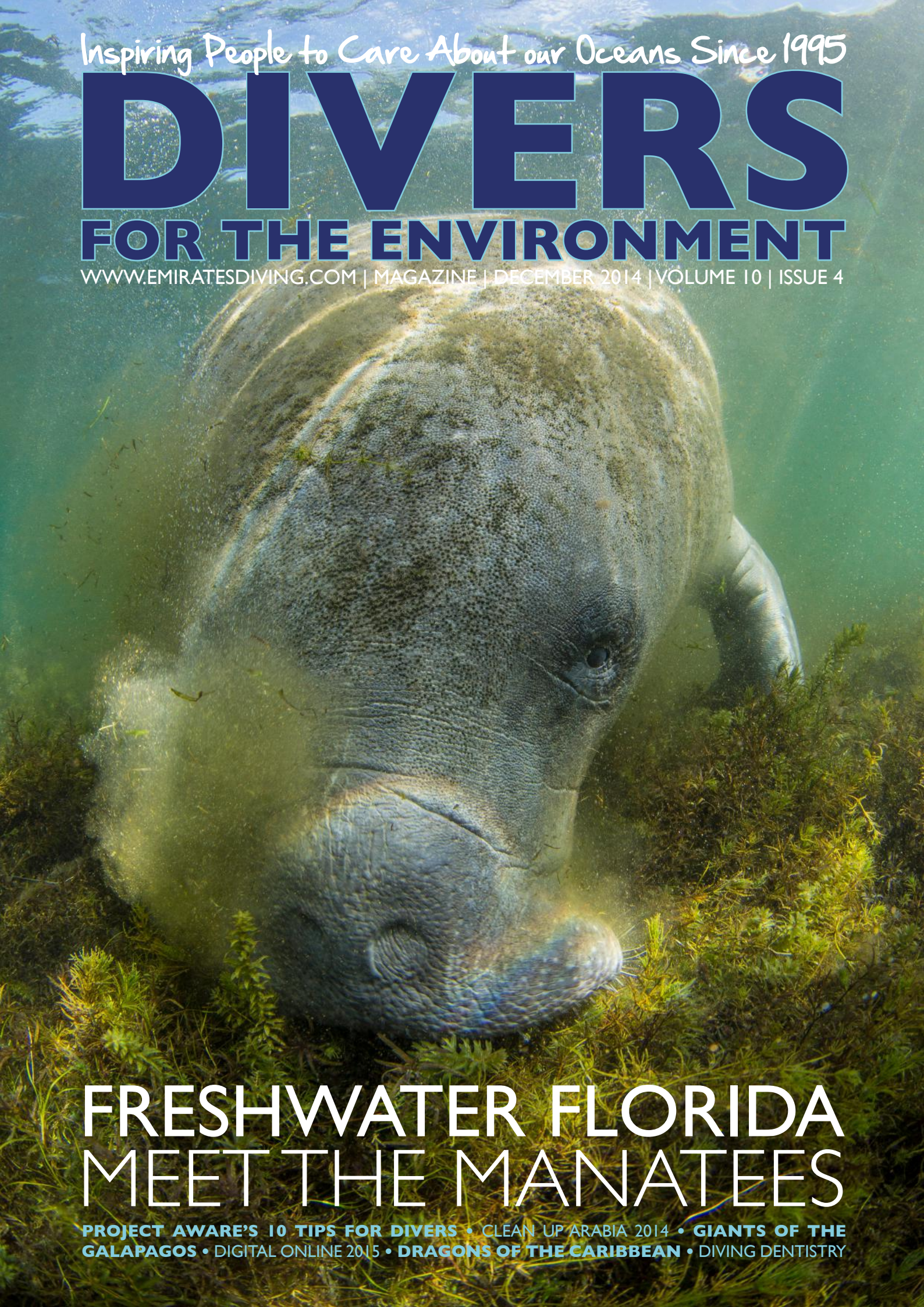
Inspiring People to Care About our Oceans Since 1995

DIVERS FOR THE ENVIRONMENT

WWW.EMIRATESDIVING.COM | MAGAZINE | DECEMBER 2014 | VOLUME 10 | ISSUE 4



FRESHWATER FLORIDA
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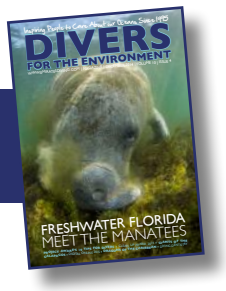
DIVERS FOR THE ENVIRONMENT
Please note that EDA's magazine, "Divers for the Environment" includes articles written by individuals whose opinions, whilst valid, may or may not represent that of EDA. It is hoped that the magazine can become a platform for individuals to voice their opinion on marine and diving related issues. You are welcome to suggest an article for the next issue of "Divers for the Environment" released in March 2015. Send all articles, feedback or comments to: **magazine@emiratesdiving.com**

EDA COVER
PHOTO BY DAVID ROBINSON



REDUCE REUSE RECYCLE

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THE QUARTERLY CONTRIBUTORS

Meet the regular quarterly magazine contributors who share their passions, interests and the expertise of their fields for our readers of, 'Divers for the Environment'.

Want to contribute? Email: **magazine@emiratesdiving.com**

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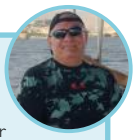
Diving opens up a whole new world. Being a writer-diver and co-editor of the Flemish divers magazine Hippocampus, I personally explore our underwater world and share it through articles with others, divers and non-divers. You'll find a collection of my articles on **www.webdiver.be**



PAUL WARWICK
Born and educated in the UK leading to a career as an officer in the British Army. Now a specialist consultant for the UAE Government inbetween his other interests and his passions which are family, scuba diving (A PADI IDC Staff Instructor), conservation and marine management.

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PHILIPPE LECOMTE
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SPIRIT OF THE UNION

IBRAHIM N. AL-ZU'BI
EDA Executive Director

43 روح الاتحاد SPIRIT OF THE UNION NATIONAL DAY اليوم الوطني UNITED ARAB EMIRATES الإمارات العربية المتحدة

As we celebrate the 43rd UAE National Day, we reflect on the spirit that ties us all together, the Spirit of the Union that enables millions of people to coexist and build lives together. The Spirit of the Union is derived from the vision and leadership of the late Sheikh Zayed Bin Sultan Al Nahyan, EDA's founder and now lives on through His Highness Sheikh Khalifa Bin Zayed Al Nahyan, President of the UAE and his fellow leaders of the nation's Emirates who are shaping the UAE's future. It is the spirit that binds the cosmopolitan community of the UAE, connecting us under one banner, one flag. It is the spirit of the union that celebrates our culture and heritage and yet also shapes our future. The Spirit needs to be celebrated and shared by all citizens and residents of the UAE.

For hundreds of years, Pearl diving was a main part of the UAE economy. Life in the Gulf was dominated by 'jewels of the sea'. Some, pearls brought fabulous wealth. For the men who harvested the pearls, it was more than an object of beauty; it was a way of life. For people with few resources on land, this jewel of the sea offered opportunity. Divers, rope haulers and captains would head to the Oyster beds for three to four months every summer with the most basic necessities. Divers worked from sunrise to sunset, wearing only a nose clip, leather finger protectors, a stone weight and sometimes, a cotton suit to protect themselves from jellyfish. Within one or two minutes, the diver would descend at least seven metres and put oysters in a basket before being hauled back up to the surface. Pearls from the region were exported to India, Persia and Turkey and sold on to European and Chinese markets. The Gulf industry boomed with integration into global markets, particularly after the mid-18th Century. As the demand for pearls increased, so did their value. By the mid-18th Century, the high value led to trading centres being established in other places, even those with limited natural resources, such as Kuwait, Abu Dhabi, Dubai and Sharjah.

The demise of the natural pearl industry came at the hands of one man in the late 19th Century; the owner of a small Japanese pearl oyster farm began to perfect the art of cultured pearls. Instead of waiting for nature to take its course, Kokichi Mikimoto seeded the oysters with irritants to provoke the growth of the pearls. It took him more than a decade to perfect the art, but by 1916, Japan started to flood the market with cultured pearls. By the 1930s, hundreds of Japanese farms were producing millions of pearls a year, cheap alternatives to the natural versions that were so hard and so expensive to harvest. It hit the Gulf hard. For those pearl divers who risked their lives to build the UAE economy we celebrate the spirit of the Union. We are proud to be part of this nation and we always will be.

Clean Up Arabia 2014 had another great success this year. We had more than one thousand participants helping to clean our beaches and our dive sites. I would like to thank our Clean Up Arabia Patron HH Sheikh Hazza Bin Hamdan Bin Zayed Al Nahyan for his support and participation, our Clean Up sponsors for their generous support, our partners in UNEP, Environment Agency – Abu Dhabi and Dibba Municipality for their support and most importantly, our EDA members for their dedication and passion to conserve our environment.

We have some interesting articles to end the year with in this last issue of 'Divers for the Environment', 2014. You can read our Reef Check updates where divers make use of their underwater adventures and help protect the underwater world. You will also read about lots of initiatives from our dive centers and clubs promoting diving, and organizing clean ups and other dive activities.

As we come close to ending the year, I look back at all this year and last years' events and at EDA's increasing members, and to all the discussions I've had with the many divers I have met while diving in and outside the UAE. One thing is clear, all divers genuinely want to make a difference and protect our marine life – we look forward to this continuing into 2015.

I would like to wish everyone a happy 43rd UAE National Day. I also want to wish you all a Merry Christmas and a Happy New Year. I am looking forward to 2015, which I am sure will be as exciting, fun and as rewarding as this year has been.

"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

Dive Safe!

Ibrahim Al-Zu'bi

EDA AND SEYCHELLES TOURISM OFFICE MIDDLE EAST PRESENT THE SEYCHELLES AT VOX CINEMAS MERCATO

PHOTOGRAPHY **ALLY LANDES**

EDA and the Seychelles Tourism Office Middle East were delighted to invite EDA members to an evening dedicated to the incredible country of the Seychelles on the 24th of September at VOX Cinemas in Mercato Mall.

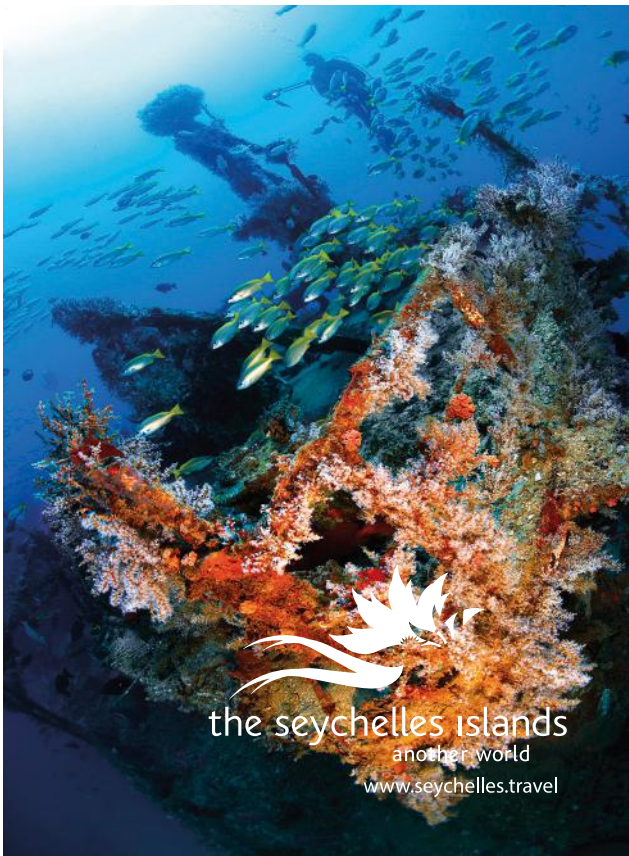
The evening included a presentation by Dr. David Rowat, Chairman of the Marine Conservation Society – Seychelles and Marine Biologist who also owns a dive centre at Beau-Vallon and is an expert in diving the Seychelles. The informative presentation was then followed by a short video and ended with a Q&A.

Apart from invaluable information about diving in the Seychelles, there were special diving packages on offer and lots of prizes won! Drinks and popcorn were provided by Seychelles Tourism Office Middle East.

the seychelles islands
another world

VOX ڤوكس سينما vox cinemas


Seychelles
Wonders beneath the waves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FORD'S GLOBAL WEEK OF CARING

PHOTOGRAPHY **ALLY LANDES**

FORD VOLUNTEER PROJECTS EXPAND IN MIDDLE EAST AS EMPLOYEES GO FURTHER IN NINTH ANNUAL FORD GLOBAL WEEK OF CARING

- More than 13,000 Ford employees, retirees and dealers will work on 310 community service projects in 26 countries for the ninth annual Ford Global Week of Caring.
- Projects expand in the Middle East as volunteers in Ford's newest region join the global effort.
- Volunteers are putting a special emphasis on projects that support and protect water resources, in keeping with Ford Motor Company's corporate water strategy.

"Ford Global Week of Caring is one of the many ways Ford and its employees are going further to improve the quality of life for people in the communities where we live and work," said Jim Vella, president, Ford Motor Company Fund and Community Services. "Ford employees embrace the company's legacy of caring and the importance of giving back. As Ford expands globally, our commitment to creating a better world grows with it."

That has been evident more than ever this year as Jim Benintende, president of Ford Middle East and Africa, led volunteers from the company's newest international business unit on a beach clean up project in Dubai in the United Arab Emirates, organized by Emirates Diving Association on the 11th of September. "I'm so proud of the incredible work our teams in the Middle East and Africa are doing," Benintende said. "From improving homes that look after abandoned children with HIV, to physical therapy for those with disabilities, to helping plant vegetable gardens for older adults, employees and dealers across the region are inspiring us all in the ways they give back."

In addition to thousands of employee volunteers taking part in Ford Global Week of Caring, the company is also contributing $348,000 to nonprofit agencies to purchase the tools, supplies and materials needed to complete many of the community service projects.

Ford volunteers are putting a special emphasis on projects that support and protect water resources, a basic necessity for people everywhere. This is in keeping with the company's corporate water strategy aimed at understanding and reducing water consumption at its global facilities and across its supply base.

Global projects with a water focus this year include:
Argentina: Install water pipes for rural communities.
China: Clean up coastlines and rivers.
Germany: Construct an irrigation system at an environmental education center.
India: Set up water purifiers for schools.
Indonesia: Upgrade a sanitation system and install a water pump and filter for a school.

Also on the Ford global volunteer to do list:
Australia: Make repairs at a wildlife sanctuary.
Brazil: Renovate children's nursery facilities.
Mexico: Remodel orphanages.
Thailand: Conduct a recycling program and install recycled equipment at a school.
Vietnam: Paint and repair schools.

In the United States, more than 1,000 Ford employees will participate in 70 volunteer projects across 14 states throughout the week. This includes a Ford Accelerated Action Day on September 11, when volunteers in Michigan and Ohio will participate in community service and other projects.

While the Ford Volunteer Corps is active throughout the year, Ford Global Week of Caring is the highlight of a year-round effort to flex the volunteer muscle of Ford employees, retirees and dealers to make a positive difference in the neighborhoods and communities where the company does business.

HILTON FUJAIRAH RESORT LEADS UNDERWATER CLEAN UP

HILTON FUJAIRAH TEAMS UP WITH THE LOCAL DIVING COMMUNITY

IN A SUSTAINABILITY INITIATIVE FOR THE HILTON WORLDWIDE GLOBAL WEEK OF SERVICE

Fujairah, UAE – 24 October 2014 – Teams of enthusiastic divers from Fujairah, from the rest of the UAE and from Oman, joined forces with Hilton Fujairah Resort this weekend in celebration of Hilton Worldwide's third annual Global Week of Service from October 19-25. More than 30 volunteers from the Hilton Fujairah Resort including 17 divers, geared up with wetsuits, dive equipment, tanks, trash bags and gloves and teamed up in the effort to help rid the Fujairah coastline of debris and trash. The team collected an impressive haul of discarded items, including plastic bottles and bags, ropes, nets and other forms of debris. Over 50kgs of rubbish was collected in total. The non-diving volunteers assisted on land to discard the rubbish collected by the divers.

The dive site is located 20 minutes away from the resort by boat and is being developed as a tourist dive site for the resort and Fujairah.

Hilton Fujairah Resort sponsored and hosted the event for the divers and volunteers, ranging from team members, open water divers to instructors and spanning from more than 7 countries.

After the afternoon's clean up, the tired and hungry volunteers enjoyed a complimentary barbeque dinner on the beach. Adventure Sports Centre – the event's main partner, provided the diving equipment and boats, but most importantly their invaluable experience throughout the process ensuring proper set-up, organisation, manpower and more.

Community service is an integral part of Hilton Worldwide's culture and acts of volunteerism occurs year-round across our portfolio of eleven distinct brands and more than 4,200 properties. Hilton Fujairah Resort's efforts are a part of Hilton Worldwide's week-long annual celebration of the company's commitment to serving and enriching the communities where we live, work and travel. This year, Hilton Worldwide participated in more than 3,000 hands-on service projects.

TO MARK ARAB ENVIRONMENT DAY
ENVIRONMENT AGENCY – ABU DHABI ORGANISES CLEAN UP CAMPAIGN AT AL WATHBA WETLAND RESERVE

ABU DHABI, OCTOBER 15, 2014: The Environment Agency – Abu Dhabi (EAD) along with BP, sponsor of the Sustainable Schools Initiative (SSI), organised a clean up campaign today at Al Wathba Wetland Reserve for the initiative's participating students. The campaign was planned as a tribute to the Arab Environment Day (14 October) which was first instituted in 1986, by a meeting of Arab Ministers responsible for the environment, in Tunisia. This year's slogan and emphasis revolved around 'Cleanliness: A Collective Responsibility'.

The clean up, which began at 9am and ended at 11am, saw the participation of 161 Sustainable Schools Initiative (SSI) students and more than 35 governmental and private organisations in Abu Dhabi, clear the area from marine debris and litter caused by neighbouring residents. The two hour clean up campaign resulted in removing 483kg of waste which included mostly plastic and wood waste, metal, glass and paper.

Ahead of the clean up, the students were given a brief and were provided with information on the roles and responsibility of the campaign and learned more about the different measurement tools used in collecting data. Gloves, bags and water were also distributed.

Kicking off the campaign, Ahmed Baharoon, Executive Director of the Environmental Science, Information and Outreach Sector at EAD, addressed the participants and highlighted the importance of changing our behaviour and our attitudes toward waste within Abu Dhabi's community.

