mm lens.

FULL SERVICE

After the first couple of dives, we slowly settle

into the special Lembeh dive rhythm. Nitrox cylinders for the day are analysed and marked before the first dive in the morning. The staff assembles your gear and loads the boat. Even your camera is freighted from the dunk tanks in front of the large and well-lit camera room to the boat. You basically just have to get yourself on the boat dressed in your wetsuit, check your equipment and that's it. The staff and the service concept are excellent. The operation just runs like a well-oiled machine with lots of smiles and laughs.

Most dives begins under the boat at five metres. After reaching 25-30 metres as the deepest point, you zig zag back up the slope to the boat while searching for unusual creatures. All dives are conducted in small groups – Dive into Lembeh maintains a luxurious ratio of a maximum of three divers per guide.

There are about 50 named dive sites and most are within five to ten minutes by speedboat from the resort in the northern part of the Strait on the mainland. Even if the dive sites are close to each other, they are still quite different. In some places there are also shallow coral reefs, but the archetypal Lembeh dive is on a grey or black sandy bottom. After the dive, you are handed fresh fruit, drinking water and a dry towel.

Directly in front of the resort, divers have access to two legendary dive sites, Hairball and Aw Shucks. If for some reason you do not want to dive from a boat, you could easily explore the house reef for an entire week and not run out of interesting things to see.

EAGLE EYES

The local guides have a legendary and almost supernatural knack for spotting the miniature

A Hairy Frogfish (*Antennarius striatus*), not larger than the tip of a thumb is hiding in a recess in the volcanic sandy bottom.

wildlife in the Strait. When they find something of interest, they will catch your attention by banging their prodders against each other or by waiving a dive light. The energy level they engage when calling for attention typically suggests the importance of their find. A nudibranch or a scorpion fish sitting on the bottom usually doesn't result in much hullabaloo, but an octopus such as the blue-ringed or mimic variety, will. Not only are these creatures rare, but they are extremely hard to spot being the camouflage artists that they are.

When the guides point at something, it is not always clear what they have spotted at first glance. Everyone who has tried muck diving with the brilliant Indonesian dive guides, knows the sensation of feeling stupid and foolish. What is he pointing at? What am I missing? Sometimes I have to give up and I just shoot a few photos out to make the guide happy. This happens especially when I do not have the right lens for that particular size of creature. The guides sometimes write the name of the species on a slate, but their grasp of Latin taxonomy often exceeds mine, so it does not always help.

THE SMALL FIVE

Take a safari on an African savannah. If you are lucky, you'll see lions, giraffes and elephants. Or you'll see nothing but dung beetles and wildebeests. But one thing is for sure; if you stay at home, you'll see nothing. You have to take your chances. It is the same thing with the dives in Lembeh Strait. Every dive is like a safari – you are always in a state of alertness and ready for everything. On most dives, you will be busy taking pictures and you only end the dive because you are running low on nitrox.

While safari tourists usually go for "the big five", the Lembeh equivalent must be "the small five". I'd like to nominate the pygmy seahorse, the blue-ringed octopus, the hairy frogfish, the mimic octopus and the lacy scorpionfish (*Rhinopias*) as the five superstars of muck diving. On this trip, we saw the first four, but the flamboyant and elusive *Rhinopias*, that used to be quite abundant in the Strait, has apparently moved deeper and are rarely seen within nitrox range. It makes one wonder how it would be to explore the deeper parts of the Lembeh Strait equipped for technical diving. Give me a rebreather and some helium. Maybe one day…

THE GOOD OLD DAYS

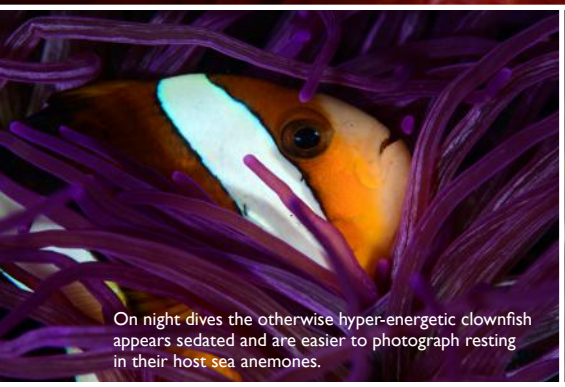
Underwater photography and especially the macro variety is getting more and more challenging. Every single species in the Strait has been shot so many times by so many other underwater photographers, that it is a challenge to come up with a new and fresh approach. Previously, you could win photo competitions or get on dive magazine covers if your shot was in focus and the subject was not swimming out of the frame. Today is a very different ballgame. Full-frame DSLR or mirrorless cameras with more than two dozen megapixels and high capacity memory cards with thousands of exposures have raised the bar. Novel toys such as snoots to alter the shape of the flashlight or dioptres to enable extreme close-ups, challenges photographers to new creative heights. You also have to be patient and lucky to get that special shot on animal behaviour.

"I miss the old days when we were shooting on film", says Dive into Lembeh's Dive Manager and Co-owner, Steve Coverdale one evening at the dinner table when we were reminiscing about the past. "When limited to only 36 exposures, people were politer and only took a few shots of the critter before letting the next photographer have a go. They were always saving a few extra frames for the mimic octopus under the boat at the end of the dive."

I tend to agree with Steve, but I do not miss leaving a dive destination with 40 rolls of undeveloped film, not knowing if I had at least one usable image. Today, divers upload their edited images to Facebook from the resort's Wi-Fi a few minutes after getting back from the dive.

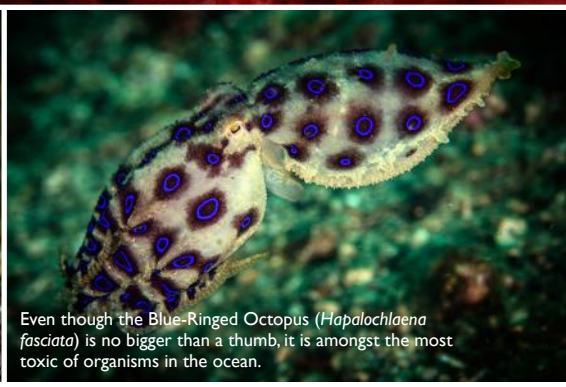
Male and female Mandarin Fish (*Synchiropus splendidus*) wrapped together in a tender moment, seconds before they disappear again.

A Pygmy Seahorse (*Hippocampus bargibanti*) jumping from branch to branch in this gorgonian fan, whilst its mate lurks in the background.



On night dives the otherwise hyper-energetic clownfish appears sedated and are easier to photograph resting in their host sea anemones.

The Robust Ghost Pipefish (*Solenostomus cyanopterus*) is perfectly camouflaged. It resembles a twig or a leaf and it just floats around, apparently without will.



Even though the Blue-Ringed Octopus (*Hapalochlaena fasciata*) is no bigger than a thumb, it is amongst the most toxic of organisms in the ocean.

EVOLUTION OR CREATION

A trip to Lembeh is a very tangible lesson in applied underwater biology. Phenomena such as symbiosis, camouflage, mimicry, specialisation and host-parasite relationships are clearly reflected on the bare sandy bottom and can be studied and appreciated almost like in a laboratory. Every life form has adopted a unique survival strategy and position in the ecosystem. For example, some organisms are protected because they mimic other poisonous or foul tasting organisms. Stripes or bright colours seem to be a popular choice of decoration for toxic fauna. But not all striped or brightly coloured creatures are venomous or indigestible – it just pays to pretend to be a deadly meal. It is mind-boggling to ponder how evolution has shaped so many variations and permutations of mimicry. Time is the essential factor that makes this possible. Natural selection and survival of the fittest after billions of generations is what drives the evolution. And here in the Lembeh Strait, you feel like you have a unique opportunity to study God's machine room (or Darwin's – depending on temperament and religious belief).

Of course, many of these processes and biologic marvels can also be observed on more lush coral reefs in South-east Asia's coral triangle, but here in Lembeh, it is as if all the disturbing elements are removed, so it is easier to document and appreciate the ecology directly.

CRITTERS À LA CARTE

I've seen images of strange creatures inside the mouth of clownfish. The tongue-eating parasite *Cymothoa exigua* was discovered quite recently, and presumably, only because the clownfish is possibly the most photographed subject on any coral reef. This small isopoda does not actually eat the poor clownfish's tongue, but the parasite attaches itself to the base of the tongue that eventually withers away. The clownfish lives on with the parasite as a substitute tongue. Talk about specialisation! "So, what do you do for a living?". "I find a clownfish and replace their tongue with myself. How about you?"

When learning of such a specific and intricate symbiotic phenomenon as this, one can only speculate how many of these relationships we have yet to discover.

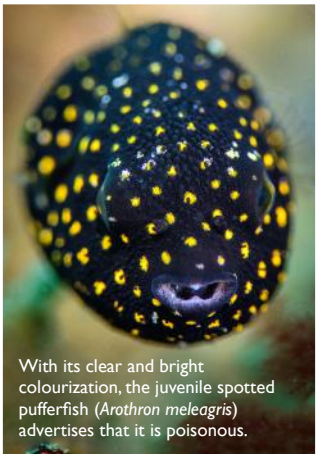
With only a few dive days left, Herry our excellent local guide, asks if we have anything left on our wish list that we have not yet crossed off. I ask if he can find me

This Saddelback Clownfish (*Amphiprion polymnus*) has had its tongue replaced by an isopod parasite (*Cymothoa exigua*).