"At EAD, one of our priorities is to raise public awareness about the hazards of pollution. Through this clean up campaign, we are directing people towards a positive attitude in maintaining a clean and sound environment by practice and participation," he said.

Baharoon added: "The Sustainable Schools Initiative continuously encourages students to become involved in activities that will benefit their environment and community, SSI regularly attracts Eco-clubs from registered schools to annually participate in projects that promote sustainability to the wider community. The SSI initiative embarked the implementation of their second phase last year and decided to coordinate the initiative's first clean up campaign for 2014. The clean up campaign will now take place on an annual basis and will provide a platform where SSI students, teachers and directors from different schools, along with partners and stakeholders, can collaboratively participate towards making concrete actions toward promoting sustainability in the Emirate of Abu Dhabi."

Nick Cochrane-Dyet, Special Advisor to BP UAE General Manager, said: "The Sustainable Schools Initiative has been a great success since its inception in 2009. BP is delighted to sponsor such a worthwhile initiative, and is particularly proud of the Environment Agency – Abu Dhabi and its project team for their great efforts in implementing this successful and sustainable programme. The clean up campaign is a great practice that brings responsible and enthusiastic people of different age groups, professions and nationalities from the school communities, government and businesses in a range of activities that positively improve local environments, aimed at creating greater environmental awareness to help reduce UAE's carbon footprint in a fun way."

The Sustainable Schools Initiative encourages students to not only reduce their ecological footprint but also to increase their 'ecological handprint', by participating in the different activities that lead towards achieving sustainability. In addition to the students, participation in the campaign included representatives from EAD, BP, Abu Dhabi Education Council (ADEC), Abu Dhabi Distribution Company (ADDC), Al Ain Distribution Company (AADC) and Tadweer (The Centre of Waste Management – Abu Dhabi).

KIDS SCUBA
UNDERWATER PHOTOGRAPHY EDUCATION CLINIC

Photo by Nadhirah

Kids Scuba, a PADI 5 Star Youth Education Dive Center about 30 minutes from Kuala Lumpur, Malaysia, organized an Underwater Photography Clinic for kids and teens during their regular Saturday pool scuba class on August 30, 2014.

The special guest for the event in educating the kids and teens on underwater Photography techniques was Nikon professional photographer, Imran Ahmad.

The event was attended by 10 kids and teens aged between 12-17 years old, to learn about underwater photography each equipped with their own digital underwater camera. The participants attended a 45 minute classroom session with Imran Ahmad on photography techniques followed by a 45 minute dive in the pool decorated with "Nemo" toys to test their underwater photography skills under the direct supervision of Imran Ahmad and two Kids Scuba dive professionals.

KIDS SCUBA – PADI 5 STAR DIVE CENTER
E-mail: kidsscuba@yahoo.com
Website: www.kidsscuba.com

Photos by Ujin Goh and Imran Ahmad

ENVIRONMENT AGENCY – ABU DHABI LAUNCHES DUGONG EDUCATION & AWARENESS CAMPAIGN AWARENESS CAMPAIGN SPONSORED BY TOTAL AND TOTAL ABU AL BUKHOOSH (ABK)

ABU DHABI, OCTOBER 20, 2014: The Environment Agency – Abu Dhabi (EAD), in partnership with Total and Total Abu Al Bukhoosh (ABK), launched the dugong education and awareness campaign today at Al Mamoura Auditorium, at EAD's headquarters in Abu Dhabi. The campaigns aims to raise awareness on the current threats that affect the dugong population found in Abu Dhabi, and how to provide the dugongs with a safe haven to live and breed.

During the kick-off of the campaign, Ahmed Baharoon, EAD's Executive Director, Environmental Information, Science & Outreach Management spoke on behalf of H.E. Razan Khalifa Al Mubarak, Secretary General of EAD and Mr. Sultan Al Hajji, Vice President & Chief Strategy Officer, Total E&P UAE, emphasising the importance of their continuous joint efforts in conserving the dugong population, protecting its habitat, and monitoring and studying their biological and geographical distribution in the UAE's waters.

Commenting on the launch of the campaign, H.E. Al Mubarak, Secretary General of EAD, said: "Through this campaign, we aim to raise environmental awareness and educate the community on the importance of protecting the dugongs, as the UAE waters are home to the second-largest population of this species in the world. Through the support of Total and Total ABK, EAD is successfully implementing its Dugong Conservation Programme, enabling the Emirate of Abu Dhabi to provide a safe haven for this migrating species and making the UAE a leader in global dugong conservational efforts."

Throughout the coming months, EAD, Total and Total ABK, will organise interactive educational workshops and information campaigns to educate middle-school and high-school students, the fishing community and boat owners in Abu Dhabi and the Western Region, shoreline industries and the general public. The campaign will also include a public outreach programme through EAD's social media platforms, along with a number of family-oriented entertaining and educational activities in November 2014, to be held at Mushrif Mall in Abu Dhabi.

Dr Shaikha Salem Al Dhaheri, Executive Director of Terrestrial and Marine Biodiversity at EAD, commented: "Since 1999, EAD, Total, and Total ABK, have collaborated in conducting detailed studies on the local dugong population. These studies have provided our teams with the data that helps us better understand the behaviour and threats against the dugong population. Dugongs are an endangered species and could be threatened with extinction unless we conserve their habitat and prevent human interference."

"One of the most important elements of our conservation efforts is to inform and educate the public about marine life found in Abu Dhabi. Through this campaign, we work together in order to protect the dugong population," Dr. Al Dhaheri added.

Mr. Hatem Nuseibeh, President Total E&P UAE and Group Representative in the UAE, commented, "Total UAE and Total Abu Al Bukhoosh are proud to be an ardent supporter in EAD's dugong conservation program by exclusively sponsoring since its launch in 1999. Thanks to EAD's efforts, today Abu Dhabi is a leader of international repute hosting the Dugong Secretariat of Convention on Migratory Species (CMS) under United Nations Environment Program (UNEP). Since 1939, Total has established a solid partnership with the authorities and people of the UAE by sharing technology and innovation, environment protection, capacity building of Emiratis and aligning with the vision of the wise leadership of the UAE. We have an unwavering commitment for the benefit of the UAE."

Mr. Sultan Al Hajji, Vice President & Chief Strategy Officer, Total E&P UAE, said, "Both Total and Total ABK as responsible energy companies, contribute to the welfare of the host country in all aspects including environment conservation. Under the wise leadership of H.H. Sheikh Khalifa bin Zayed Al Nahyan, the President of the United Arab Emirates and the guidance of H.H. General Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, Total UAE and Total Abu Al Bukhoosh demonstrate their solidarity by partnering with EAD in the noble cause of preserving the delicate biodiversity of the Emirates. This is one of the ways of expressing our sincere gratitude and appreciation for the UAE."

Significant effort has been made by the UAE and EAD in the conservation of the dugong population. In 2002, EAD banned drift net fishing practices in shallow waters to prevent dugongs and turtles from becoming entangled in the nets. On a national front, the UAE issued Federal Law No. 23 and 24 in 1999 to protect dugongs from exploitation. In support of international efforts, the UAE was one of the first Middle Eastern countries to sign the International Union for Conservation of Nature (IUCN) agreement in 2007 on the conservation and management of dugongs and their habitat. The Dugong Memorandum of Understanding, which falls under International Union for Conservation of Nature (IUCN) and the Convention on Migratory Species (CMS), is implemented through the CMS Secretariat office hosted by EAD since 2009 on behalf of the UAE's Government.

10 Tips for Divers to Protect the Ocean Planet

Divers share a deep connection with the ocean. You can make a difference for ocean protection every time you dive, travel and more.

Be a Buoyancy Expert

Underwater plants and animals are more fragile than they appear. The swipe of a fin, bump of your camera or even a touch can destroy decades of coral growth, damage a plant or harm an animal. Streamline your scuba and photo gear, keep your dive skills sharp, perfect your underwater photo techniques and continue your dive training to fine-tune your skills. Always be aware of your body, dive gear and photo equipment to avoid contact with the natural environment.

Be a Role Model

New scuba divers are being trained and certified every day. Regardless of your experience level, be sure to set a good example for others when interacting with the environment – while underwater and on land.

Take Only Photos – Leave Only Bubbles

Nearly everything natural found underwater is alive or will be used by a living creature. If you take a coral, shell or animal, you can disturb the delicate balance and add to the depletion of dive sites for future generations.

Protect Underwater Life

Choose not to touch, feed, handle, chase or ride anything underwater. Your actions may stress the animal, interrupt feeding and mating behavior or provoke aggressive behavior. Understand and respect underwater life and follow all local laws and regulations.

Become a Debris Activist

An astonishing amount of waste makes its way underwater, reaching even the most remote ocean areas. Once there, it kills wildlife, destroys habitats and threatens our health and economy. Don't let your dives go to waste. Remove and report what doesn't belong underwater every time you dive. Make a conscious effort to buy green, buy local and, when possible, buy less.

Make Responsible Seafood Choices

Overfishing leads to species declines while harmful fishing practices damage and pollute underwater ecosystems. You play a critical role as a consumer. If seafood is part of your meal selection, ensure you're choosing sustainably sourced species and encourage others, including restaurants and shop owners, to do the same.

Take Action

Scuba divers are some of the strongest ocean advocates on the planet. Now, more than ever, divers like you are taking a stand. Speak out for conservation, share your underwater images, report environmental damage to authorities and campaign for change.

Be an Eco-tourist

Make informed decisions when choosing and visiting a destination. Choose facilities dedicated to responsible social and environmental business practices that include water conservation, energy reduction, proper waste disposal, use of mooring buoys and respect for local cultures, laws and regulations.

Shrink Your Carbon Footprint

Global warming and ocean acidification are putting your favorite animals and the whole ocean planet at risk. Do your part by understanding and reducing your carbon footprint and look for ways to offset what you can't reduce.

Give Back

Ocean protection depends on all of our actions, large and small. Investing in the ocean protects our planet and lets the dive adventure live on. Donate or fundraise for ocean protection to fuel the grassroots action and policy change necessary to ensure a clean, healthy ocean planet.

Thank you for giving the ocean planet the protections it deserves!
Take action with us at

PROJECTAWARE.ORG

PROJECT AWARE®

10 TIPS FOR DIVERS TO PROTECT THE OCEAN PLANET

FEATURE **DOMINO ALBERT** – NEW MEDIA SPECIALIST, PROJECT AWARE FOUNDATION

To adapt to the ever increasing and shifting threats to the environment as well as changes in the way we travel and learn to dive, in 2014 Project AWARE gave a facelift to its popular 10 Tips.

Just as climbers and campers have an ethic or code to live by – so do scuba divers. When I first became a diver in 1996, I embraced the Project AWARE philosophy and ethos launched more than two decades ago with the 10 Ways a Diver Can Protect the Underwater Environment, not because these 10 ways were enforced rules, but rather principles I chose to follow as I felt a responsibility as a diver to respect and help protect the new fascinating world to which scuba diving had opened the doors. Every diver has their own motivation for making their way into the underwater world, for me it was a step towards better understanding our ocean planet and becoming an ocean activist. Today, it's no secret that the world – including the underwater world – is changing rapidly. The health of the world's oceans is deteriorating even faster than had previously been thought, a report announced in 2013 – the latest audit by an international team of marine scientists at the International Programme on the State of the Ocean (IPSO) found that the world's oceans and marine life are facing an unprecedented threat from a combination of pollution, global warming and climate change, and overfishing. When updating the Project AWARE philosophy, it was important to focus on top ocean issues globally – specifically where individual scuba divers, like you and me, can make a difference when we travel, dive, photograph and more.

As scuba divers, we are privileged to experience first-hand the beauty and wonders of the ocean. With such privilege, comes the responsibility to protect it. If you're like me, you want to know how to be a "good" diver, a diver who uses his skills to help protect the dive sites we love most, a diver who gives back to the ocean and takes action to ensure fragile ecosystems are preserved for future generations. Ocean protection starts with you, us, all of us and it can be as easy as following the new Project AWARE's 10 Tips for Divers to Protect the Ocean Planet. Today, I'm overwhelmed by the threats facing our ocean planet but I'm hopeful that we can reverse the current trend. 18 years after I blew my first underwater bubbles, I pledge to follow Project AWARE's new 10 Tips. Will you join me?

Download the new 10 Tips for Divers poster and pledge to follow the 10 Tips for Divers to Protect the Ocean Planet at projectaware. **http://is.gd/0FGQ12.** Thank you for doing your part to protect the ocean and taking these tips to heart each time you dive.

HISTORIC ADVANCES IN INTERNATIONAL SHARK AND RAY CONSERVATION 21 SPECIES LISTED UNDER CONVENTION ON MIGRATORY SPECIES

QUITO, ECUADOR. November 9, 2014. Conservationists are rejoicing at the listing of 21 species of sharks and rays under the Appendices of the Convention on Migratory Species (CMS), made official today in the final plenary session of the Conference of Parties (CoP). With these listings, member countries agreed to grant strict protection to the reef manta, the nine devil rays, and the five sawfishes, and committed to work internationally to conserve all three species of thresher sharks, two types of hammerheads, and the silky shark.

"We are elated by the overwhelming commitment expressed by CMS Parties for safeguarding some of the world's most imperiled shark and ray species, including the highly endangered sawfishes," said Sonja Fordham of Shark Advocates International, a project of The Ocean Foundation. "Today's unprecedented actions more than triple the number of shark and ray species slated for enhanced conservation initiatives."

The proposal to list the thresher sharks was brought by the EU. Silky shark listing was proposed by Egypt. Ecuador and Costa Rica jointly proposed the two hammerhead species. Kenya put forward the sawfish proposal while both the reef manta and devil rays were proposed by Fiji. Fifty-nine of the 120 CMS Parties participated in this CoP.

"Manta and devil rays are exceptionally vulnerable to overexploitation, usually having just one pup every few years," explained Ian Campbell from WWF, who served on the delegation of Fiji. "The Appendix I listing obligates CMS Parties to ban fishing for reef manta and all devil ray species and reflects a responsible, precautionary approach in light of their inherent susceptibility to depletion."

Listing on CMS Appendix I commits countries to strictly protect species while Appendix II listing encourages international cooperation towards conservation of shared species. The rays (including sawfishes) were listed under both Appendices while the six shark species were added to Appendix II.

"From hammerheads of the Galapagos to threshers in the Philippines, sharks are incredibly popular attractions for divers," noted Ania Budziak of Project AWARE. "With increasing recognition of the economic benefits of associated tourism, divers' voices are playing a key role in winning protections for these iconic species."

While consensus to advance the sawfish, devil ray, hammerhead and thresher shark proposals was reached in Committee, Peru and Chile at the time expressed opposition to listing silky sharks on CMS Appendix II. In the final plenary session however, the two countries did not voice resistance, thereby clearing the way for adoption.

"We could not be more pleased that, in the end, all of the proposals to list sharks and rays under CMS were adopted, and yet we stress that the benefits of such listings depend on concrete follow-up action by the Parties," said Amie Brautigam of the Wildlife Conservation Society. "We urge countries to channel the overwhelming concern for sharks and rays demonstrated at this historic meeting into leadership towards national protections and regional limits on fishing."

The CMS Parties also agreed a Resolution encouraging improved data collection and fisheries management for sharks and rays.

U.A.E. DOLPHIN PROJECT

Support us, report a sighting!

CITIZEN SCIENCE: YOU, MAKING A DIFFERENCE FOR YOUR ENVIRONMENT

FEATURE **DR. ADA NATOLI**

Dubai and Abu Dhabi 'Report a Sighting' maps available on the UAE Dolphin Project website (www.uaedolphinproject.org). Each icon identifies a sighting reported by the public. It also reports the relevant sighting information, photo or video if submitted, and in the case of a reporting by companies or associations, their logo.


Photo by UAEDP


Photo by George Highmoor


Photo by Milad el Mukahal

Exactly two years ago, in December 2012, we launched the UAE Dolphin Project website with the aim to involve the public in helping us to understand the status of the local dolphin population. How? By simply reporting what you encounter at sea. Reporting sightings can sound a pretty insignificant act for many, or some people do it as a favor because they have been personally requested. Most of the time when I ask, "Do you ever see dolphins?", the most frequent answer I get back is, "Oh, yes! I always see them here and there…"

Reporting what you see in the natural world is actually an incredible tool that you have in your hands. It is vital information that can effectively make a difference if centralized and made accessible to the researchers. Why? Because as much skill and equipment researchers have, their actions can only cover a minimal proportion of the natural environment surrounding us. Having the public report sightings is like having a fleet of observers dispatched across an area that no research team would ever be able to cover in real time. Every unreported sighting has the same effect as throwing away a small piece from a big puzzle set. We may still be able to see the picture at the end, but the image will be fuzzy.

Today, the development of social media and a widely available online network has boosted the possibility of sharing information exponentially, to the extent that the information provided by the public has been defined as, 'Citizen Science'. In a matter of minutes, an email or a facebook message can easily be sent with the relevant data of date, time, location, picture – and this can be done from pretty much anywhere.

With two years of activity, with limited resources and a scarce awareness campaign, we managed to collect 192 sightings. This data enabled us to identify areas of high occurrences of dolphins along the UAE coastline and therefore, possible key areas for future monitoring and protection. Citizen science, through the reporting of sightings, has allowed us to better understand seasonal occurrence and in some cases, to identify individual dolphins and track their movements. We presented this data on several occasions to the relevant authorities that are now more aware of the presence of these species along the UAE coastline. More importantly, your information has allowed us to establish baseline information that did not previously exist. Most of the sightings reported were from companies or single individuals. We believe more can be done. We believe that dive professionals and dive centres are among those that can greatly contribute to this research. Please share our initiative in your dive centre and contact us if you would like to have more information. Reporting your sightings will help us to stand for the conservation of dolphins in UAE.

If you encounter a dolphin or a whale, dead or alive, please 'Report Your Sighting' at **www.uaedolphinproject.org**! Alternatively, you can text (056 671 7164) or email the information (Date, Time, Location and if possible, a photo) to **sighting@uaedolphinproject.org** or post it on the UAE Dolphin Project Facebook or Twitter pages (**@UAEdolphinproject**).

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PROJECT

The UAE Dolphin project is a non-profit initiative dedicated to investigating the dolphin population along the UAE coastline, to provide scientific information and to support the conservation of these local marine species.

Support us.