Mating swimming crabs. The second after this image was shot, they were buried in the sand with only their eyes sticking out.

The Pink Skunk Clownfish (*Amphiprion perideraion*) is one of the most common of the many different species of clownfish found in Lembeh.

The Painted Frogfish (*Antennarius pictus*) sits completely still and waits for prey to swim past.



With its clear and bright colourization, the juvenile spotted pufferfish (*Arothron meleagris*) advertises that it is poisonous.

Some spieces of Frogfish are covered with organisms such as algae and hydrozoa.

The Emperor Shrimp (*Periclimes imperator*) lives in symbiosis with larger animals such as sea anemones, corals or starfish. This one is hitchhiking on a sea cucumber.

a clownfish with a tongue-eating parasite as I would love to observe the phenomenon up close and personal. To be honest, I did not expect him to be able to deliver and I only mentioned it to challenge him, but he just smiled, and the next day he pointed to a clownfish at the seldom used dive site, Selena Patah, and with a huge grin on his face, he indicated that this specimen was infested with *Cymothoa exigua*.

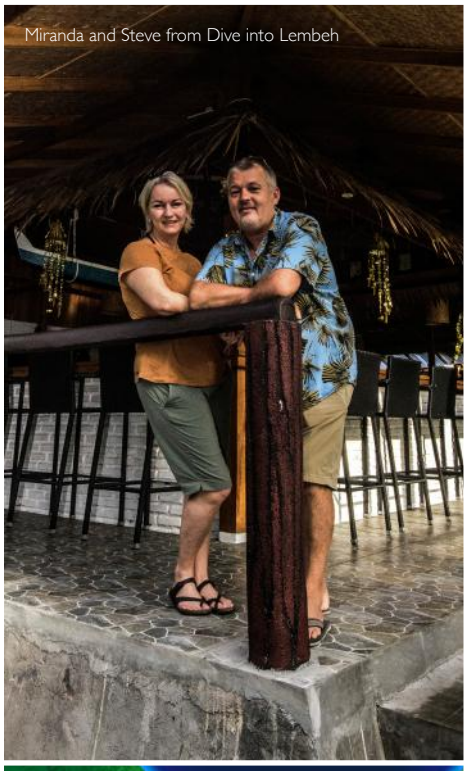
I was a little sceptical at first. I could not see the two telltale black dots indicating a living parasite tongue, but I started shooting the fish. It was one of the livelier clownfish, so it was really hard to get it, but after a long series of shots, I stopped and zoomed in on my screen on one of the more promising images. Bingo! I could clearly see two dots from the eyes of the small crustacean, but the mouth and parasite were not satisfactorily in focus. But I was encouraged – I knew I was not wasting my time and I kept at it for another 15 minutes. The host anemone was luckily in shallow water, so I had plenty of time. In a few of over 100 images, I managed to get the peekaboo shots of the tongue-eating parasite. High fives to Herry after the dive.

MUCK MAGIC

If your tropical desires lean towards unspoiled coral reefs, blue water as far as the eye can see and the possibility of interaction with large pelagic wildlife, then you do not want to go to Lembeh Strait. Here you get plenty of plastic debris on the bottom, limited visibility and you rarely encounter animals larger than your fist. But if you are into diversity and species, biological surprises and not least, macro photography, I cannot imagine a better place to spend a week or two. The muck magic of Lembeh Strait is simply contagious.

At Dive into Lembeh, you'll enjoy friendly and thoughtful service provided by a management team and staff that really knows and understands exactly what you need. When you realise that your biggest problem for the day is to decide what lens to attach to your camera before the next dive, that is when you discover that you really are on vacation.


Jesper Kjøller


Miranda and Steve from Dive into Lembeh



FACT FILE 1
DIVE INTO LEMBEH
Steve and Miranda Coverdale met in Egypt in the late 90s and for many years they managed liveaboards and land-based diving operations in the Red Sea before they relocated to Sulawesi, Indonesia to manage the famous and historic Kungkungan Bay Resort (KBR) in Lembeh Strait. After six years in Lembeh, they moved to Europe to live a "normal life", but after a couple of years in Holland, they realised that they missed the tropical life-style, so they decided to go back to Indonesia to build their own resort at Kasawari Bay from the bottom up – Dive into Lembeh was born. It is evident that Steve and Miranda are very experienced in managing customer oriented dive operations and this time they had a unique opportunity to design the setup exactly as they wanted it.