Report a sighting !

www.uaedolphinproject.org

MINI HOW-TO

Report a sighting !

sms +971 566717164
mail sighting@UAEdolphinproject.org

with location and time (eg.: UAE, Dubai, 1 mile from shore between The Burj Al Arab and the World Islands)

www.uaedolphinproject.org
tweet @UAEdolphinproje
tinyurl.com/UDPin
tinyurl.com/UAEdolphinproject

THE DIVE CENTRE'S BIG NEWS

THE dive centre is very pleased to announce, that as of the 1st December, we will be managing the Sandy Beach dive centre.

We are very excited to be working with the owners of Sandy Beach Hotel & Resort. They have some amazing plans for the near future. Sandy Beach Hotel & Resort is an iconic hotel and has great memories for me personally, from the days when I lived on the East Coast in the late 90's. I remember the days when that stretch of beach only had the Sandy Beach Hotel & Resort on it. The Hotel has been in the same family for over 30 years.

Opening up on the East Coast brings great diversity to THE dive centre. Students are now able to choose whether they want to do their dives on the West or East coasts. Divers can enjoy diving with THE dive centre on the wrecks of the Arabian Gulf and the reefs of the Indian Ocean.

Sandy Beach Hotel & Resort and THE dive centre will be working very closely together to make the dive centre an amazing place to enjoy a weekend of diving with night dives, BBQ's, social events, Dive Against Debris and a whole host of other great activities. I hope to see you diving with us very soon!

REEF CHECK CALIFORNIA PARTNERS WITH COBI FOR BAJA TRAININGS

BY **ANNA NEUMANN, REEF CHECK CALIFORNIA NORTH COAST MANAGER**

Photos by Reef Check California

In July, Reef Check's California Program Director Jan Freiwald and North Coast Manager Anna Neumann, along with PISCO (Partnership for Interdisciplinary Studies of Coastal Oceans) diver Corianna Flemming, headed down to Baja California, Mexico for two Reef Check trainings.

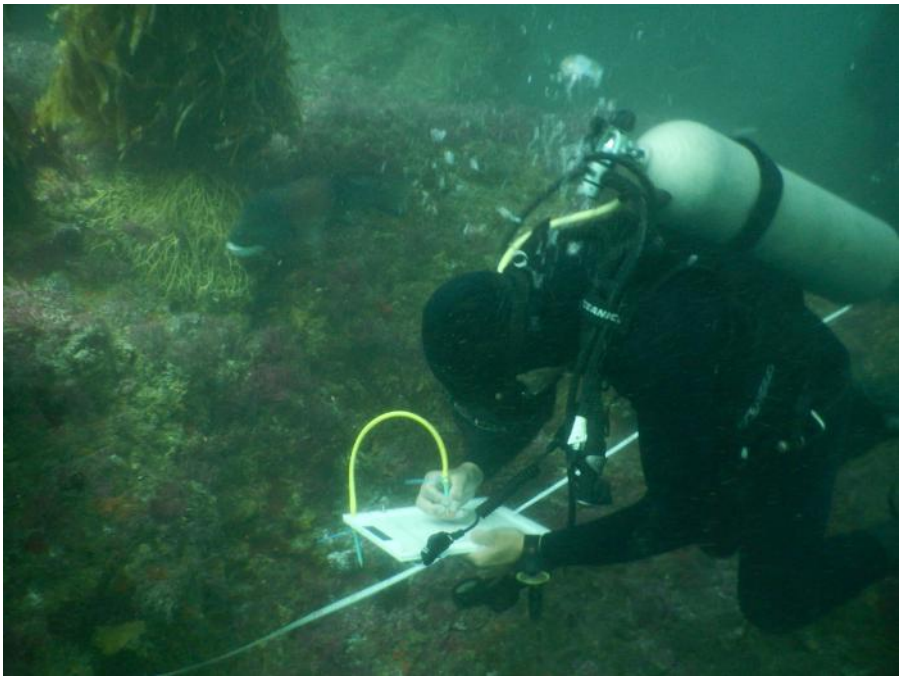
Reef Check and the non-profit group Comunidad y Biodiversidad (COBI) based in Mexico teamed up again this year to train groups of divers in Baja California to monitor local reefs. COBI and Reef Check have been working together since 2007 in three locations in Baja California - Magdalena Bay, Isla Natividad and El Rosario. COBI was established in 1999 and has programs throughout Mexico; they work to promote marine conservation through community participation.

The group met up with COBI personnel Rodrigo Beas in Vizcaino, Mexico and started the journey to Natividad, where the first training would be held. "Only two types of people go to Natividad," Rodrigo laughs while speeding down dirt roads, "stubborn scientists and people with private planes." He's referring to the group of professional surfers who frequent the island's surf spots.

As they traveled, Rodrigo filled the group in on what COBI has been doing with the local fishing cooperatives. Many fisheries along the Baja California coast are organized into fishing cooperatives and COBI works hand in hand with three cooperatives in El Rosario, Isla Natividad and in Magdalena Bay.

The cooperatives organize small groups of local fishermen and have exclusive fishing rights for several commercially important species of invertebrates. Because these exclusive fishing concessions are an area-based approach to resource management and a relatively small group of individuals is exploiting a common resource, they are an ideal place for involving stakeholders in resource monitoring and management. The cooperatives, with the help of COBI, have developed voluntary no-take zones focused on the recovery of a species of interest. This participatory management approach has extended into participatory science that will assist in future management decisions. Reef Check trains fishermen and local community members in scientific survey methods to monitor the status of exploited species and the local reef ecosystem as a whole. Community members, in conjunction with research scientists, then collect data that are used to not only inform future management, but also to help understand ecosystem responses to impacts other than fishing. Directly involving the fishermen in monitoring and research is contributing to a general understanding of the resilience of these coastal ecosystems and supporting local environmental stewardships.

The first training went off without a hitch and by the end of the week the divers were all certified and checked off on all four survey types, happily eating tacos around the barbeque recounting survey stories. The second training took place in El Rosario and despite enthusiasm and great ocean conditions, the group was waylaid by everything from oil contamination in the air compressor and tanks to sinking panga boats. They pulled out all the stops and after a week of hard work, the trainings were back in full swing; they completed the training just in time to start ten days of monitoring. "The men here are so dedicated," comments Anna Neumann. "They continue to show up day after day to help us clean tanks, fix the air compressor and will do whatever needs to be done. It is amazing to see the community that the cooperative creates, all the men pulling together and laughing along while they work. Even in the water they are helping each other. You can tell they take pride in being a part of this program and it is amazing to see and to be a part of. It gives me hope for the future of their reefs and fisheries."



Photos by Reef Check Malaysia and Keith Kei

CORAL ID IN THE HEART OF THE "CORAL TRIANGLE"

BY **GIANFRANCO ROSSI, REEF CHECK ITALIA ONLUS**

Coral reefs are among the most biodiverse ecosystems on the planet. You just need a diving mask to understand the value of this statement. Unfortunately, only few people realize that corals are not just one of the components of this extraordinary variety of life forms and colors, but are themselves the true essence of the reef. In their absence, most of the organisms associated with them would disappear, resulting in a loss of invaluable proportion because millions of people would lose all the benefits related to the presence of the reef. Food and sustenance would be lacking for the many people who rely on the reef for their survival. Also, the multi-million dollars of income, which every year large numbers of tourists pour into the local coffers, would cease. The protection of the coast, in the face of natural phenomena like tsunamis or storms, would also fail. Unfortunately, it is only through knowledge that the awareness of the value and absolute need to protect and conserve this natural heritage can be derived.

For this purpose, Reef Check Italia onlus and the research outpost "Coral Eye" in Bangka, North Sulawesi, Indonesia have organized a field course on hard coral identification. Last year, ten Italian marine biologists participated in this first course specifically designed to train young specialists to promote, with the right skills, the value of coral reefs.

To perform this task a most appropriate location has been chosen, the island of Bangka located in the heart of the "Coral Triangle", the area with the largest number of species of coral reef builders. The equipped laboratory of the Coral Eye Center allows studying the samples of corals in a form not otherwise observable.

At the end of the course, participants are ready for field identification of corals. The identification is done directly in the field in a true natural laboratory, where finally everybody can discover the extraordinary diversity that characterizes coral reef builders.

REEF CHECK WELL REPRESENTED AT ASIA-PACIFIC CORAL REEF SYMPOSIUM

BY **REEF CHECK MALAYSIA**

They may seem invisible and lifeless, but coral reefs are the most important marine ecosystem in Asia-Pacific. They provide shelter to millions of marine lives, and support the livelihoods of more than 500 million people in the region. Despite their importance, coral reefs face multiple threats – overfishing, pollution, habitat destruction – all made worse with climate change and rapid economic development.

The annual Asia-Pacific Coral Reef Symposium (APCRS) was therefore created to address these issues and help them continue their ecological functioning now and in the future. It acts as a forum for scientists, educators, managers, environmentalists, policy makers and relevant stakeholders from key organizations in Asia-Pacific to share their knowledge and experiences on all aspects of coral reef biology, ecology, management and conservation.

At this year's APCRS, held June 23-27 in Pingtung, Taiwan, Reef Check Malaysia was selected to present a paper on the "Status of Reefs in Selected Southeast Asia Countries." In 2012, the status of Southeast Asia's coral reefs was determined using Reef Check survey methods on 295 sites from six different countries: 50 in Brunei, 22 in Philippines, 40 in Taiwan, 24 in Thailand, 18 in Indonesia and 141 in Malaysia. In summary, the data shows that the reefs in Southeast Asia are "in fair condition with 43.20% of live coral (hard coral + soft coral) cover. However the abundance of highly prized food fish (Barramundi Cod, Humphead Wrasse and Bumphead Parrotfish) and several other fish targeted for food were low. Invertebrates targeted for curio trade and food trade were also present in small numbers or completely absent at many survey sites. Overfishing seems to be the main impact to coral reefs in this region."

Following the symposium, Reef Check Hong Kong coordinator Keith Kei trained up members of the Taiwan Environmental Information Association (TEIA) as EcoDivers with the goal of re-energizing the Reef Check Taiwan program.

WHAT A TEAM: REEF CHECK FOUNDATION & THE RITZ-CARLTON, LAGUNA NIGUEL

BY **MICHELE INIGO, VOLUNTEER DIVER FOR REEF CHECK AND AQUARIUM OF THE PACIFIC**

What a day! On August 10, 2014, Reef Check Staff and Volunteers teamed up with The Ritz-Carlton, Laguna Niguel in Dana Point, California to give children and adults a close encounter with marine life in Salt Creek. The day started out with captivating slide shows by two Marine Biologists, Leslie Hart from the Eco-Adventure Center at the Ritz Carlton and Colleen Wisniewski from Reef Check. These presentations introduced guests to creatures that they were about to encounter. They were then guided along the beach where still photos from the slide show came alive! Participants explored tidepools and interacted with Reef Check Staff and Volunteers.

As a partner in Reef Check's "Adopt-a-Reef" program, The Ritz-Carlton sponsors annual health checks of the reef ecosystem by volunteer citizen scientists trained by Reef Check. Of course two of our very own Reef Check Volunteer Divers with full on survey gear made a special appearance! Perfect timing as the children were pretending to go through two "transect lines" on the sand where they noted on their very own colorful data sheets the indicator species they encountered. Like celebrities, the Volunteer Divers were surrounded by a crowd who wondered about all the instruments hanging all over their wetsuits! The crowd quickly learned how funny looking calipers were used to measure abalone and how the data collected helps to monitor the health of the surrounding reefs. It reminded me of my childhood – before electronic games and gadgets were made – when "the great outdoors" was my learning environment. It instilled in me a sense of wonder and respect, two ingredients of great stewardship.

Special thanks to Lyn Evins, Leslie Hart and The Ritz-Carlton, Laguna Niguel for their help and support of this event.

FEATURE CREATURE

OCEANIC WHITETIP SHARK (*CARCHARHINUS LONGIMANUS*)

FEATURE **IUCN RED LIST 2014.2** PHOTOGRAPHY **LEVENTE ROZSAHEGYI**

RED LIST CATEGORY & CRITERIA: VULNERABLE

Scientific Name: *Carcharhinus longimanus*

Common Name(s):

English: Oceanic Whitetip Shark, Whitetip Shark, White-tipped Shark, Whitetip Oceanic Shark

French: Requin Océanique

Spanish: Tiburón Oceanico

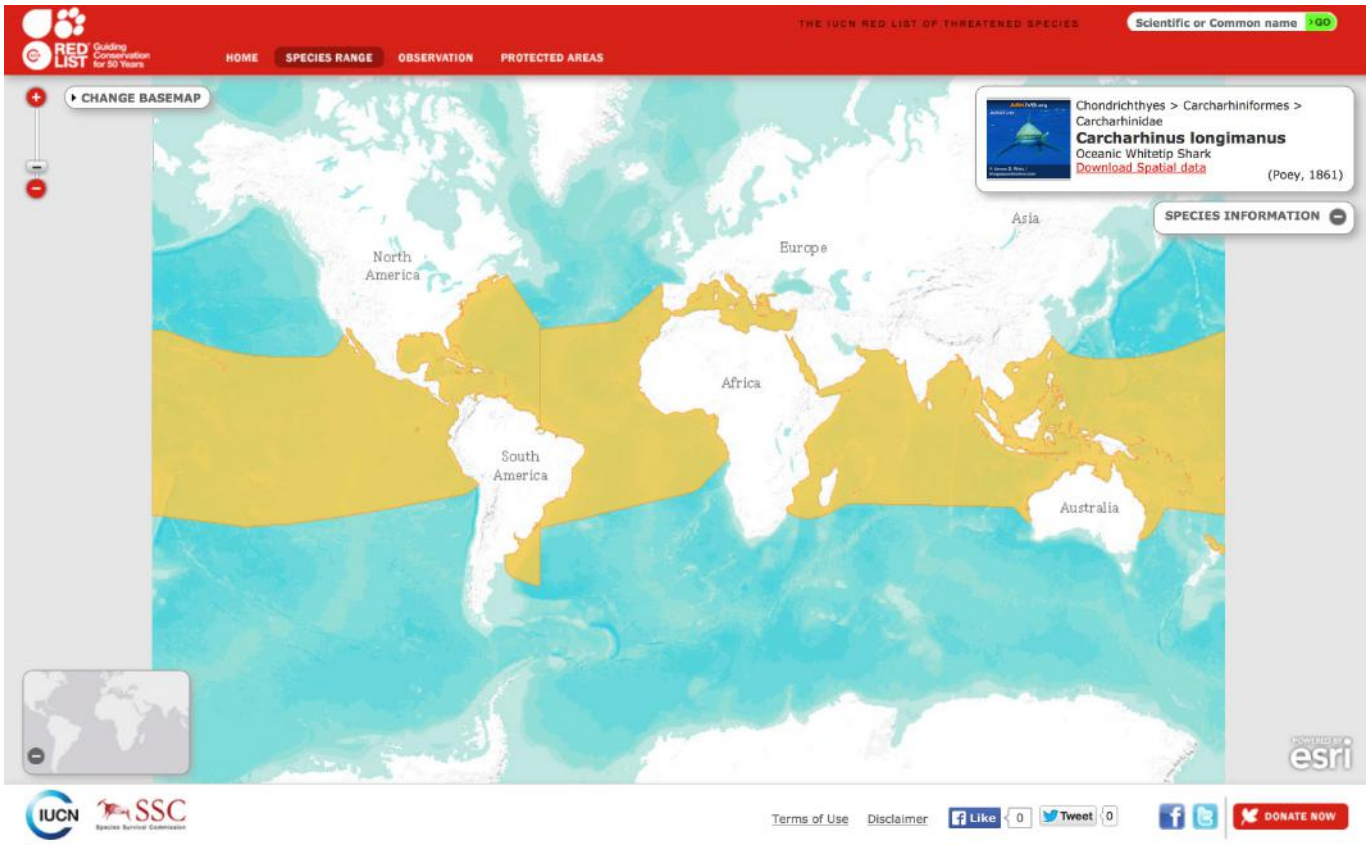
Justification: Global: This formerly widespread and abundant large oceanic shark is subject to fishing pressure virtually throughout its range. It is caught in large numbers as a bycatch in pelagic fisheries, with pelagic longlines, probably pelagic gillnets, handlines and occasionally pelagic and even bottom trawls. Catches, particularly in international waters, are inadequately monitored. Its large fins are highly prized in international trade although the carcass is often discarded. Fishery pressure is likely to persist if not increase in the future. Outside of the areas detailed below, this species is under similar fishing pressure from multiple pelagic fisheries, there is no data to suggest that declines would and have not also occurred in these areas, given there are similar fisheries throughout the range. As such, a precautionary global assessment of Vulnerable is considered appropriate for the oceanic whitetip. Efforts are underway to improve the collection of data from some regions and effective conservation and management of this species will require international agreements.

Northwest Atlantic and Western Central Atlantic: The oceanic whitetip shark is assessed as Critically Endangered in the Northwest and Western Central Atlantic because of the enormous declines that have been reported. Two estimates of trends in abundance from standardized catch rate indices were made from independent datasets.

An analysis of the US pelagic longline logbook data between 1992 and 2000, which covers the Northwest and Western Central Atlantic regions, estimated declines of 70%. An analysis of the Gulf of Mexico, which used data from US pelagic longline surveys in the mid-1950s and US pelagic longline observer data in the late-1990s, estimated a decline of 99.3% over this forty year time period or 98% over three generations (30 years). However, changes in fishing gear and practices over this time period were not fully taken into account in the latter analysis and there is currently debate as to whether or not these changes may have resulted in an under, or overestimation of the magnitude of these declines.

Range Description: This is one of the most widespread of shark species, ranging across entire oceans in tropical and subtropical waters, usually found far offshore between about 30°N and 35°S in all oceans.