The large spacious beach front property has nine sea view bungalows. All come equipped with AC, ceiling fan, minibar, cable TV, personal safe and western style ensuite semi open bathrooms. As an extra feature, every bungalow has its own Japanese style hot tub on the balcony. After four long dives, it is very pleasant to soak in the balmy water while enjoying a beverage from the minibar. We ended up using the tub almost every evening.

Go to their website for more information: **www.diveintolembeh.com**

FACT FILE 2
THE BEST OF BOTH WORLDS:
MANADO COMBO
Are you undecided to whether you would rather have grandiose wall diving with dramatic drop-offs, occasional current dives with large marine life encounters or be down with the macro life to see the weird diminutive creatures and critters?

Manado is the perfect place to travel to in that case. Bunaken National Park on the opposite side of North Sulawesi, is only two hours away from Lembeh Strait and it's very easy to arrange a combi-vacation and stay at a resort on the Bunaken side before or after the critter hunt in Lembeh Strait. Dive into Lembeh are collaborating with resorts and dive centres on both the mainland and on the islands, and are happy to help you arrange the Manado-combo.

Bunaken is famous for magnificent wall dives and well-preserved coral reefs, so by combining Bunaken and Lembeh, you truly get the best of both worlds.

FACT FILE 3
MUCK DIVING
The concept of muck diving is attributed to the Australian underwater photographer, Bob Halstead and denotes diving in often sandy areas in relatively shallow water. These are areas which at first glance do not offer much, but after looking closely, you will discover lots of interesting life forms. Lembeh Strait is considered by many as the epicentre of muck diving, but also the Philippines, Papua New Guinea and other destinations in Indonesia offer excellent muck diving.

TRAVEL FACTS
GEOGRAPHY AND CLIMATE
Lembeh Strait was formed during a volcanic eruption that moved Lembeh Island off the mainland of North Sulawesi and formed a narrow passage. The strait is not more than 40-50 metres deep, but at both ends, the bottom slopes down to several hundred metres and these special conditions are part of the biological mechanism that makes the life in the Strait so special. The nutrient-rich water from the depths and the equally nutrient-rich volcanic sand supports the enormous diversity of species. Lembeh is just one degree north of the equator, so there is no big variation in day length and temperature. The sun rises around 6:00 am and goes down at 6:00 pm – all year round.

The dry season runs from March to November where the days are usually sunny. In the rainy season, from December to February, you get short rain showers, but it's still possible to dive. The rainy season is cooler and lusher and less crowded, and the showers are short so this is actually a preferred time to visit North Sulawesi. The temperature swings between 25 and 30°C. The water temperature is usually 28-29°C.

GETTING THERE From Dubai you either fly to Singapore and onwards to Manado with Silk Air, or to Jakarta and onwards with Garuda Indonesia. A driver from Dive into Lembeh will pick you up at the airport and the transfer time is 90 minutes, depending on traffic.

DIVING There are some tidal currents at a few places, but if the current looks too strong before the dive, the boat just moves to another site. Good awareness is important as it is very easy to become separated from your group while taking pictures and good buoyancy is a must for photographers, but otherwise it is very easy and uncomplicated diving.

TIME ZONE Singapore time, GMT+7. In other words, 4 hours ahead of Dubai.

ELECTRICITY 220 Volt, continental power sockets, so bring an adapter for UK style appliances and chargers.

HEALTH Indonesia is malaria territory, but the Manado area is not a risk zone. You will be in the water for many hours every day, so take precautions against outer-ear infection or swimmers ear. Drink plenty of fluid and stay out of the sun. The decompression chamber at the hospital in Manado is not the most dependable, so dive conservatively.

EQUIPMENT Dive into Lembeh has equipment rentals if you do not want to bring your own. You can get Nitrox32 on tap. A 3 mm full suit is recommended.

VISA Travellers from most countries can obtain a free 30-day tourist visa at entry.

CURRENCY Indonesian Rupiah. 10.000 IDR is roughly worth 0.75 USD or 2.75 AED.

COMMUNICATION There is free resort WiFi available. It is relatively stable and fast. There is no reliable cell-phone coverage at the resort.

SOUTH AFRICA'S SARDINE RUN

FEATURE AND PHOTOGRAPHY **SIMONE CAPRODOSSI**

Photographing this spectacle is a complete mess between the excitement, the tens of dolphins and sharks swimming past from all directions at full speed – which often looks like they will collide into you, sardines scales adding to all the backscatter and the concentration of exhilarated divers that quickly turns into the most crazy action you've ever seen. You just can't believe that all that is happening right before your eyes.