Countries: Native: American Samoa (American Samoa); Angola (Angola); Anguilla; Antigua and Barbuda; Argentina; Aruba; Australia (New South Wales, Northern Territory, Queensland, South Australia, Western Australia); Bahamas; Bangladesh; Barbados; Belize; Benin; Bermuda; Bonaire, Sint Eustatius and Saba (Saba, Sint Eustatius); Bouvet Island; Brazil; British Indian Ocean Territory (Chagos Archipelago); Brunei Darussalam; Cambodia; Cameroon; Cape Verde; Cayman Islands; Chile; China; Christmas Island; Cocos (Keeling) Islands; Colombia; Comoros; Congo, The Democratic Republic of the; Cook Islands; Costa Rica; Côte d'Ivoire; Cuba; Curaçao; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Eritrea; Falkland Islands (Malvinas); Faroe Islands; Fiji; France; French Guiana; French Polynesia; French Southern Territories; Gabon; Gambia; Ghana; Grenada; Guadeloupe; Guam; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Heard Island and McDonald Islands; Honduras; Hong Kong; India; Indonesia; Israel; Jamaica; Japan; Jordan;



Kazakhstan; Kenya; Liberia; Macao; Madagascar; Malaysia; Maldives; Marshall Islands; Martinique; Mauritania; Mauritius; Mexico (Baja California, Baja California Sur, Campeche, Chiapas, Colima, Guerrero, Jalisco, Michoacán, Nayarit, Oaxaca, Quintana Roo, Sinaloa, Sonora, Tabasco, Tamaulipas, Veracruz, Yucatán); Montserrat; Morocco; Myanmar; Nauru; Netherlands Antilles (Bonaire); New Caledonia; Nicaragua; Niger; Niue; Northern Mariana Islands; Oman; Pakistan; Palau; Panama; Papua New Guinea; Peru; Philippines; Pitcairn; Portugal (Azores, Madeira); Puerto Rico; Réunion; Saint Helena, Ascension and Tristan da Cunha; Saint Kitts and Nevis; Saint Lucia; Saint Martin (French part); Saint Vincent and the Grenadines; Samoa; Sao Tomé and Principe; Saudi Arabia; Senegal; Seychelles; Sierra Leone; Singapore; Sint Maarten (Dutch part); Slovenia; Solomon Islands; Somalia; South Africa (KwaZulu-Natal, Northern Cape Province, Western Cape); Spain (Canary Is.); Sri Lanka; Sudan; Suriname; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Togo; Tokelau; Tonga; Trinidad and Tobago; Turks and Caicos Islands; Tuvalu; United States (Alabama, California, Connecticut, Delaware, District of Columbia, Florida, Georgia, Hawaiian Is., Louisiana, Maine, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, New York, North Carolina, Rhode Island, South Carolina, Texas, Virginia); United States Minor Outlying Islands (Johnston I., Wake Is.); Uruguay; Vanuatu; Venezuela, Bolivarian Republic of; Viet Nam; Virgin Islands, British

FAO Marine Fishing Areas: Native: Atlantic – western central; Atlantic – northeast; Atlantic – eastern central; Atlantic – southwest; Atlantic – southeast; Atlantic – northwest; Indian Ocean – eastern; Indian Ocean – western; Pacific – western central; Pacific – southeast; Pacific – northeast; Pacific – northwest; Pacific – eastern central; Pacific – southwest

Population: This species, together with the silky shark *Carcharhinus falciformis* and blue shark *Prionace glauca*, has often been described as one of the three most abundant species of oceanic sharks and large marine animals (Compagno 1984, Taniuchi 1990, Bonfil 1994, Castro et al. 1999). Recent observations, however, indicate that this species that was formerly "nearly ubiquitous in water deeper than 180m and above 20°C" (Castro et al. 1999) is now only occasionally recorded (e.g., Baum and Myers 2004, Domingo 2004).

The population dynamics and structure of this species are unknown. Distribution appears to depend on size and sex and the nursery areas appear to be oceanic (Seki et al. 1998). Larger individuals are caught deeper than smaller ones and there is geographic and sexual segregation (Anderson and Ahmed 1993). Longline catches in the Central Pacific show that this species definitely increases in abundance as a function of increasing distance from land and unlike the silky shark *Carcharhinus falcifomis,* it does not congregate around land masses (Compagno in prep.).

In the Northwest and Western Central Atlantic enormous declines are estimated to have occurred. Two estimates of trends in abundance from standardized catch rate indices have been made from independent datasets. An analysis of the US pelagic longline logbook data between 1992 and 2000, which covers the Northwest and Western Central Atlantic regions, estimated declines of 70% (Baum et al. 2003). An analysis of the Gulf of Mexico, which used data from US pelagic longline surveys in the mid-1950s and US pelagic longline observer data in the late-1990s, estimated a decline of 99.3% over this forty year time period (Baum and Myers 2004). When trends in abundance from the former analysis are extrapolated back to the mid-1950s, they match the latter analysis almost exactly (99.8%). Over a period of three generations (30 years), the estimated decline is 98%. However, the latter study has recently been criticized because temporal changes in fishing gear and practices over the time period were not taken fully into account and the study may, therefore, have exaggerated or underestimated the magnitude of the declines (Burgess et al. 2005, Baum et al. 2005).

Population Trend: Decreasing

Habitat and Ecology: This is one of the most widespread sharks, ranging across entire oceans in tropical and subtropical waters. The oceanic whitetip is an oceanic-epipelagic shark, usually found far offshore in the open sea in waters 200m deep, between about 30°N and 35°S in all oceans; it is normally found in surface waters, although it has been recorded to 152m. It has occasionally been recorded inshore, but is more typically found offshore or around oceanic islands and areas with narrow continental shelves (Fourmanoir 1961, Compagno in prep, Last and Stevens 1994). Temperatures of waters in which it regularly occurs are 18 to 28°C, with water above

20°C preferred. Although one whitetip was caught in water of 15°C it tends to withdraw from waters that are cooling below this, as in the Gulf of Mexico in winter (Compagno in prep.).

This is a slow-moving but quite active shark, apparently equally active at daytime or night (Compagno in prep., Ebert 2003).

Development is viviparous and embryos have a yolk sac placenta that attaches to the uterine wall of the mother (Bigelow and Schroeder 1948). Born at about 60 to 65cm TL after a gestation period of about 10 to 12 months (Compagno in prep.), males mature at about 170 to 96cm and females at 170 to 190cm TL (Seki et al. 1998). Oceanic whitetip sharks grow to a large size, with some individual reaching almost 4m. However, most known specimens are et al. 1973, Stevens 1984, Seki et al. 1998), although 15 foetuses were recorded from a female of 245cm TL from the Red Sea (Gohar and Mazure 1964) and larger females appear to carry more young, although there may be regional variation (Bass et al. 1973). Birth is thought to occur in early summer in the northwest Atlantic and south west Indian Oceans (Bass et al. 1973) and January to March off New South Wales (Stevens 1984), whereas Seki et al. (1998) found that parturition was February to July in the North Pacific. Pregnant females of this species are less frequently found in the Indian Ocean than other sharks of this genus (Gubanov 1978). In the Central Pacific, females with small embryos have been found throughout the year, suggesting a less tight seasonality of birth (and presumably mating) than the Western Atlantic (Compagno in prep). Also, non-breeding adult females have been found to outnumber gravid females in the equatorial Central Pacific (Compagno in prep). The location of nurseries has not been reported, but very young oceanic whitetip sharks have been found well offshore along the southeastern US, suggesting offshore nurseries over the continental shelves (Compagno in prep).

Seki et al. (1998) studied the age, growth and reproduction of the oceanic whitetip in the north Pacific. They found similar growth rates in both males and females with a Von Bertalanffy equation of: Lt = 299.58 * {1 - e-0.103 x (t + 2.698)} where Lt is expressed as precaudal length in cm at age t. They used Bass et al.'s (1973) transformation of TL = 1.397 x PL for conversions to total length. Using vertebral analysis they showed that annular formation occurred in spring. Both male and female oceanic whitetips matured at 4 to 5 years of age. Smith et al. (1998) investigated the intrinsic rebound potential of Pacific sharks and found that oceanic whitetips to be among a moderate rebound potential, because of their relatively fast growth and early maturation.

This pelagic species feeds mainly on bony fish (including tuna, barracuda, white marlin, dolphinfish, lancetfish, oarfish, threadfish, swordfish) and cephalopods and to a lesser extent, seabirds, marine mammals, stingrays, and flotsam, including garbage.

Systems: Marine

Major Threat(s): Oceanic whitetip sharks have been caught in large numbers virtually everywhere they occur, particularly in pelagic longline and drift net fisheries. This species was initially described as the most common pelagic shark beyond the continental shelf in the Gulf of Mexico (Wathne 1959, Bullis 1961) and throughout the warm-temperate and tropical waters of the Atlantic and Pacific

(Mather and Day 1954, Strasburg 1957). In the Gulf of Mexico, for example, between 2 and 25 of these sharks were usually observed following the vessel during longline retrieval on the exploratory surveys in the 1950s and their abundance was considered as a serious problem because of the high proportion of tunas they damaged (Bullis and Captiva 1955, Backus et al. 1956, Wathne 1959). Recent shark papers on the Gulf of Mexico have either not mentioned this species or have dismissed it as rare, not recognising its former prevalence in the area (Baum and Myers 2004).

Few data are available on the catch rate of these sharks and this is a serious hindrance to assessing the status of this species in regions other than the Northwest Atlantic and Eastern Central Pacific. Strasburg (1958) reported that the oceanic whitetip shark constituted 28% of the total shark catch in exploratory tuna longline fishing south of 100°N latitude in the central Pacific Ocean. According to Berkeley and Campos (1988), oceanic whitetip sharks constituted 2.1% of the shark bycatch in the swordfish fishery along the east coast of Florida in 1981 to 1983. Taniuchi (1990) analysed Japanese fishery statistics and noted that this species was most commonly taken by fishery boats in the Pacific, where they made up 20 to 30% of the number of sharks taken by tuna longliners, compared to about 3 to 4% in the Indian Ocean, because the boats are fishing for southern bluefin tuna in cooler waters. Guitart Manday (1975) demonstrated a marked decline in the oceanic whitetip shark landings in Cuba from 1971 to 1973. In the Maldives, Anderson and Ahmed (1993) reported that oceanic whitetip sharks were taken commercially by pelagic shark longliners and incidentally by tuna fishermen and that in a previous exploratory fishing survey oceanic whitetip sharks constituted 23% of all sharks caught.

Domingo (2004) reported that the Uruguayan longline fleet observer programme in 1998 to 2003 recorded catch rates of only 0.006 sharks/1,000 hooks in Uruguayan and adjacent high seas South Atlantic waters (latitude 26° to 37°, 16 to 23°C) and 0.09 sharks/1,000 hooks in international waters off the Atlantic coast of Africa. He notes that similarly infrequent records are obtained by Brazilian and Ecuadorian Atlantic longline fleets.

Conservation Actions: Conservation and management action are urgently required for this species; the only known conservation measure at present is a broad, multi-species pelagic shark quota for U.S. Atlantic waters. Specifically, fishing pressure on this species must be considerably decreased through reduction in fishing effort, catch limits, measures to enhance chances of survival after capture and possibly also through the implementation of large-scale oceanic non-fishing areas. Effective conservation of this species will require international cooperation. The oceanic whitetip is listed as a highly migratory species under the 1995 UN Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UNFSA). The Agreement specifically requires coastal States and fishing States to cooperate and adopt measures to ensure the conservation of these listed species. To date, there is little progress in this regard. See United Nations Convention on the Law of the Sea for further details. Also of relevance is the FAO International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) which specifically recommends that Regional Fisheries Organisations (RFO) carry out regular shark population assessments and that member States cooperate on joint and regional shark management plans. This is of particular importance for pelagic sharks such as *C. longimanus* whose stocks are exploited by more than one State on the high seas. Although steps are being taken by some RFOs to collect species-specific data on pelagic sharks, and to ban the practise of shark finning, to date no RFO has limited shark catches or drafted a 'Shark Plan' as suggested in the IPOA-Shark guidelines (R. Cavanagh, pers. comm).

Citation: Baum, J., Medina, E., Musick, J.A. & Smale, M. 2006. *Carcharhinus longimanus*. The IUCN Red List of Threatened Species. Version 2014.2. **www.iucnredlist.org**.

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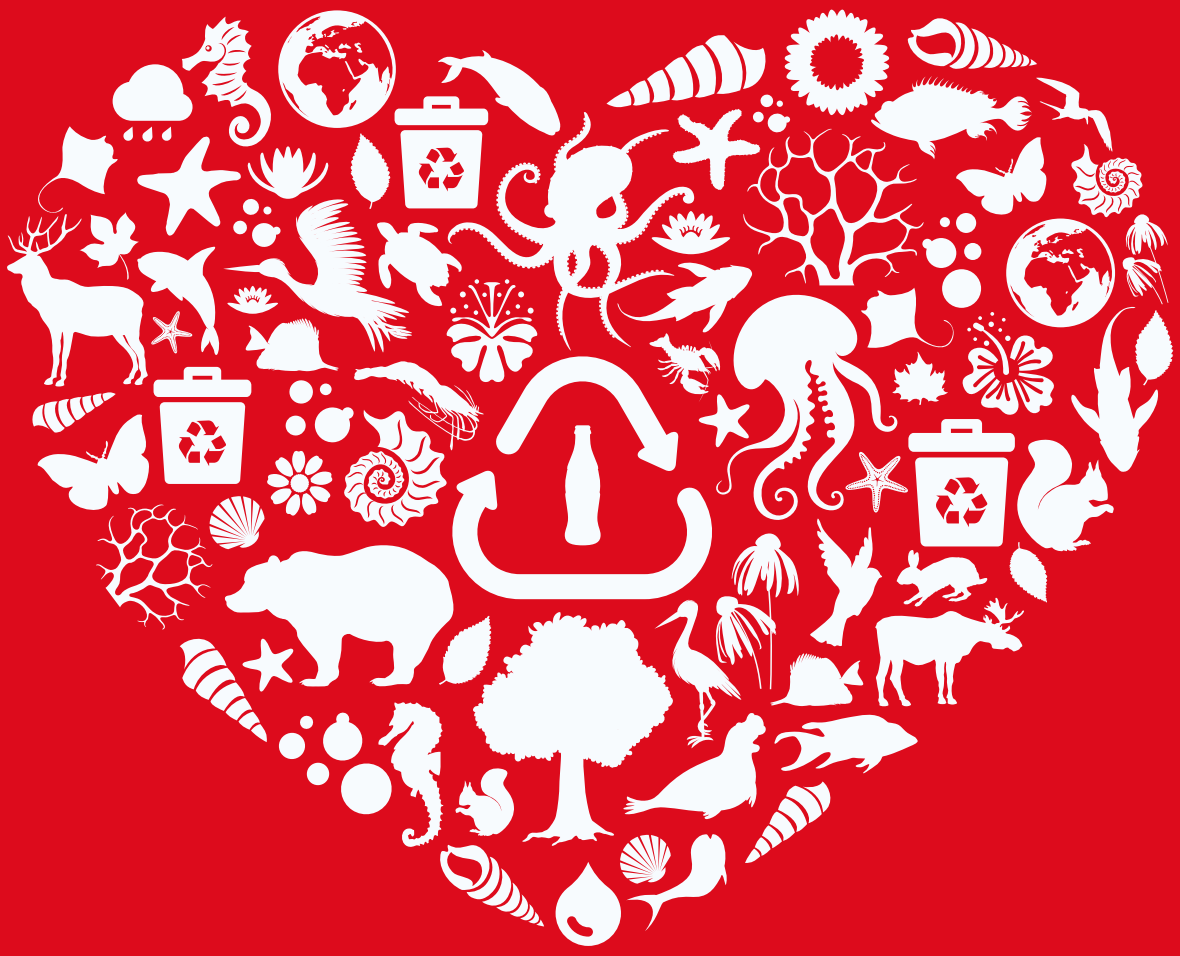

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(REGIONAL BEACH AND DIVE SITE CLEAN UP CAMPAIGN)

PHOTOGRAPHY **ALLY LANDES** UNDERWATER PHOTOGRAPHY **JURAJ ROKA** AND **GISELA VARGAS**

"With Clean Up Arabia, we are asking residents across the region to take action and keep beaches and dive sites clear of marine debris for the sake of our future generations. Involving volunteers from the local community allows them to make a positive environmental impact in their marine environment and to preserve the region's diverse marine life," said Mr. Essa Al Ghurair, Vice Chairman – Emirates Diving Association.

PLATINUM SPONSOR:

MAJID AL FUTTAIM

GOLD SPONSORS:

DUBAI DUTY FREE

Emirates NBD

Jafza
Jebel Ali Free Zone

SILVER SPONSOR:

CHALHOUB GROUP

Under the Patronage of His Highness Sheikh Hazza bin Hamdan bin Zayed Al Nahyan, the Emirates Diving Association (EDA), supported by the Environment Agency – Abu Dhabi (EAD), The Centre of Waste Management – Abu Dhabi, The Critical Infrastructure and Coastal Protection Authority – Abu Dhabi, Al Mahara Diving Centre and Dibba Municipality and sponsored by Coca Cola, Majid Al Futtaim, Le Merdien Al Aqah Beach Resort, JAFZA, Emirates NBD Bank, Dubai Duty Free, Chalhoub Group and HSBC organized the 19th Annual 'Clean Up Arabia' during the first week of November 2014. The initiative took place across the UAE and Oman.

This campaign is adhered to clear beaches and key dive sites from harmful marine debris, as well as raise public awareness about the negative impacts of marine debris on one's health and that of our wildlife.

The clean up was held on October 31st in Abu Dhabi and November 7th in Dibba, on the East Coast. 400+ community volunteers and divers participated in collecting the marine debris by the coast and in the water. Last year's campaign attracted over a hundred volunteer participants.

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"The annual Clean up Arabia is an ideal opportunity to spread awareness concerning our marine environment, we also want to highlight the UAE's efforts to conserve the marine environment" Mr. Al Ghurair added. "It provides people with a sense of purpose and achievement that they can make a difference. Other countries such as Oman will also be joining us in collaboration with our partners there" he added.