They call it the Greatest show on Earth and with good reason. The Sardine Run is a unique event which takes place every summer from the end of May until the end of July as millions of sardines travel up the east coast of South Africa, migrating from the colder waters of the Cape into warmer sub-tropical waters travelling up along the South African Eastern Cape and KwaZulu-Natal in a northwards direction. Because of the cold currents along this stretch of coastline and their appetite for plankton, these fish converge close to the shoreline and surface, making ideal targets for hungry predators and perfect viewing for snorkellers and scuba divers.

The event does not only call in excited divers and snorkellers, but also thousands of Common (*Delphinus*) and Bottlenose (*Tursiops*) dolphins, and several species of sharks all ready to feast on the travelling buffet. The dolphins are actually the engineers of this feeding event as they cleverly push large groups of sardines up towards the surface where they amass tightly into large baitballs. As the compact fish ball is pushed close to the surface, hundreds of Gannets come shooting in from the sky catching sardines as they swim in leaving trails of bubbles and foam behind them.

Dolphins and sharks dive into the fish ball from all sides, coming out with rich mouthfuls while the sardines panic and pack more tightly into a smaller ball until little is left, or the dolphins get distracted and the group manages to swim away and dive deeper to rejoin the larger shoal. Occasionally a huge Bryde's whale (*Balaenoptera brydei*) comes up from the deep, and in one gulp, finishes the unlucky last few.

The Gannets diving into the water are actually the topside signal that allows the divers to spot where the big action is at. This is in addition to the spotter plane which flies up and down the long coast to at least point the boats in the right direction and tell them where to look in for the action more closely.

As if this was not enough to make this one of the most incredible experiences, this time of year also hosts many Humpback whales (*Megaptera novaeangliae*) on their way back down towards the Arctic with their recently born calves. Often, while trying to spot for diving birds, the horizon is cut by the amazing shape of a breaching whale and on very lucky occasions, curious calves with permissive mums approach the divers underwater for some of the most touching underwater encounters one could ever ask for.

Penguins and Fur Seals are also often seen on the run, as well as occasional Killer whales (*Orcinus orca*), Southern right whales (*Eubalaena australis*), Manta rays (*Manta*), Sailfish (*Istiophorus*)… basically anything can swim past you in these open wild waters.

While the underwater action is constantly happening, the water conditions are not always suitable for underwater encounters with snorkellers and divers. The water often has very poor visibility closer to the coast, and besides not seeing much, makes them dangerous conditions to be in the middle of a shark feeding frenzy. You need the baitball to be well offshore and in clearer water as dolphins are not always able to create the very large baitballs, and small ones get consumed so fast and move so quickly, that a swimming human can barely catch a glimpse of the action.

So it is not as easy as it may sound to get the full on experience, but if you do – and this year we had the very lucky chance to have an incredible one, apparently one of the best in years – it truly is mind blowing. Photographing

this spectacle is a complete mess between the excitement, the tens of dolphins and sharks swimming past from all directions at full speed – which often looks like they will collide into you, sardines scales adding to all the backscatter and the concentration of exhilarated divers that quickly turns into the most crazy action you've ever seen. You just can't believe that all that is happening right before your eyes.

To access the sardine run between mid June and mid July, you are typically based in Port St John which is a quiet village on a river mouth with gorgeous views of green surroundings. Shark Explorers is a great operator run by very passionate shark and ocean lovers who have been diving these waters for more than a decade. They can guarantee the best experience in whatever conditions.

Despite running these trips for years, they are on the water with the same daily excitement and enthusiasm as their guests. They setup for the Sardine Run at "the Creek", a wonderful family owned place in the forest just outside Port St John. The mornings are very cold and the wetsuits often still wet as the boats launch from the river mouth just as the sun is rising. But the cold quickly fades in the excitement of the encounters and as you get back in the early afternoon, you are greeted with a bowl of earthy hot soup and warm bread caringly prepared by the wonderful Joy, to then enjoy a rest, download your photos and have a delicious dinner or a barbecue by the bonfire before an early sleep to be ready for the next day. Definitely one of my absolute favourite trips of all time.

SHARK EXPLORERS
(Established 2008)
Email: info@sharkexplorers.com
www.sharkexplorers.com

Shark Explorers offers uniquely customised shark diving, viewing and filming expeditions. We will help you plan and execute your ultimate shark diving experience or shoot, by making sure you are in the right place at the right time with the best chance of successfully encountering your shark of choice.

MISSION STATEMENT
We believe that we can make a difference by showing people a positive experience with sharks. We don't believe in misrepresenting them as potential killers for an adrenalin experience to sell tours. We do believe that sharks should be respected as the critically important predators they are.

OUR SPECIALTIES ARE:
- Great White Sharks
- Mako Sharks
- Blue Sharks
- Sevengill Sharks
- Cat Sharks
- Spotted Gully Sharks
- The ultimate adventure, the annual Sardine Run!

Shark Explorers is active in several research, awareness and conservation projects involving sharks and rays around the world. Whether it's sponsoring boats and equipment, assisting with fieldwork, or donating images and video, we're passionate about contributing towards the conservation of sharks and the oceans.

DIVING AND CARDIOVASCULAR RISK

FEATURE **CAREN LIEBSCHER**

How you can assess your Cardiovascular Risk for Diving with the Framingham Risk score. Approximately 32% of diving fatalities have been identified as cardiac event or cardiac arrest.

According to M.D., Ph.D. Alfred A. Bove, Emeritus Professor of Medicine at the Cardiology Section of Temple University School of Medicine in Philadelphia, USA, the risk for heart attack is affected by a number of factors that may go undetected for many years until the attack occurs. These factors may not cause symptoms for a long time but are cumulative and will finally lead to a heart attack that may occur while diving or on land.

Factors that increase risk for heart attacks include:
1. Elevated blood pressure
2. Elevated cholesterol
3. Cigarette smoking
4. Diabetes
5. Age
6. Gender (men have a higher risk than women)

The Framingham risk score (calculators can be found on the Internet - CVD1, CVD2) can be used to estimate your personal heart attack risk.

To determine your risk score you need your blood pressure, cholesterol level, including total, LDL and HDL cholesterol, smoking status, diabetes status, age and gender (Fig. 1 & Fig. 2).

Fig.1 (values in mg/dL)

Age:	☐ years
Gender:	○ Female ○ Male
Total Cholesterol:	☐ mg/dL
HDL Cholesterol:	☐ mg/dL
Smoker:	○ No ○ Yes
Systolic Blood Pressure:	☐ mm/Hg
Are you currently on any medication to treat high blood pressure.	○ No ○ Yes

Fig.2 (values in mmol/L)

Framingham Risk Score[1]

Risk assessment tool for estimating a patient's 10-year risk of developing cardiovascular disease

Age:	☐ Years
Gender:	○ Female ○ Male
Total cholesterol:	☐ mmol/L
HDL cholesterol:	☐ mmol/L
Smoker:	○ Yes ○ No
Diabetes:	○ Yes ○ No
Systolic blood pressure:	☐ mm Hg
Is the patient being treated for high blood pressure?	○ Yes ○ No

This online assessment tool is intended as a clinical practice aid for use by experienced healthcare professionals. Results obtained from this tool should not be used

Calculate risk

The calculation provides the 10-year risk for heart attack (in percent): If your risk score is less than 10 percent, you are considered a low risk, if it is 10 percent or greater and less than 20 percent, you are considered intermediate risk. With more than 20 percent you are at high risk.

If your Framingham risk score is more than 10 percent, you should be evaluated medically to be sure you are safe for diving.

Other factors that are not included in the Framingham risk score but can increase your heart attack risk are:
- History of a heart attack before age 50 in a close family member,
- Poor physical conditioning,
- Lack of exercise, and
- Obesity

For safe diving, you should avoid obesity (overweight), exercise enough to maintain good physical condition, keep your blood pressure and cholesterol normal, and get a check for diabetes.

Your personal lifestyle can make the difference. Start early to lower your heart attack risk!

EAR INFECTIONS AND DIVING: A DIFFICULT RELATIONSHIP

FEATURE **STEFANO RUIA**

It's winter and still a handful of European divers continue to dive regardless of the cold temperatures that have enveloped Europe. You get out of the water and climb into the dinghy, taking off your drysuit's hood to alleviate some of the pressure on your neck, so you can speak freely with friends while sat on the side as you ride back to port. What could this all mean for our ears? Cold water enters the ear canal, followed by exposure to cold air and wind, and even rain. Here is where the trouble begins; maybe not after the first dive, but after the repetitive ones. Other divers find refuge in warm, tropical destinations, but that isn't really any better for our ears. Water that's rich in plankton and algae, and the sweet sensation of wind in your hair, also gets in your ears! In this case, after a few days of diving, some equalization problems may arise, first with the onset of a painful sensation that gets increasingly intense, accompanied by muffled hearing, pressure pain, possible itching and a constant buzzing (tinnitus). Weeks of vacation lost? By no means, if you know how to treat this annoying problem, or above all, how to prevent it. We have asked Dr. Marta Frigo, ENT Specialist and DAN Europe's contact for her input on this topic.