SPORTS AND WELL-BEING
TEAM
DUBAI
DUTY FREE


Following boat and underwater photos by Juraj Roka


AL BOOM DIVING

Coca-Cola
SUZUKI



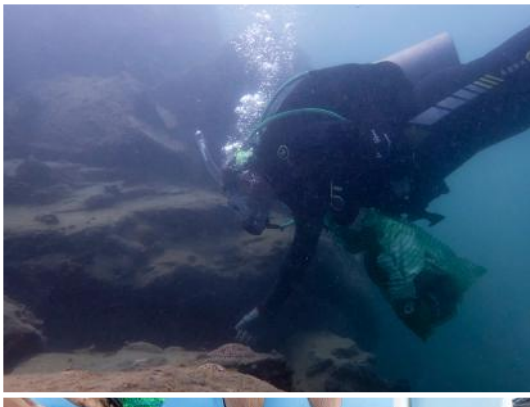
SPORTS AND WELL-BEING
TEAM












CLEAN UP ARABIA 2014 SPONSORS AND PARTNERS

EVENT ORGANISERS: EDA
MAIN SPONSOR: Coca-Cola
PLATINUM SPONSOR: MAJID AL FUTTAIM
GOLD SPONSORS: Dubai Duty Free, Emirates NBD, Jafza
SILVER SPONSOR: CHALHOUB GROUP
SUPPORTING PARTNERS: Le MERIDIEN AL AQAH BEACH RESORT FUJAIRAH
PARTNERS: UNEP, Clean Up the World, Ocean Conservancy

ITEMS COLLECTED	UNDERWATER	BEACH	BOTH
Bags (paper)	0	373	373
Bags (plastic)	43	155	198
Balloons	0	26	26
Beverage Bottles (plastic)	26	265	291
Beverage Bottles (glass)	18	352	370
Beverage Cans	64	253	317
Caps, Lids	0	567	567
Clothing, Shoes	4	45	49
Cups, Plates, Forks, Knives, Spoons	165	387	552
Food Wrappers/Containers	16	183	199
Pull Tabs	1	52	53
6-Pack Holders	0	33	33
Shotgun Shells/ Wadding	0	30	30
Straws, Stirrers	2	118	120
Toys	1	37	38
Bait Container/Packaging	8	3	11
Bleach/Cleaner Bottles	1	10	11
Buoys/Floats	1	0	1
Crab/Lobster/Fish Traps	5	8	13
Crates	0	4	4
Fishing line	16	9	25
Fishing Lures/Light Sticks	0	8	8
Fishing Nets	2	23	25
Light Bulbs/Tubes	2	12	14
Oil/Lube Bottles	0	15	15
Pallets	0	15	15
Plastic Sheeting/Traps	2	42	44
Rope	18	282	300
Strapping Bands	0	31	31
Cigarettes/Cigarette Filters	0	792	792
Cigarette Lighters	0	71	71
Cigar Tips	0	151	151
Tobacco Packaging/Wrappers	0	71	71
Appliances (refrigerators, washers, etc.)	0	2	2
Batteries	3	5	8
Building Materials	6	204	210
Cars/Car Parts	0	2	2
55-Gal. Drums	1	2	3
Tires	2	6	8
Condoms	0	6	6
Diapers	0	8	8
Syringes	0	1	1
Tampons/Tampon Applicators	0	5	5
Others	8	65	73
TOTAL	**415**	**4729**	**5144**

Following underwater photos by Gisela Vargas





VOLLEYBALL RESULTS

At the close of every Clean Up Arabia, after the big BBQ buffet lunch, Le Meridien Al Aqah's staff organize a beach volleyball tournament. EDA's Clean Up Arabia medals and trophies went out to Dubai Duty Free's teams for first and second places and Le Meridien Al Aqah Beach Resort and Spa's team came in third place! Congratulations to this year's winners and a big thank you to the spectators' cheering!







Photo by Mary Joy Castor

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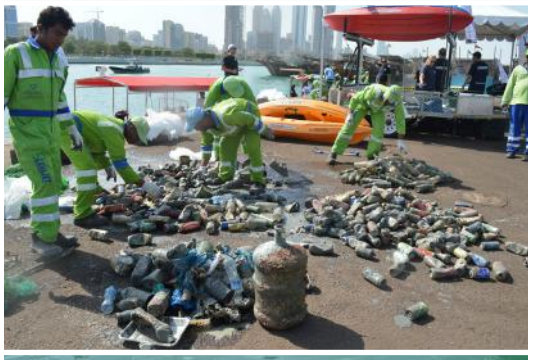
CLEAN UP ARABIA ABU DHABI
AL MAHARA DIVING CENTER

The Abu Dhabi Clean up Arabia was held in Mina Zayed for divers. Over 100 divers participated and collected over 400 bottles, 900 cans and around 100 plastic bags! Well done Abu Dhabi!

ITEMS COLLECTED	UNDERWATER
Bags (plastic)	100
Beverage Bottles (plastic)	283
Beverage Bottles (glass)	293
Beverage Cans	928
Clothing, Shoes	1
Cups, Plates, Forks, Knives, Spoons	10
Food Wrappers/Containers	18
Pull Tabs	1
Straws, Stirrers	17
Toys	1
Buoys/Floats	1
Crab/Lobster/Fish Traps	2
Fishing Line	1
Cigarettes/Cigarette Filters	3
Cigar Tips	12
Batteries	2
TOTAL	**1673**


CLEAN UP
ARABIA
EDA



JAFZA'S ACTIVE RESPONSIBILITY TO THE ENVIRONMENT

Jebel Ali Free Zone (Jafza) was one of the key sponsors of Clean Up Arabia 2014 and a number of Jafza employees took an active part in EDA's Clean Up Arabia – Under the Patronage of His Highness Sheikh Hazza Bin Hamdan Bin Zayed Al Nahyan.

Divers from Jafza were among other organisations that cleaned the beaches and the sea of man-made debris and waste, that is damaging the environment.

"As Emiratis, we understand that our culture and heritage is deeply linked to the sea. The sea has always been a source of livelihood for us and continues to be a key trade route for Dubai and the UAE.

As proud UAE nationals, it is our duty to ensure that we maintain a clean and healthy environment for ourselves and future generations," said Abdulaziz Redha of the Jafza sales team, who is also a member of the Jafza Divers Club.

The annual voluntary campaign that aims to clean up the dive sites and beaches of the UAE and surrounding regions, is one of many social responsibility initiatives that Jafza undertakes throughout the year as part of its commitment to the community to add value and enrich the environment.

Most recent initiatives include a number of health initiatives, Heart, Breast Cancer and Diabetes awareness days observed at the organisation, where Jafza employees and customers were made aware of these health issues and how to overcome them.

"Jafza is very keen on working with the community to preserve the environment. Through our projects and the initiatives that we take part in, our aim is to ensure that practical steps are taken not only for the preservation of the environment, but also to ensure that people remain healthy and fit to enjoy this environment.

Hence we always work on initiatives on our own and align ourselves with other initiatives that further our cause," says Fatma Hussain, the head of CSR in Jafza.

On World no tobacco day, for instance, Jafza teamed up with a local health centre to distribute packs of Nicotine chewing gum to encourage employees and customers to quit smoking. Posters with grave warning and statistics were also displayed throughout the public areas in the Free Zone to create awareness.

Apart from actively participating in World Environment Day, Earth Hour and other environmental initiatives, since 2008, Jafza and its parent company Economic Zones World has implemented numerous green initiatives for their old and new facilities. Examples are expanding sewage treated effluent water networks for irrigation, harvesting AC drainage for irrigation, monitoring and controlling of air conditioning with BMS and Timers, solar LED and LED street lighting in Jafza South, switching off lights after office hours, occupancy lights sensors, changing existing office lights to more energy efficient lighting (fluorescent T5 type and LED lights), sustainable interior LED lighting in offices, optimizing on lighting illuminations in corridors and offices, optimizing electrical loads for warehouses, sustainable designs of warehouses and buildings to Green Regulations and enhancing security controls.

Additionally, The Etihad Energy Service Company (Etihad ESCO) and Economic Zones World (EZW) have entered into an agreement paving the way to identify opportunities for the reduction of water and electricity usage across EZW's commercial, residential and industrial facilities within Jebel Ali Free Zone (Jafza) and other sites in Dubai.

The agreement sets precedent in the Middle East region and allows EZW to enhance and sustain its business standing and efficiency of its investor services and operations as one of the leading free trade zones in the world.

BE AN AMBASSADOR FOR OUR OCEANS AND SEAS
BE AN AMBASSADOR FOR YOUR FUTURE
(A MESSAGE – A PLEA TO ALL OUR YOUNGER GENERATIONS)

FEATURE **PAUL WARWICK** PHOTOGRAPHY **ALLY LANDES**

"Do you as a young person have the personal commitment and courage to be different and not just "one of the crowd", but to step forward and be a voice for your future? I challenge you to be a Young Ambassador for our Oceans and Seas, an Ambassador for not just your future but for the future of the generations yet to come!"

The dedicated scuba diving community, especially those who came up through the PADI system of teaching, will be familiar with Project AWARE which was formed under the "Banner of PADI" to specifically address the plight of conservation in our oceans and to tackle the multitude of ever growing global marine issues. Support for Project AWARE is huge and is not restricted only to the scuba diving community. Through its not inconsiderable efforts, campaigns and programmes over the last 20 years or so, it has educated, informed and impacted upon some of the key marine conservation and protection issues across the globe at national and international level. In doing so, it has gained support both from governments and non-governmental organizations in the battle to save species such as sharks and manta rays and preserve unique and irreplaceable eco systems and habitats. However, despite the best efforts of this "Marine Conservation Community", there are still major issues to be addressed which ultimately will affect each and every one of us and those yet to come.

Realising that life on earth is ultimately connected to our oceans and seas, Project AWARE now addresses the wider conservation issues associated with our "Water Planet" such as marine debris, marine pollution and marine exploitation. After all our oceans and seas cover 73% of the surface area of our world and over 80% of known species resident on this planet are from our oceans and seas – and those are just species we know about, new marine species are being discovered almost every day. Understanding that we and all life on our "Water World" are connected, we have to take a more "holistic and radical view" of how we tackle the issues facing our oceans and seas and not pick them off "one at a time" as we have done in the past. That particular option is long gone and no longer available to us. The situation regarding marine pollution, marine debris, marine destruction and overfishing is taking us out of the category of "SERIOUS", into "CRITICAL" and at all costs, we have to avoid it being "TERMINAL". Otherwise, we and future generations will have no future to look forward to.

Much has been written about the declining state of our Oceans and Seas and the life they support, but this is not a recent phenomena; the BBC produced THE BLUE PLANET many years ago in which Sir David Attenborough brought to the world's attention, not only the fantastic wonders of our oceans and seas, but their plight as well. National Geographic documentaries such as KINGDOM OF THE OCEANS, ONE OCEAN, PACIFIC ABYSS, PLASTIC OCEANS and OCEANS to name but a few, all highlight the link we have to our oceans and seas and the impact that our lifestyles, proclivities and greed, as well as our lack of understanding and knowledge are having – but are we doing anything about it?

Most of us love the water and being close to it as if we have a natural "bond" to the oceans and seas and perhaps this is true. Project AWARE is not just about the Scuba Diving Community picking up the challenge of conservation and survival and you do not have to be a scuba diver to appreciate our oceans and seas. It starts with each and every one of us making unselfish choices and more importantly giving

future generations the option of being able to make that same choice as well.

THE YOUNG GENERATION

The current generation like every other generation before, is entrusted with a huge responsibility – we are the custodians of our children's and their children's future. The legacy of past generations has meant safety from the prospect of war and hunger, prosperity and a better life, education and the promise of a bright future – that was before we really understood what the effects of our avarice, complacency, selfishness and lack of respect and understanding were having upon our natural world. Even knowing what we are doing seems to have little effect on our lifestyles or the decisions we make because we continue to do it fully cognizant of the catastrophic consequences in the short term and the unknowing potential consequences in the long term.

But it is not just this current generation who has to decide what kind of world we want to live in, nor should you, our children inherit the results of our mistakes and lack of commitment and action. You should have a "voice" as well, so that you can influence the decisions and actions of this generation today so that we in turn "hand on" responsibility for a world in which you want to live and be a part. That is why ignorance, selective blindness and apathy and most importantly greed, can no longer be used as excuses for the lack of decisions, commitment and worst of all, inaction.

Sir Isaac Newton, a scholarly British Physicist wrote "for every action there is an opposite and equal reaction". In the case of our environment, for every action there is an impact which is often disproportionately unequal and not necessarily directly opposite or measureable. So, the natural world equation, I believe, goes something like this; Action = Impact = Unforeseen Result = Unforeseen Reaction.

Nature reacts to excess and change in unseen ways and we still have much to learn about how Mother Nature will respond – she may even "bite back" at our excesses. We also have to remember that our oceans and seas may hold the key to your future scientific, medical and agricultural needs in a world whose population is growing ahead of available land based resources.

SO WHAT CAN YOU DO?

So what can you, the young people – our next generation(s), do to help? This world is yours, this future is yours so you need to take it and make it yours with all the enthusiasm, commitment and energy you can muster. This means taking this current generation (your parents and families and friends) to task over your future and how they can ensure they provide a future for you. Part of way in which you can promote awareness and take responsibility for the world we all live in, is through the acceptance of your Social Responsibility; that is your personal contribution to the Local, National and Global Society in which we live, making it one in which you want to live and in which you would want to see your children and future generations live.

On the recent "Clean Up Arabia" Project in Abu Dhabi at the end of October, the UAE's leadership was present in the form of young Sheik Yass Bin Hamdan Al Nahyan who is an enthusiastic and strong supporter of marine conservation, marine management and protecting the organic and inorganic resources of all our oceans and seas and not just in the Gulf Region. His is a "shining example" of how young people can take a leadership role and influence the actions of the current generation and "shape" the future.

Some of the young divers taking part in Clean Up Arabia are so passionate about their contribution, albeit enormous in the face of apathy and general disinterest. Their enthusiasm is infectious, their desire for change honest and respectful and their commitment unquestionable. Amy and Stephanie, two students from NYUAD made the commitment to do something positive for Abu Dhabi and their contribution was to dive for Clean Up Arabia. Both were new divers, but nevertheless they were determined that they wanted to make a difference. Ali and his 13 year old son Mohamed, came all the way from Dubai to take part in Clean Up Arabia in Abu Dhabi, both dived and collected rubbish and both finished the day with huge grins on their faces. Young Mohamed said, "It is little enough effort to take one day out of your time to do something which is so worthwhile. It makes you feel good about yourself and everyone who has taken part. We should do these days more often and get more people involved". Here is another shining example of a young person taking control of their own future.

You too can all play a part, as we all can, and at the same time learn about the wonders and mysteries of our "Water World". Remember, it is all too easy to sit back and think it is all someone else's problem or what can I do, until it affects you directly by which stage it is too late. It doesn't take much, but can make a huge difference:

- Help create and raise awareness about the importance of our oceans and seas of our world and to each and every one of us, ask questions and question the answers until you understand and most importantly they understand!
- Get your friends and families to make a personal commitment either by action, or financially through donations to recognized governmental and non-governmental marine conservation and management organisations.
- Put out the message about marine clean ups around the UAE, including "Clean Up Arabia" which is an annual event which takes place at the end of each year. Take part and encourage others including community groups and schools to take part. Increase awareness and play a positive role by being a "role model" and "shining example".
- Make the marine clean ups a year round effort for everyone and not just the dedicated few. One plastic bottle or bag in a bin, is one less in the oceans and seas contaminating and harming them.
- Take your rubbish with you and encourage others to do the same, do not use the oceans and seas as a dumping ground – how would you like it if people deposited their rubbish in your bedroom or bathroom or home?

- Stop people from dropping plastic and all manner of rubbish in the seas. It is lazy, inconsiderate and shows a complete lack of respect for our oceans and seas. Take them to task and embarrass them into taking their rubbish with them. Be the "shining example" to adults who either do not understand or do not care.
- Make sensible choices about the seafood you and your family purchase, most supermarkets will tell you which species are endangered, which are under threat and which are from sustainable sources. There are many species from the Gulf and Indian Oceans which are under serious threat, some reaching the status of "critically endangered".
- Be conscious and make adults conscious of the responsibility they have when they use our oceans and seas and their responsibilities towards you and your future.

Speak to your parents, families, school friends, teachers and friends. Tell them:

- **Water Sports Enthusiasts:** Whether you are a professional or amateur sailor, surfer, water skier, jet skier or a combination thereof, your recreational pleasures come from the free use of the oceans and seas. Without them, you would not be able to enjoy what our world has to offer. But your recreation has an impact upon our oceans and seas if you do not act responsibly and ensure others do as well. If not controlled and managed, your activities can result in environmental damage, pollution, contamination and the destruction of the unique and irreplaceable ecosystems we have in the Gulf and in particular around Abu Dhabi. Take a responsible approach to using our oceans and seas and follow some basic conservation guidelines.
- **Boat Owners:** Follow some simple rules to avoid being part of the problem – be part of the solution and avoid pollution, contamination and general littering of our oceans and seas and stay away from marine life.
- **Recreational Fishermen:** Whether it is fishing for fun or food, the "fruits" of our oceans and seas are not limitless. For those who fish for food, take only what you need without waste and only take from those species which you know to be sustainable. For sports fishermen, try to put your catch back in good health after the obligatory photos and weights and measures, avoid unnecessary and wasteful killing for pure pleasure. Let someone else have the pleasure of the "catch" now and in the future.
- **Spear Fishermen:** No one wants to stop you enjoying what you do, but only fish for that which you need, do not fish on "protected sites" and do not target the larger of the species which are the "breeding stock" which will allow that species to procreate, survive and thrive so that others may enjoy them in the future. Your sport could see the destruction of entire species forever!

What about your school? Natural history, physical geography, biology, physics and chemistry are all taught in schools and colleges, but how many of your schools actively include the impact of man on all of these? Ask your school to take up the challenge as well and teach you about our "natural water world". You could look at Special Projects as part of your curriculum to ensure that children of all ages are made aware of the issues so that they can make the right choices for their future. Ask about:

- What is happening in and to our Oceans and Seas.
- How important our Oceans and Seas are to us and our survival in the future.
- Conservation.
- Protection.
- Marine Management.
- International Projects and efforts.
- What our future could be like.

More importantly, you should be allowed to see at first hand the impact and effects that we are having on our marine habitats. This can be easily arranged through various organizations who will negotiate visits, deliver presentations and arrange "hands on" interactive sessions so that you can see what is happening.

As a young citizen of the UAE or any other country, take your elected officials and departments to task over policies regarding the use and management of your local seas and oceans and marine environments. The UAE in particular has some unique habitats and eco systems which are found nowhere else in the world – they deserve to be protected in more than just their name. Look at the key conservation issues such as:

- Management and monitoring of the mangroves to avoid abuse and mis-use.
- Safe havens for the gentle and sensitive dugongs, to free them from the risk of injury by inconsiderate boat owners and jet skiers. The UAE has the second largest population of Dugongs outside of Australia, let us keep it that way!
- Marine mammal monitoring and protection for dolphins and porpoises.
- Monitoring and reporting all forms of marine pollution.
- Monitoring and reporting all forms of marine debris.
- Management of the Gulf Region's and the world's marine resources to ensure that those resources are sustainable for future generations.
- General conservation issues to ensure our local oceans and seas remain clean, healthy and safe for the animals which live in them and for our continued and future use.

BE AN AMBASSADOR

So I challenge you, all our younger generations, to be a Young Ambassador for our Oceans and Seas, an Ambassador for your future and those of generations to come. No matter how young you are, or how small your contribution, you can all make a difference and in doing so, increase awareness. No one is asking you to be an activist, nor take up a personal crusade.

Changing lifetime and cultural habits is not easy, but you are fighting for your future as well as the future of our seas and oceans. Your future is not a political, economic or social "tool" to be used by today's generations to justify inaction in the areas of conservation and marine management, but global conservation and management. Today's generations have an obligation to redress the balance, but it requires commitment and a willingness for everyone to play their part no matter how small. So will you take up my challenge and be an Ambassador for your Future?

For more information contact Emirates Diving Association for Clean Up Arabia 2015, get onto the Project AWARE website or "do your own thing" and promote awareness of conservation issues and cleanliness and health of our oceans and seas – "be a future leader and a leader for your future".

"Always Keeping the Fun in Diving"

GIANTS OF THE GALAPAGOS

FEATURE AND PHOTOGRAPHY **SIMON PIERCE**

Whale sharks are enigmatic. When you realise just how gargantuan they actually are, that becomes hard to understand. An average school bus is up to 14m long and 16 tonnes in weight. The largest measured whale shark was 20m long and they reach at least 34 tonnes. They are very, very big.

The Galapagos Islands are a dream destination. For travellers, they are an exotic, remote destination. For scientists, they are the spiritual home of evolutionary biology. For explorers, there are still plenty of discoveries to be made. During my visit last month, I had a more specific goal: travel to Darwin Island, in the far north of the archipelago, to find Earth's largest fish.

DIVING IN THE GALAPAGOS

Before we get to that, let's talk about the area. The diving throughout the Galapagos is world class. Although the archipelago lies close to the equator, the water around the main islands are decidedly not tropical. The Humboldt Current sweeps cool waters north from Peru, creating an upwelling zone as it hits the islands. That brings cold, nutrient-rich water up from the depths… fantastic if you want to see penguins and mola, less fantastic if you were hoping to travel with a 3mm wetsuit.

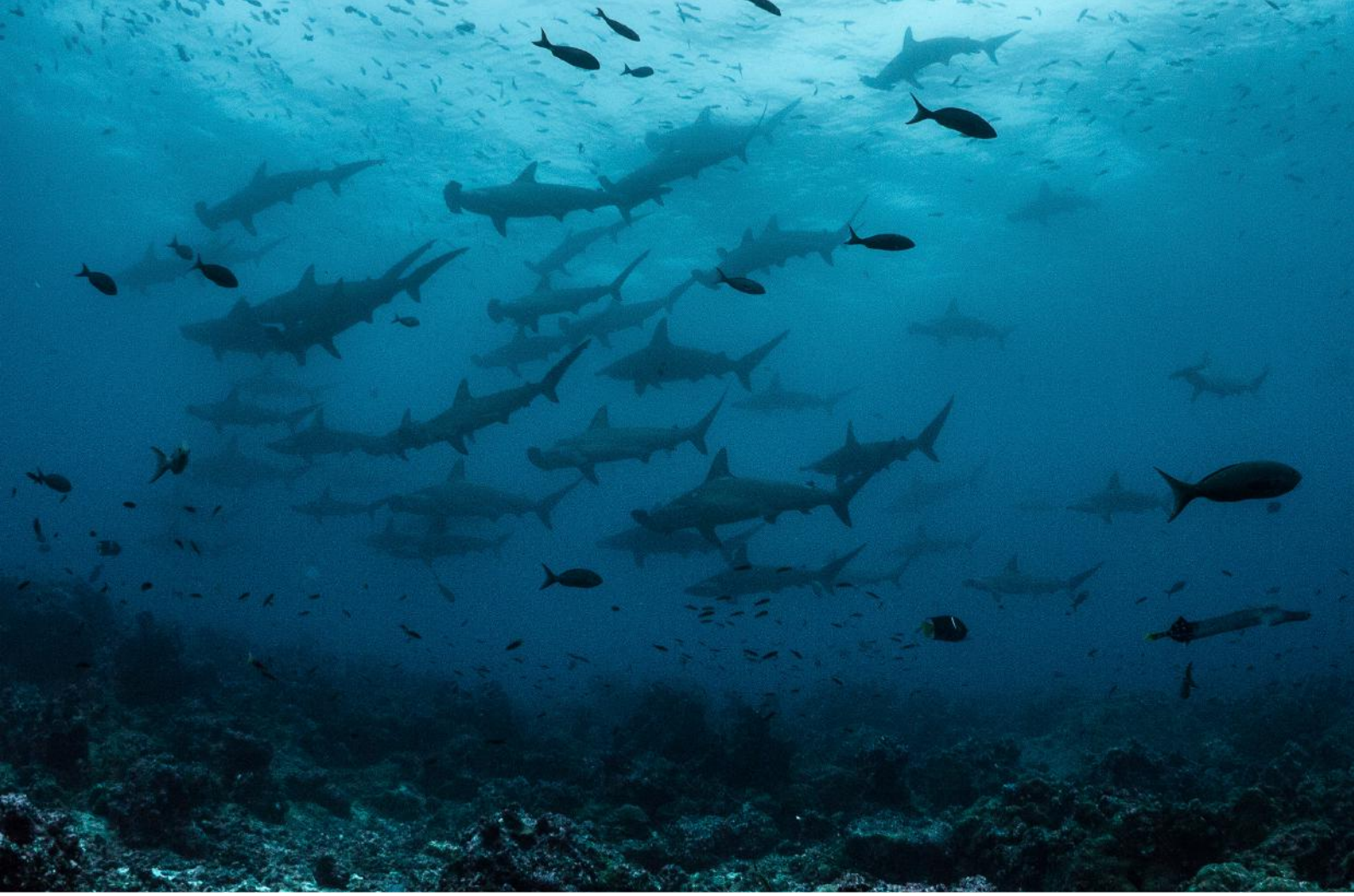
There are some truly unique diving opportunities here. Within a few short days, I dived with 7-8 mola (sunfish) – right next to a bay where at least 1500 sea turtles were resting – along with marine iguanas, sea lions, red-lipped batfish, rays and sharks. We also dived on an active volcanic fumarole. And all this was before we travelled north to Wolf and Darwin islands.

THE WORLD'S BEST DIVE SITES

Wolf Island is famous for sharks. Previously, I'd seen three-quarters of a hammerhead shark (the rest of the group saw it's head – I didn't). In one dive at Wolf, I saw hundreds. There are lots of Galapagos sharks, too. We effectively sped past Wolf, though, en route to our main destination – Darwin Island.

We were able to spend three full days at Darwin, enjoying a total of nine dives. The area is beautiful, but that's nothing compared to what is happening just underneath the surface.

Each dive begins by rolling backwards off a small inflatable boat. Until we hit the water, we don't know how strong the current will be – it can change dramatically through the day – so we immediately fin down to a rocky ledge on the wall. If there is a strong current, we find a spot on the reef, hang on, sit tight



and wait. I like to wedge myself between a couple of rocks and enjoy watching life pass me by – literally.

This is an awe-inspiring place. I saw hundreds of hammerhead sharks, Galapagos sharks, yellowfin tuna, sea turtles, huge schools of fish… on every dive. It's easy to understand why Darwin is routinely rated as the world's best dive site.

As I was on my safety stop on the last dive of the first day, I finally saw it. The largest fish I have ever seen. It was colossus, around 16m long!

INTRODUCING… THE WHALE SHARK

Whale sharks are enigmatic. When you realise just how gargantuan they actually are, that becomes hard to understand. An average school bus is up to 14m long and 16 tonnes in weight. The largest measured whale shark was 20m long and they reach at least 34 tonnes. They are very, very big. Despite that, they were only discovered by science in 1828 and until the 1980s, there had only been 320 documented sightings around the world. Even Jacques Cousteau, for all his ocean exploration, only saw two in his life.

Knowing this, imagine my colleague Jonathan Green's surprise when he saw whale sharks as soon as he started diving at Darwin. That was back in 1988. Jonathan, an earth scientist and guide who had only recently arrived from the UK, quickly realised that almost nothing was known about these ocean giants. He became determined to learn more.

Unfortunately, that wasn't easy. Darwin Arch is slightly over 320km north of the main port in the islands, which itself is over 1000km from the South American mainland. There is no landing available on Darwin, it's expensive to get to and the dive site is often exposed to rough seas and strong currents. Also, the sharks are only seasonally present, from around July to October. Despite these challenges, Jonathan persevered.

In the meantime, scientists – including myself – have learnt a lot more about whale sharks. It turns out they are not secretive, just very focused on their needs. A huge fish needs a

lot of food, and their usual prey – zooplankton – are sparse in tropical waters. To cope with that reality, the sharks aren't evenly dispersed. They purposefully time their movements to coincide with regional explosions in productivity, such as huge plankton blooms or fish spawning events.

We have now found several places where they are found fairly routinely, such as Mafia Island off Tanzania, Qatari oil fields and near Cancun in Mexico. In many of these areas, tourism industries have sprung up to allow people to swim with the sharks. They are completely harmless to people, so hundreds of thousands of people have now seen them in the wild.

THE WHALE SHARK MYSTERY

Of course, there is a catch. All of these areas, across the world, share a common denominator: most of the sharks present are juvenile males. I help to oversee the scientific program for the global whale shark database and looking at the full library – over 5700 sharks from 45 countries – a full 71% are males. Almost all of them are juveniles between four and nine metres in length. Somehow, we're missing a lot of very large, very small and very female sharks. They are the dark matter of the oceans.

To put this in personal perspective, I have studied whale sharks since 2005. I have worked extensively on the species in all three tropical oceans. Before the Galapagos, I had never seen a shark over 10m long, even though they are known to reach twice that size. In many countries, adult females have never even been recorded. They are very, very difficult to find.

This is what I call the great whale shark mystery. Where are all the females? Where are the adults (and babies) of either sex? Following years of concerted research effort and a huge number of divers and photojournalists exploring the furthest reaches of the world, we still can't answer these questions.

If only this was purely a curiosity-driven conundrum. Whale sharks are one of the most threatened of all fish. Based on the current global IUCN Red List assessment, fishing and other human pressures have at least halved their population over the past few decades. In some areas sightings have declined over 80%.

To save the whale shark, we need to find the females, find where they go to breed, identify the main human threats and remove them. Fast.

WHALE SHARKS IN THE GALAPAGOS

To get these answers, we have to return to Jonathan and his sharks. Darwin Arch is even more special than he first realised. Almost all the sharks seen here are females. Indeed, Jonathan has only ever seen two males here. Most of the sharks are adults. And almost all of them… are pregnant.

Female sharks are the most important part of the population, because they produce more sharks! In conservation terms, the very best group to focus on are the large juvenile and young adult females. Most baby sharks probably don't survive to adulthood due to predators or other factors, but these larger juveniles have a high chance of a long life – and their whole reproductive lifespan is ahead of them. Specifically removing threats to these medium-sized females will help the species to recover as quickly as biologically possible.

At this stage we know very little about whale shark reproduction. Only one pregnant whale shark has ever been physically examined by scientists. This singular shark, caught in a fishery off Taiwan in 1995, carried over 300 pups inside her. That's almost twice as many as any other shark species. We don't know if this is normal. Given that this shark was 'only' 10.6m long, it may well be a small litter for whale sharks. We don't know how old they are when they become adults, or how often they reproduce. The Galapagos offers the best – and at this point, only – opportunity to learn more.

Thanks to the support of the Galapagos Conservation Trust and other funders, Jonathan and his colleagues have been able to start deploying satellite tags to follow the movements of these pregnant sharks. They are true ocean wanderers. One shark travelled almost 7000km over five months before the tag detached. The limited data they have been able to gather to date has provided intriguing insights into their lives.

SOLVING THE MYSTERY

There are several key questions we need to answer so that we can effectively protect whale sharks:

1. How many sharks swim past Darwin?
2. What proportion are pregnant?
3. How often do they come back?
4. Where have the sharks come from?
5. Where do they go after Darwin?

With that information, we will know which threats are affecting them, the habitats that need increased protection and where to look for the female sharks in other oceans. We will also be able to find out how often they have pups. That allows us to calculate how quickly fisheries can reduce their populations, and how fast the species can bounce back once human threats are removed.

We intend to answer these questions in the next 3-5 years. We will deploy the latest satellite tag technologies to track the movements and behaviour of the sharks after they leave the archipelago and analyse skin samples to find where they have travelled from. Most importantly though, we need help from divers!

Have you, or any of your friends, seen a whale shark in the Galapagos? Each and every whale shark has a distinct pattern of spots, making them individually recognisable. By collating photographs of whale sharks from the Galapagos, we can work out how many sharks travel through this area, and how often they're coming back. If you do know of any photos, please get them submitted to the global whale shark database. Together, we can solve the great whale shark mystery.

In October 2015, I will be returning to the Galapagos to search for the whale sharks again. If you are interested in visiting the Galapagos, I would love for you to join me!

GET MORE INFO: http://is.gd/D4t4Be

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HOW DEEP IS YOUR LOG?

FEATURE **STEPHANIE ROCHET**
PHOTOGRAPHY **JENNY LORD** AND **LAURA DINRATHS**

L-R: 1| Jaimie Brown, support diver bringing back the proof of the 335m tag. 2| Starting the dive. 3| On the deco ladder. 4| Surfacing after 14 hours.

On the 18th of September 2014, Ahmed Gabr – a 41 year old Egyptian Technical Instructor Trainer – became the world's deepest scuba diver ever on an open circuit. The Guiness Book of Records™ officially certified Ahmed's record at an amazing depth of 332.35 meters off the shores of Dahab, in Egypt's South Sinai.

Ahmed, a former officer in the Egyptian army is anything but a risk taker. As a long time experienced and talented diver – he started at 18 – he is also a famillly man and aimed at minimising the risks as much as possible. His goal was to, "experiment and to do something for my country."

Let's have a look and see what it takes to prepare such a feat.

TRAINING, TRAINING & MORE TRAINING

To achieve the world's record dive, it took Ahmed nearly four years of training, both mentally and physically. The preparation was enhanced further during the last few months. In addition, over 14 support divers from all around the world, 90 tanks of various mixed gases and about 14 hours were needed!

Diving to that depth is a challenge and allows no improvisation, but Ahmed was both humble and confident about it. "The World Record for me is a lifestyle. It has two parts, a mental and a physical one. First of all, you have to believe in what you are doing, you have to be completely normal and not have an inflated ego. You have to know exactly what you need to do and what you have to do."

TEAM SPIRIT

Ahmed originally started to train in the south of the Red Sea, but finally chose the peaceful and scenic town of Dahab, Sinaï where he found both perfect location and the support he needed to make his dream come true.

Because of its convenient accessible depths, the lack of currents and the amazing water conditions there, Dahab was the ideal place for such a dive. Ahmed then associated with the H2O Dive Center who took charge of the dive planning and logistics as he just wanted to focus on the dive itself.

"To do something like that, you need to trust your team. I found what I wanted to have and I didn't expect any better from the H2O team", he said.

L-R: 5| The team (before the dive). 6| On the deco ladder. 7| Ahmed Gabr receiving his Guiness World Records certificate. 8| Press conference after the dive.

D-DAY

Ahmed started his incredible journey to the depth on the 18th of September around 10:30am. Pretty strong winds and a choppy sea didn't compromise the dive, but somehow made it a little bit more challenging.

Finally, Ahmed started to descend into darkness, alone for nearly 40mins as he left his last deep support diver Jaimie Brown, at 110m.

The initial plan was to reach 350m, but Ahmed had to turn back at nearly 335m due to problems with extreme high pressures he experienced. The former world record, held by South African diver Nuno Gomez, who dived to a depth of 318.25m back in June 2005 off the coast of Dahab, had been smashed by Ahmed Gabr. He also beat Pascal Barnabé's claimed record of 330m.

Ahmed breathed a mixture of trimix, nitrox, oxygen and air specially prepared for him by another tec diving instructor trainer, Sam Helmy from the H2O team, a friend of Ahmed and the brains behind Ahmed's dive plan and dive profile. Four hours into the dive, Ahmed finally reached the deco ladder – a ladder that had been specially built by the team – reaching down from the surface to 30m where Ahmed met support divers who helped him up to the surface at an extremely slow pace, checking on him, providing food, beverage, and helping with tanks and equipement switches. On the main support boat, Oliver Watkins coordinated every task with military accuracy!

Eventually, after 884mins underwater, Ahmed Gabr resurfaced! Back onboard, he thanked his friends, his team, his family and his sponsors for making his day. Back at the marina, hundreds of people were celebrating the champion's safe return. His family were there to see him receive his official Guinness certificate for Deepest Male Scuba Diver, having reached an official depth of 332.35 meters.

"Anyone can go to 350 meters if they have the right physical and mental preparation", said Ahmed before the dive, but it's highly doubtful! Being as humble and modest as Ahmed is, his achievement is a truly tremendous one.

A big shout out and thank you goes out to the H2O team in Dahab!

"DO NOT THINK LIGHTLY ABOUT USING A SURFACE MARKER BUOY." WHEN DIVING NEAR BOATS, EVERYONE SHOULD USE ONE.

FEATURE **NATHALIE BOCK**

This is going to be the last blog of this journey, which has abruptly come to an end and it has to be written. The last couple of months have been extraordinary. So many amazing things we've seen. Without this last blog, the story wil just not be complete. Second reason why this blog needs to be written is because for me it's a hard and emotional story (BE AWARE!). At the moment I live by the day. I don't want to talk about what happened or what is still to come. Not yet. I only want to talk about the bits and pieces that I can handle at that moment. This blog will be the exeption.

The third reason why this blog has to be written, is because there are lessons to be learned by other divers. I hope that when you are finished reading, you feel the importance of using a surface marker buoy during your safety stop. EVERY TIME AND IN EVERY PLACE! We share the water with boats and everyone makes a mistake now and then: either you get lost or drift off or boats accidently enter a diving area. You can get angry about that, but this will not help you in case you get overrun. Prevention! Let not happen to you, what just happened to me.