Dr. Frigo, what is the cause of this problem that often plagues divers?
We're talking about an external otitis, otherwise known as an infection of the outer ear, which is composed of the auricle and ear canal. The latter is the only "dead-end structure" in the human body: a small sack covered in skin, which is warm, humid and dark resulting in the perfect condition for the proliferation of germs. An outer ear infection constitutes 25-50% of ear infections, and peaks in Summer. The categories at risk are individuals with predisposed medical conditions, and those who do water sports. 90% of outer ear infections are bacterial (staphylococcus or Pseudomonas aeruginosa), while the other 10% are fungal infections (candida or aspergillus), and even more rarely, viral.

How does the human body defend itself from this bacteria, fungus, or virus?
Fortunately, the outer ear canal has special defenses: the production of earwax allows for an acid coating containing lysozyme and substances that inhibit growth of bacteria and fungus. Earwax, being rich in lipids, is also hydrophobic (water repellant) and prevents water from penetrating the skin and causing maceration.

Are divers affected by this problem more than the average person?
After prolonged exposure to potentially affected water, or water that is rich in plankton, divers are five times more at risk of developing an

external ear infection than those who do not dive or swim. Between snorkellers and divers the risk doesn't change because the problem is not connected to hyperbarism, but to contact with water, especially at the surface.

What factors favour the onset of external otitis?
There are external factors and personal factors. External factors are: hydration (frequent exposure to water, excessive sweating, high humidity); water contaminated by bacteria; high temperature and humidity; mechanical/traumatic removal of ear wax (e.g. using cotton buds); presence of foreign bodies in the external auditory canal.

The systemic-localised factors are: dermatitis from an allergic reaction or irritants; psoriasis, seborrheic dermatitis, acne, lupus erythematosus, diabetes mellitus, and immunodeficiency.

How is it cured?
In the case of a simple bacterial outer ear infection, without complications like fever or infection of surrounding tissues, a localised treatment with antibiotics and steroids is sufficient. The most effective antibiotics are fluoroquinolone (ciprofloxacin and ofloxacin).

In the case of fungal otitis, it is necessary to use anti-fungal drops, and to rinse out the ear with acidifying solution. If the infection has spread to surrounding tissues, it's useful to proceed with oral fluoroquinolone and anti-fungals.

What are the recommended ways to prevent it from happening?
Prevention is the best way to approach the problem because developing an external ear infection during a dive vacation or cruise means forgoing dives!

Prevention is fundamental for those who have the aforementioned risk factors. First, you must practice proper hygiene of the ear canal, removing any wax buildup or foreign matter. Necessary to note, however, that obsessively cleaning the ear canal is not beneficial; rather, it can be counterproductive because constantly rubbing the thin skin of the outer ear canal can cause microabrasions that are an "open door" for bacteria. Also, earwax isn't dirt that comes from the outside, as many think, but a product of wax glands in the outer ear canal that protect the ear from such feared infections. Only if there is a buildup of wax is it necessary to go to an ENT doctor for a cleaning.

Since localised factors like dermatitis and psoriasis cause intense flaking of the skin, accompanied by dry skin deprived of wax, prevention will mean applying otological oils to build the missing lipid film. Drops can be applied in the morning before or after dives or before swimming.

After exposure to sea water or to pool water, it is a good idea to wash the ear canals with running water, then gently dry them (with toilet paper or a hairdryer on a low setting), to eliminate the residue of salt water or chlorine. Never dry with cotton buds or similar products. It would then be helpful to use drops that acidify and dry out the external ear canal (boric alcohol 3%, acetic acid 5% and isopropyl acid 85%.

What do you think about using ventilated ear plugs and a mask that has ear covers?
For those predisposed to external ear infections who dive frequently, like professional guides or instructors, in addition to localised preventative therapy, it's recommended to use a mask with ear covers (like Proear) because completely covering the auricle and the outer ear canal prevents contact with water, without any obstacle to equalizing thanks to a tube connecting the nose to ear.

Beyond a certain depth, vent caps still allow a gradual passage of water. As a result, although reduced, there is water-skin contact. For any activity that is just on the surface, like snorkelling, it's fine to have earplugs or a tight hood.

As all divers know, the ears greatly influence diving, both in terms of equalization and infection, to the point of impeding a diver from going underwater. So, just by taking proper prevention procedures… your ears will let you enjoy that weekend or vacation!

Before leaving for your next dive adventure, make sure your DAN membership is still active. If it isn't, join DAN or renew your membership at **www.daneurope.org**. Your DAN membership ensures the services of the biggest international network, assisting divers anywhere in case of emergencies.

DAN | AlertDiver

SCUBA AND FREEDIVING ON THE SAME DAY: OUR GUIDELINES

WHAT ARE THE CURRENT DAN GUIDELINES ON SCUBA DIVING AND FREEDIVING ON THE SAME DAY?