But let me start by telling how special Eke is. He got me out of the water, feared for my life, held pressure onto my wounds, realizing it could have well been him. He never left my side, coping with his own emotions, continuously translating Spanish into Dutch and vice versa, organizing and coordinating so many things, kept everyone back home well informed, and so much more. I would have been nowhere without him. Eke, I love you dearly.

It's Thursday, May 9th. The ingredients of the day are: a dive site at the Galápagos Islands about 1.5 hours offshore, one boat (ours), four crew members of which two are dive guides and besides us, seven other divers.

At 50 minutes into the dive, Eke points out a turtle to me. Wow! I look for the guide to see if we have time to stay with the turtle for a short moment, but I see he's busy handsignaling with the other two divers in our group. One of them is low on air and as previously agreed will end the dive. The diveguide accompanies the buddyteam away from the rocks so they can safely start their ascent. He then joins us again to look for the turtle at around 12 meters depth. The whole dive has been shallow, so we still have enough air. Unfortunately we quickly run out of time, because we agreed not to dive longer than one hour. No rejoining the turtle. At 57 minutes into the dive, the diveguide gives us the signal to start our ascent and our safetystop: always a harsh reality at the end of any dive. But this ascent is different. A fourth member joints us: a curious fish. He

follows us closely until we reach a depth of five meters. At this depth, we have to wait three minutes before returning to the surface. The fish, curious and brave as can be, stays with us and swims from diver to diver keeping less than half a meter's distance. When the three minutes are up, I wave the fish goodbye and slowly go up to the surface. The fish is still there at three meters. And also at two! So funny! What does this fish want? Eke stays a brief moment longer at two meters to say his goodbyes. I make it to the surface.

The following takes place in less then a second:

When I get my head above the surface, I see the right side of the bow right before my face. The boat is coming in less than a meter away. The captain could never have seen me. All alarm bells ring. I cannot get away. I'm going to be run over. In a split second I realise that I have to avoid the bow running into my face. I try to turn over to my left shoulder and get the dive tank between myself and the boat and perhaps a bit of depth. This does not work. I feel a light suction and the fast rotating motor blades grasp my left leg and release it again. The boat has passed.

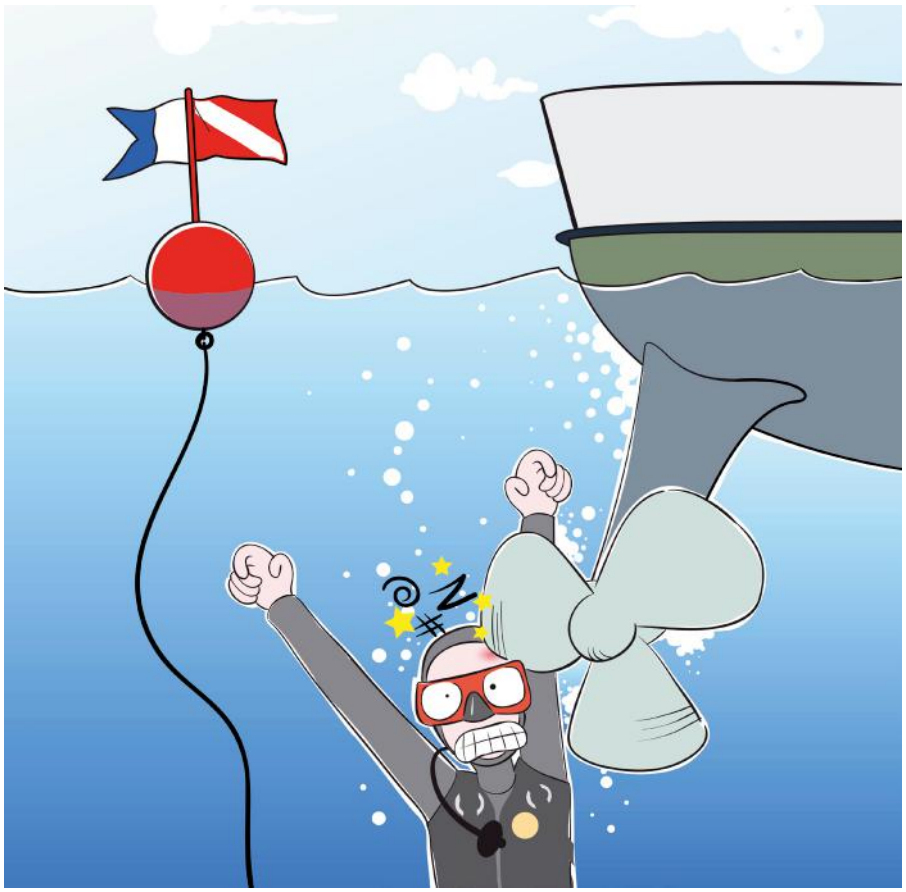
Right behind me Eke surfaces, unaware of what just happened. I lift my leg out of the water but it's gone. Where my knee should have been, I see a lump. I lost my leg. I don't feel pain and don't feel panic. I start to scream as loud as I can. Everybody must immedialy know something is really wrong. Eke sees my injury and blows air into my bcd and drops our weights. Within seconds the boat is in the right position to lift me on board. I feel how people get hold of me and how they unbuckle my diving equipment. I surrender; it's all up to my rescuers now. I get lifted on board and laid down on a soft bench and to much of my surprise, my leg follows as well. First I think Eke has found my leg, but then I realise I can wiggle all five of my toes. My leg is still attached! I still have my leg! And I can move my toes! Hope! I need oxygen right away! I need to breath so much oxygen, that enough will reach my foot and toes so they have the chance to be saved.

On board, Jen (AU) and Lynzi (GB) move super fast. Within thirty seconds, they turn a weight belt into a tourniquette and place this tight around my leg. The second one is about to be ready. Jen is standing on my right hand side and is managing the scene in a more than perfect way. She has complete overview, delegates tasks and talks to me. Above me I see Ekes face. I hear him say that he loves me and that I should try to remain calm. His eyes and his trembling voice tell me that this is something he can hardly do himself. My mind is extremely clear. Never before have I had to ask myself the question, whether I was going to live. My head stays clear, I do not feel any loss of conciousness, I understand the bleeding is under control and I can still wiggle my toes. Yes, I will survive this. I tell Eke and Jen that all will be fine in the end. This I believe. Why is there still no oxygen?

A short discussion wether to wait for the other four divers is ended when they surface. They are in the boat within no-time and we leave full speed for the main island, still one and half hours away. Several people support my leg and they place towels around my knee. Finally there is the emergency oxygen and when I tell them I get cold, they imediately cover me in more towels. I feel no pain and I feel completely calm and fully awake. Today I will not die.

I hear lots of radio communication. The captain slightly changes direction. We're not heading for the harbour anymore, but directly for the airport. I have to be transported to the mainland hospital, about 1,000km away, as soon as possible. Medical assistance at the airport is ready to receive me and some people at the dive centre are on their way to our hotel to collect all our personal belongings to bring them to us at the airport. Still fifty more minutes by boat they tell me. I still see Ekes face right above me. He seems calm again. He tells me how great I'm doing. I'm still fully focused. I'm going to survive this.

When we reach shore, we have to wait a couple of minutes, because the ambulance has parked in a different spot. People board with a stretcher which they place under me. Then they lift me on. My leg is not in a stable position anymore and rolls from left to right.



This hurts terribly, especially my knee. The ambulance brings us to a couple of hundred metres to the first aid post of the airport. The doctor gives me IV fluids, emergency oxygen and medication to relieve the pain. They put two alumunium bins under my leg, to stable it. When I get cold, they cut me out of my wetsuit and replace it with towels and blankets. I hear fierce discussions about where I should be brought next. The people in charge decide that I must be transported to the mainland immediately. I'm very lucky that the last commercial flight is delayed by quite a bit, so there is enough time to handle all procedures and formalities and get me on that flight. I asked one of the dive guides to stay close to me all times as he's fluent in Spanish and in English. He has been of such great value in helping with all conversations with both the rescuers and the authorities.

I don't know exactly how long I've been laying here, but all of sudden we're moving. We're going! An ambulance takes me to the plane, the bins remain under my leg to give support. They carefully carry me up the stairs of the plane, but one of the bins gives way. When someone on my right hand side lowers the stretcher a tiny bit, my knee moves in that direction. Pain! I scream and for a short moment they put me down on the floor of the already fully boarded airplane. I manage to explain which movement they have to avoid, to exempt me from agonizing pain. They lift me again and carefully put me on the last row of seats (still including two metal bins). Once the doctor who accompanies me on the flight has declared that I won't die during the flight, we take off. Eke is sitting backwards on a seat directly in front of me and keeps the bins and my knee in position. Next to him the face of a friendly hostess appears. She is going to take care of me during the whole flight. She immediately gives me emergency oxygen. I look at my hands and see that they are covered in blood. Then I notice the blood on all the seats and stow tables. I'm still very concious and I can still wiggle my toes. We're now on our way to a very modern private hospital and an excellent orthopedic surgeon. Within one and half hours, we arrive in Guayaquil and from there the ride to the hospital takes five minutes by ambulance. The doctors there take a short while to decide on which actions to take. In the meantime, I go through the process of making extremely painfull x-rays. I get everyones attention by calling to them: "Look! I can move my toes. Please save my leg!" It is 10pm. I say goodbye to Eke. Finally the moment of liberation is there. I get to breath anestatic gas. When I feel I'm drifting away, I wave to the aneastasiologist.

Today is Thursday May 23rd. Tonight will be the sixteenth and also the very last night in this hospital. Tomorrow we'll fly home! This whole day I have no control over my emotions. Tears of happiness: tomorrow we'll fly home.

I've had multiple surgeries. On the day of the accident, Thursday, they cleaned the wounds and put bandages around them. On Friday morning they did the same. This needed to be done first to prevent infections. On Monday, they fixed all fractures and closed the wounds. I have three fractures: just above my knee, my knee itself and my ankle. I also have deep cuts and damage to my muscles. The surgeon told me, he can't believe, seeing the damage to my leg, my artery and my nerves were still intact. He used 21 bolts and two plates to put my leg back together again. He promises me that within a couple of months, I will fully recover and keep all of my leg's functionality. He's a bit more pessimistic about my knee. Some bone fragments are missing and my kneecap doesn't have a smooth surface anymore because of that. This will cause erosion over time and this is why I'll probably have to have my knee replaced in a dozen years or so.

Recovery right after the surgeries had its ups and very painful downs. All the personal support messages that I got from Holland as well as from Ecuador gave me a lot of strength. I thank you a lot! Even more support I got from Eke. There have only been very few times that he was not directly at my side. There is a large couch next to my bed. This is where Eke has lived during the past two weeks. He took care of me, translated as much as possible for me, tried millions of times to get the nurses into action modus, continiously kept contact with the emergency desk of the insurance company, held almost daily meetings with the financial department of the hospital about the payment of the fast growing bills, kept everyone back at home well informed, but most of all… helped me through all the hard and painful moments, day and night. I know how hard this has been for you. I would not have made it without you. I love you.

Tomorrow we fly home. At 7pm there will be a direct flight from Guayaquil to Amsterdam. We'll fly business class. At Amsterdam Schiphol Airport, an ambulance will take me directly to the hospital in Amsterdam. We're already in contact with a excellent surgeon there. They know I'm coming. I think I'll only stay in this hospital for a couple of days, so the medical team can decide on a plan for the near future. I'll need a lot of support in the upcoming months.

This is where our dream journey ends, but we'll soon be back for sure. We still have to do many more dives here, but only with a surface marker buouy. This is not only applicable for us, but also for all other divers all over the world. This is going to be my mission. This is where I want to put my story to use.

Now it's time to let my emotions run free again: TOMORROW WE'LL GO HOME!

AlertDiver.eu, 2013;51

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WHAT IS YOUR POSITION?

FEATURE **PATRICK VAN HOESERLANDE**

Determining the position in a time when nautical charts were not very accurate. Photo by Royroleg.

In the previous articles published in both the June and September issues, we touched two elements important to a diver: time and depth. However, there is still a third out there that we need on some of our diving trips: position. In fact, without that concept every successful wreck dive would be a lucky shot (though I think this is sometimes the case anyhow). After having read the two other articles, you will understand that there is a lot of history and science hidden behind the coordinates flashing on your GPS screen. Let's discover it.

On land or close to the coast one can easily use landmarks to pinpoint a position. A navigator can determine with a compass the direction of two towers he sees. By drawing corresponding lines on a map, he can locate the whereabouts of his ship. Further at sea or at night, he can use lighthouses in a similar way in determining his location or in finding the right way for entering a harbor. But these methods do not work out at sea, out of view of any landmark or pathways indicated by powerful lighthouses. So, we need something universally applicable, independent from any visible object.

I would like to suggest that we, as in the previous articles, digest the large amount of information ahead of us by analyzing our positional problem in two parts: latitude and longitude. If we leave the third dimension, i.e. height, out of the equation, we will be able to use these two to geographically indicate any point on earth's surface (sea surface would be more accurate) by its spherical coordinates. And to find that point again, we only need to plot those coordinates on a map. Let us start easy.

LATITUDE

The latitude of a point on the globe is the angle of the line through that point and the center of the earth, with the plane of the equator. The latitude varies from 0° to 90°, with the addition of N (north, north of the equator, in the northern hemisphere) or S (south latitude, south of the equator, in the southern hemisphere). A degree is divided into 60 minutes. A minute on a great circle or orthodrome with a diameter equal to the diameter of the globe, corresponds to a distance of one nautical mile or 1852 meters. All parallels, imaginary horizontal lines of the points with the same latitude, run parallel, hence the name, to each other and are lines in the east-west direction across the globe. With the exception of the equator, these circles of latitude are small circles. This means that the distance of one minute on a parallel decreases with increasing latitude, from a nautical mile on the equator to zero on the poles.

But how do you determine the latitude? This can be done on the basis of the position and the movement of the stars in the sky. The latitude in the northern hemisphere can easily be determined based on the height of the Pole star in relation to the horizon.

We do know, however, that Earth is not a perfect sphere, but rather flattened towards the poles. This makes it harder to exactly define the center of Earth. To complicate things further, the Pole star is not perfectly aligned with the North. So, we will get different coordinate systems (often the longitude stays the same) depending on the reference used. In Belgium, we previously used the 'European Date 1950' (ED 50) but we replaced it by the 'World Geodetic System 1984' (WGS 84). ED50 and WGS 84 differs in Belgium about 100 meters from each other.

The accuracy of the determination of a location plays a double crucial role. For example, suppose that somewhere at sea there is a rock formation which is not visible, but the water above is shallow enough to cause serious damage to your ship. As the ship's navigator, you want to avoid this lurking danger. It is therefore important to know the exact location of your vessel so that you position it precisely on the nautical chart in

relation to the danger zone. Not only do your navigational skills have to be near perfect, but the indication of the danger on the chart must be precise. What is the use if you steer the ship 500m away from the coordinates of the danger zone, if those coordinates are plotted 500m off track?

LONGITUDE

The second element of a coordinate is the longitude. This is the angle between the plane containing the meridian through Greenwich, the so-called Prime Meridian and the plane containing the meridian of the position. A plane containing a meridian runs through both poles. The longitude varies from 0° to 180°, with the addition E (eastward longitude, to the east of the prime meridian, on the eastern hemisphere) or W (westward longitude, west of the prime meridian, in the western hemisphere). When a sign is used, eastward longitude is awarded a positive and westward a negative value.

A meridian connects all the points with the same geographical longitude. These lines are equally long and run like half great circles between the poles. The distance between meridians varies greatly with the geographical latitude: on the equator the distance between two meridians with a difference of one degree is approximately 111km. At the poles the same one degree equals 0km.

The choice for the Prime Meridian through Greenwich as the reference for the longitude is (geographically) completely random. As explained in the previous article, this choice is the result of the English ambition for a large navy and without a reference for the determination of the longitude, it would be impossible for pinpointing a location at high sea and thus becoming a truly global power. History knew different reference meridians, but in 1884, during the International Meridian Conference, 41 spokesmen of 25 nations invited by the President of the United States officially declared that the meridian through Greenwich would, from then on, serve as the sole prime meridian. The international date line runs around on the other side of the planet but for practical and political reasons it is not exactly the 180° meridian.

Although we have a reference, the question of how to determine the longitude is still unanswered. Navigation remained far in the eighteenth century as a mere matter of a best guess. Once at sea, out of sight of any reference points, navigators knew neither where they were, nor in what direction they had to sail for a port. Deciding on the heading meant gambling with the life of the crew and the ship at stake. Where is the nearest island with fresh water and food in relation to our current position? Do we need to steer starboard or backboard to prevent collision with those dangerous rocks on the chart?

The vertical angle between a celestial body and the horizon can be measured with a sextant. If the vertical angle, the date and the moment of the day are known, the position at sea can be calculated. Photo by Jupiterimages.

Navigation was, because of its complexity and the risk involved, a privilege of officers. Questioning the exactitude of a position was equal to questioning the competence of officers. Such an act was an act of mutiny. Sailors were hung because they dared to determine a position themselves! The task of the watch in the crow's nest was not limited to announcing "Land ho" – that moment was always a surprise due to the large uncertainty about the exact position of the ship – but more importantly to quickly recognize that piece of land. In fact, a wrong turn could lead to shipwrecking on dangerous cliffs. And we all know from experience how difficult it is to recognize a coast line, certainly when you expect something else. It is therefore not surprising that the saying, "Land ho!" made everyone aboard nervous. It meant good and bad news.

On February 22, 1707 a large British fleet was wrecked as a result of navigational error. 2000 sailors were left dead at sea. This incident was more than the admiralty could bear. Following this disaster, the British parliament promised the sum of 20,000 pounds – converted to nowaday's rate, a sum worth many millions of euros – to the person solving the longitude problem. The quest was officially open.

Depending on the longitude, the sun, stars and other celestial bodies reach their highest point in the sky on a different moment. A difference of one degree in longitude corresponds to 4 minutes in this so-called solar or star time. Many proposals were submitted as the solution to navigating at high seas and returning safely to the home port. There were proposals like the one for a fleet of signal ships spread over the oceans. Every day at fixed and known times, these ships would detonate a bomb at high altitude. A navigator could calculate his local time, as measured by the sun's position, and compare it with the time of the signal ships. This time difference indicated the distance from the navigator's position to the nearest signal ship. Based on practical problems, this proposal was rejected.

The race for the 'Longitude prize' finally went between two men, the astronomer Sir Nevil Maskelyne and a simple carpenter and clockmaker, John Harrison. The fight was between a 'celestial clock' and a 'mechanical clock'.