FEATURE AND PHOTOGRAPHY **DAN STAFF**

FREEDIVING BEFORE SCUBA

The answer varies depending on the intensity of the exercise when freediving, and the depth you reach. If you freedive without straining yourself and at shallow depths, you can scuba dive afterwards without much worry. Obviously, the more breath-hold dives you do, the more difficult it could become to keep equalizing over and over. On the other hand, if you go deep and strain yourself a lot, you will need longer surface intervals before you can scuba dive. If you freedive to a depth of only 12 to 15 metres and for a limited number of times (two-three), all you need to wait before scuba diving is 30 to 60 minutes. For deeper, more strenuous freedives – a common practice in spearfishing – the surface interval needs to be much longer, even if there's not enough data available at present to allow for definite suggestions.

FREEDIVING AFTER SCUBA

If instead you choose to freedive after scuba diving, it is another story. You need to be aware that you already have gas bubbles in your system from scuba diving, therefore even if you freedive at shallow depths, there are risks. The most obvious one is that freediving involves physical exercise, and straining after scuba diving may increase the amount of bubbles circulating in your body. Another maybe less evident risk is that, during freediving, the circulating venous gas bubbles that are already in your body from having scuba dived get compressed and shrink because of the pressure of the water, thus they could pass through the lung filter much faster than normal and reach the arterial circulation.

It is also worth mentioning that freediving alone, especially if deep, repetitive, and strenuous, can produce a high quantity of bubbles in the system. We've all heard of extreme freedivers, such as record holders who dive very deep, showing neurological symptoms after surfacing from a single deep dive. These symptoms, which can be compared to the Decompression Sickness that scuba divers can suffer from, are referred to as Taravana, and can go from simple nausea, dizziness or headache to very serious visual, hearing or speech problems, paralysis, and in the worst cases, loss of consciousness and death.[1]

Needless to say, it's never a good idea to carry a high bubble load in the body, so it would appear more prudent not to scuba dive and freedive on the same day if the dives undertaken are long, deep, and strenuous, thus creating significant bubble formation in the body. Each person and each case is different, but it is always better to be more cautious than less.

To summarise, if you freedive deeper than 15 metres and do strenuous physical activity, such as spearfishing, it would be better to scuba dive and freedive on separate days. Even long surface intervals between the two activities, if involving long, deep, and strenuous dives, do not eliminate the risk of overloading the body with bubbles. As aware divers, it is simply wiser to avoid this risk.

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

REFERENCES

[1]Detection of venous gas emboli after repetitive breath-hold dives: Case Report – D. Cialoni et al., UHM 2016, Vol. 43, No. 4

UPCOMING EVENTS

DIGITAL ONLINE 2018 COMPETITION ENTRY DEADLINE

DEADLINE FOR ENTRIES: Sunday 29th April 2018 @ 11:59 PM (GST)
Time is up! All entries (photos and videos) must be emailed to **photo@emiratesdiving.com** as per the rules and guidelines on page 53, before midnight. Late entries will not be accepted.

DIGITAL ONLINE 2018 AWARDS & EXHIBITION OPENING

AWARDS NIGHT | Wednesday 23rd May 2018 | 20:30 Registration, 21:00 Start
EXHIBITION | 24-31 May 2018 | 9:00-17:00 on week days and 14:00-17:00 on Fridays

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

Digital Online 2018, EDA's Underwater Photography and Film Competition's Award Night and Exhibition Opening will be held at the American University in Dubai's (AUD) Rotunda Gallery on the 23rd of May.

EDA MOVIE NIGHT WITH VOX CINEMAS

VOX CINEMAS سينما

DOCUMENTARY TBC | VOX Cinemas, Mercato Mall
Wednesday 9th May 2018 | 18:30 Registration, 19:00 Start

A3 LANDSCAPE HARDCOVER PHOTO BOOK: SPECIAL EDITION
The Best of Digital Online, EDA's Underwater Photography and Film Competition 2011-2017

We're showcasing some of our EDA members' underwater photography from 7 years of competition. 292 images have been selected to make up this beautiful 142 page, A3 hardcover photo book from some of the best entries submitted to Digital Online between 2011 and 2017.

The photography has been edited and prepared for print, giving the viewer maximum quality to enjoy the images at their best. Each photo has been credited to their respected photographer in the order they appear, and each species has been researched with its scientific name at the back of the book, leaving photos clear of markings.

The book will be released in June and unveiled at Digital Online's Awards Night at the American University in Dubai (AUD). Limited copies will be made available for purchase by order only. Watch this space!

EDA
جمعية الإمارات للغوص
Emirates Diving Association

MISSION STATEMENT

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

LEGISLATION

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

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

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