The celestial clock is a method that uses a predictable celestial phenomenon visible for everyone for the determination of time on another location on earth. The navigator measures with a sextant the vertical angle between a celestial body and the horizon. If the vertical angle, the date and the moment of the day are known, the altitude line of the location can be calculated. Solar or lunar eclipses lend themselves very well for this, but they are too rare to be really useful. Sir Maskelyne proposed to use the method of lunar distances, which is based on the relatively rapid movement of the moon through the sky. The lunar distance (the angle between the moon and a known bright star) is observable by everyone – although with a parallax error – at the same moment. After the observation, the navigator consults a nautical almanac with the predicted lunar distances and the times at which they will occur. Through the comparison of the adjusted, observed lunar distance with the predicted value, the navigator can calculate his longitude. However, this method is not user friendly – an expression not well-known at that time – because of the complexity of the astronomical calculations in a time without computers.

Harrison's mechanical clock or chronometer (also called sea watch or ship clock) ultimately won the prize giving navigators a trustworthy time reference on board. The miracle of the mechanical clock was that after several months at sea, it still indicated the time in Greenwich. A navigator could calculate the difference in solar times between the local time determined with a sextant by observing the sun and with the time in Greenwich on his watch. For example, when the sun is one hour later at its highest point than the Greenwich time, the navigator can be sure that he is 60 minutes divided by 4 minutes per degree, i.e. 15 degrees longitude West of Greenwich. A derogation of a mere four seconds on the equator means an error of a few nautical miles! So the ships watch had to be very precise.

MODERN METHODS

Fortunately, in the 20th Century other tools, such as radio beacons, radar, automatic positioning systems (e.g. DECCA, LORAN) were introduced and finally in 1985 GPS based on satellites became available. Thanks to this new system, which may be supplemented with a reference station, it is now possible to accurately determine a position with a margin of a few centimeters.

Despite modern resources, it is useful to occasionally reflect on the history and the content of the concepts which we as divers take for granted. I hope that this series of articles has contributed to your personal reflection.

AN UNPROVOKED* MEETING WITH TIGER SHARKS

FEATURE **STEVEN SURINA** TRANSLATED FROM FRENCH **ALLY LANDES** PHOTOGRAPHY **SIMONE CAPRODOSSI**

AN UNPROVOKED* MEETING

To approach an animal without provocation or an invitation through the temptation of food or territorial domination.

It has been scientifically studied and proven, that big fish populations migrate and gather together in specific zones. In particular, during the course of reproduction. It is the same of Tiger sharks (*Galeocerdo cuvier*) for whom these communities are very difficult to observe during this particular phase.

Diving with Tiger sharks is extremely beneficial for ecotourism and so an essential study to dive with these animals is made through the practise of "feeding" and "baiting", as well as testing other activities that could possibly provoke and distort the attitude of the shark. It does however remain possible to dive with tiger sharks in normal circumstances which are non provoked.

Tiger sharks are of a rather docile nature and are very powerful swimmers. They live within a very wide range of deeper territory and are much less active during the day than they are at night. Most of the time (except during the period of reproduction and hunting), they are found in deep waters on reef cliffs in the day and near estuaries in murky waters at night.

In the animal marine kingdom, despite the fact there are no rules, there are codes that connect the level of evolution between predator and prey. A shark below our level of advancement is wary, he observes us and through provoked curiosity, can become territorial.

If a shark finds himself inferior to the diver, it becomes less suspicious, less shy in this case and no longer considers the diver a threat. The shark will feel comfortable and be at ease sharing the same space.

Back in 2009 in the Red Sea, a gathering of eight Tiger sharks took to the reef of Elphinstone in Egypt. These sharks had arrived to populate and took over the coral reef for more than two months and for some females, almost a year.

During the same period in 2013, still in the Red Sea but this time in Sudan, a similar gathering of tiger sharks was observed for several weeks. This time there were three females and a large male. The dates coincide with the gap between two gestations for a female Tiger shark. The most likely hypothesis is that the sharks gather for the precise purpose of reproduction.

During the mating period, the most impressive and more mature females take over the territories. The stress generated by the presence of several other competitors makes them particularly more aggressive toward some of the other females. The latter try to draw the attention of males by releasing pheromones and chemical stimuli. Catching a males attention can also be done by generating nervous electric pulses through the water by means of attitudes and tonic behavior, but also by protecting their territory by using intimidation and sometimes strength, no matter the depths.

One or several tiger sharks during a feeding are attracted by the smell of food. Their motivation will hence be to feed. Divers are clear of the bait and the sharks quickly accept the presence of the divers and ignore them. If the situation degenerates, boats are always on standby above.

During the mating stage, one or several Tiger sharks are not attracted by smells. A diver's simple presence in shark territory can be enough to stimulate and agitate the females against some of the other female sharks. Having a large-sized animal such as a diver in their zone, excites them to send signals out showing off their status of animal dominance to entice the males.

The shark can also confuse the diver for a potential rival and see him/her as a possible intruder to which it will attempt to chase the victim out of its territory.

With a diver clearly having no advantage against such an animal, the tiger shark will not hesitate to:

- Show itself several times from various depths (both far and close).
- Come in at great speed from depth up toward the divers.
- Overhang the zone of the divers.
- Move in sprints.
- Have nervous spasms.
- Bang their head against the reef.
- Approach the diver head on and drop out at the last moment.

Tiger sharks are stubborn sharks and difficult to confine! Their size and diet makes them one of the most dangerous sharks to man. No other animal in the underwater world will come up against it. They are afraid of nothing and due to their curiosity, they always go in for contact and a taste to see what happens next. They have no preliminary tack of approach and can change attitude at any given time!

That is why it is absolutely necessary to be prudent around them. The most sensible thing to do if aggressive signs appear, is to leave their territorial zone and calmly go back up towards the surface. Any rapid excitement would attract their attention and get them more agitated. Remain in a group at all times. Isolating one's self makes an individual diver the "black sheep", giving opportunity to the predator to associate the solo diver as sick prey. Keep the animal in eye contact until it disappears. As a general rule, it will not persist like an Oceanic shark (*Carcharhinus longimanus*) or a Silky shark (*Carcharhinus falciformis*) with ceaseless inquisitive rounds. It will back away and leave when the divers have left its territory.

The most important thing to do during your dive, is to keep calm at all times.

Dives with Tiger sharks in such circumstances requires a lot of recession, mastery of diving skills and self-confidence. It is necessary to understand and judge the codes imposed by the animal and especially to respect the safety regulations while respecting the shark and its temperament.

Remind yourselves that we are not at home underwater, that we are just opportunists welcomed by these threatened predators, who are regrettably disappearing from our world.

STEVEN SURINA | Founder and Managing Director of Shark Education
Shark Education offers seminars based on the observation of various species of sharks. According to the types of predators, several destinations may be proposed. For example, South Africa for the Big white, the Bahamas for the Tiger or Egypt for the Oceanic shark.

Every species is approached under diverse angles: ID cards, their way and habit of life, food and reputation, without forgetting the analysis of their attitudes and their behaviors in the presence of divers. Daily conferences are illustrated with photos and videos. The practical side takes place on dives in situations which may sometimes be of use to the scientific study of sharks. The knowledge and acquired experiences will contribute to adopting good conducts/approaches during the encounters with *Chondrichthyes* or cartilaginous fish and in the end, you will become a representative and competent advocate toward the cause of sharks.

DIGITAL ONLINE 2015 RULES AND GUIDELINES

EDA'S UNDERWATER PHOTOGRAPHY AND FILM COMPETITION

OPENS: THURSDAY, 1st JANUARY 2015 | **CLOSES:** THURSDAY, 30th APRIL 2015 @ 11:59 PM
EXHIBITION & AWARD CEREMONY: WEDNESDAY, 3rd JUNE 2015 | 19:00-22:00 | VENUE TBA

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 UAE Nationals and all people living in the UAE under a valid Residence Visa and of any diving qualification with a valid EDA membership status.

DIGITAL ONLINE EDA JUDGES

REEMA ABBAS | EMIRATES DIVING ASSOCIATION
Projects Manager

Reema is a UAE national who has an insatiable passion for life. She paints, practices yoga and travels extensively in search of adventure. An enthusiastic diver; she quotes, 'Diving gives you a feeling of exhilaration as well as tranquility'. Her work with EDA as Projects Manager gives her a sense of fulfillment, knowing that she's with like-minded people working together for a positive cause.

ALLY LANDES | EMIRATES DIVING ASSOCIATION
Events Coordinator, Graphic Designer, Photographer and Videographer

Ally has been working with EDA since December 2004 where she created and introduced the quarterly magazine, 'Divers for the Environment' and is the magazine Editor. She branded and helped foresee the development of Digital Online – The UAE's Only 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 new improvements, developing EDA's brand, designs and managing all the EDA media material and FAM trips. As a qualified PADI Instructor, she utilizes the experience within everyday life at EDA.

CONTEST OPENS FOR SUBMISSIONS:
Thursday, 1st January 2015

SUBMISSIONS DEADLINE:
Thursday, 30th April 2015 @ 11:59 PM (GST)

AWARDS & EXHIBITION NIGHT:
Wednesday 3rd June 2015 | 19:00-22:00 | TBA

GENERAL RULES

- 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. Entrants with multiple winning entries will be given priority in the points awarded.
- Prizes not claimed by multiple winners, will be awarded to the highest points given to the next image.
- Winners will choose their own prize.
- Participants are obligated to follow environmental conservation regulations and to share respect for 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.

ADDITIONAL RULES

- 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 winning images in the 'Divers For The Environment' magazine, EDA's Facebook page and on the EDA website. Winning 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 organizers will take the utmost care in handling digital files submitted to the competition. However, competition organizers 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 on Wednesday, 3rd June 2015. Participants who do not make it to the evening of the event will be asked to collect their prizes from the EDA offices. Venue and prizes will be announced in March.
- We pledge to run this photography and video competition ethically and with integrity. Our judges have volunteered their time to help and to some it might be important to note that the photographers' details remain hidden to the judges during the judging process.
- All judge's decisions are final.

PHOTOGRAPHY SECTIONS

Photography will be classified into Section 1, including DSLR and MILC (Mirrorless) cameras and Section 2, for Compact (point and shoot) cameras. Please state the camera section when entering your submissions and where photos were taken.

SECTION 1

DSLR: Digital SLR camera users with or without external strobes.

MILC: Photographers using the mirrorless interchangeable-lens camera (MILC), which is a class of digital system cameras. This type of camera provides an interchangeable lens mount. They do not have a mirror reflex optical viewfinder.

SECTION 2

COMPACT: Point and shoot photographers only (compact cameras).

PHOTOGRAPHY CATEGORIES

Photographers may enter one photo per category:

1. MACRO – ANY DESTINATION (Section 1 and Section 2)

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 – ANY DESTINATION (Section 1 and Section 2)

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. DIVERS FOR THE ENVIRONMENT – ANY DESTINATION (Sections 1 and 2 Combined)

Definition: Any underwater image featuring an environmental impact on reefs or marine life.

4. BEST OF THE UAE – UAE ONLY (Section 1 and Section 2)

Definition: Any underwater image taken in the UAE.

VIDEO CATEGORY

1. BELOW THE SURFACE

Definition: Show off your editing skills showcasing your montage of video footage (can be any style or all, such as macro, wide angle, wreck, etc) to the title 'Below The Surface'. Maximum duration including credits: 5 minutes.

REGISTRATION & UPLOADING ENTRIES

- Registration and entry is open from Thursday, 1st January 2015 and the deadline is on Thursday, 30th April 2015, at 11:59pm (GST – Gulf Standard Time).
- The participant must be a UAE Resident and a valid EDA member. Submit entries via email to photo@emiratesdiving.com with the following information:

- Full Name
- Camera Section
- Photo Title
- Dive Location for each submission.

- File names should include photographer's name and the category. (eg. TSmith-Macro.jpg, TSmith-WideAngle.jpg and TSmith-DiversForTheEnvironment, etc).
- 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 sent via Yousendit or Dropbox with file name of the Videographer.
- The preferred method of entry is electronically, however, if this method is not possible due to lack of proper internet connection, you are able to submit via 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 come through and you may need to try again.

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. Prizes not claimed by multiple winners, will be awarded to the highest points given to the next image.

Good luck to everyone taking part! Dive safely and have fun!

DIGITAL ONLINE GUEST JUDGES

Ali Khalifa Bin Thalith, Warren Baverstock, Jonathan Ali Khan and Nuno Sá will be judging Digital Online 2014 entries in addition to Ally and Reema. We're honoured to have such amazing people and photographers/videographers be a part of this event.

ALI KHALIFA BIN THALITH | DOCUMENTARY FILM PHOTOGRAPHER
Secretary General of 'Hamdan Bin Mohammed Bin Rashid Al Maktoum International Photography Award' (HIPA)

Born in Dubai, Ali Khalifa Bin Thalith Al Humairi is a professional documentary film photographer and he is the Secretary General of 'Hamdan Bin Mohammed Bin Rashid Al Maktoum International Photography Award' (HIPA). He holds diplomas in Documentary Photography (London Academy); and French and Literature (Montpellier University, South of France).

His career journey began in 1995, since which he has participated internationally in numerous exhibitions and specialized courses. He has collaborated in the coverage of many major events globally in: Heidelberg – Germany; Phuket – Thailand; Sipadan – Malaysia; Barcelona – Spain; as well as in the UAE.

In 2010, he won the 'Mohammad Bin Rashid Award for Young Business Leaders' for the best marketing and promotional project. Bin Thalith's rich portfolio of documentaries and films includes: 'Journey to the Green Mountain'; Four episodes of the 'Masirah Island', Oman; 'Alyasat and Alhalaniyat Island', Oman; and 'Sipadan', Malaysia (known for its ecological diversity). Utilizing his extraordinary talents he produced a unique short documentary film titled "Gaza Diver", which narrates the journey and hopes of a poor young man who travels to Dubai for medical treatment – at the behest of a noble gesture by Sheikh Hamdan Bin Mohammed Bin Rashid Al Maktoum, the Crown Prince.

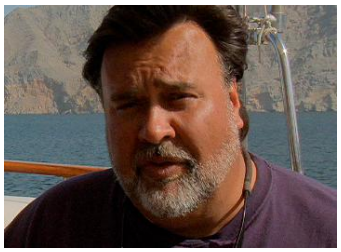
WARREN BAVERSTOCK | UNDERWATER PHOTOGRAPHER
Aquarium Curator – The Burj Al Arab

Warren has been involved with a number of filming projects within the region such as the popular television documentary "Arabia's Cycle of Life" and the more recent and ongoing "Sharkquest Arabia". Having a passion for elasmobranch conservation, Warren has gained essential filming experience by joining researchers in Saudi Arabia, Qatar, Djibouti and the Maldives where his filming has included large aggregations of whale sharks and manta rays. With vast experience of working with marine animals within a commercial aquarium environment, Warren specialises in aquaria photography/videography as well as the building and filming of artificial environments for documentaries.

Warren was Digital Online's overall professional winner for 2011 and 2012 as well as 1st and 2nd place winner in British Underwater Image Festival's 2011 competition and was featured in Time magazine, 2011 for his amazing photography on manta rays of the Maldives.

WEBSITE: www.warrenbaverstock.com
FACEBOOK: Underwater Photography by Warren Baverstock

JONATHAN ALI KHAN | WILD PLANET PRODUCTIONS
Managing Director – Natural History TV Production, Underwater filming specialists, video production and photography.



JAK is a topside wildlife and underwater camerman, 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

NUNO SÁ | WILDLIFE PHOTOGRAPHER
Professional Photographer Specializing in Marine Life

Nuno has been a professional photographer since 2004, specialized in marine life photography. He is the author of three books and several dozens of articles published in National and International magazines. He is the co-author of the "Azores Diving Guide" – Portugal's first published diving guide, and a regular collaborator of several magazines, such as National Geographic Portugal.

He is the first Portuguese wildlife photographer nominated in some of Europe's major nature photography competitions, such as: Wildlife Photographer of the Year and Asferico International Nature Photography Competition, amongst others.

Nuno is also on the Wild Wonders of Europe's team of top European nature photographers. This is the world's biggest ever nature photography project with an expected public of over 100 million people, a project supported by the National Geographic Society.

WEBSITE: www.photonunosa.com

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SHOOTING UNDERWATER VIDEOS WITH THE NIKON D3200 AND NIMAR

FEATURE **NICO DE CORATO** – DUBAIBLOG, DIVER & HELI RESCUE SWIMMER PHOTOGRAPHY **PEDRO SANTIAGO**

Jacques Cousteau produced some of the world's greatest underwater videos, inspiring thousands of divers and filmmakers. Here, we introduce some of the key elements you must consider to start your underwater filming.

Video footage has been, inevitably, "affected" by DSLR devices, not only underwater. In recent years we have seen a succession of ever more efficient models: from the first SLR able to record video, the Nikon D90, we quickly moved on to many models with impressive capabilities. The first digital SLR cameras able to shoot high definition video emerged in 2008. In just two short years, these cameras revolutionized independent film making with their ability to deliver professional-looking video in an affordable and compact package, as never before. They are fast becoming the camera of choice for indie cinematographers around the world.

With today's DSLRs, all photographers have the built-in potential to make beautiful movies. Many DSLRs give you the opportunity to record in full HD video quality with high ISO values at all the necessary parameters.

The primary obstacle faced by underwater filmmakers and photographers is the loss of color and contrast when submerged to any significant depth. The longer wavelengths of sunlight are absorbed quickly by the surrounding water; the deeper you are, the more color is absorbed. Red is the first color wavelength to be lost, disappearing altogether by about 3 metres, as light is absorbed. Secondly; orange, then yellow and so on. This means, that the deeper you go, your underwater photos and videos will appear bluer and greener, if you don't use a flash or strobe. The loss of color not only increases vertically through the water column, but also horizontally, so subjects further away from the camera will also appear colorless and indistinct. Water also reduces contrast, color and sharpness, which is why you need to get very close to your subject underwater.

We decided to try the Nikon D3200 to shoot some underwater video, pairing it with the new housing produced by Nimar, the model Ni3D3200zM. D3200 offers the capability to record HD (high-definition) movies up to 20 minutes in length, with or without sound. Movies are created in the MOV format, which means you can play them on your computer using most movie-playback programs. The underwater housing for your camera is arguably the most important item for underwater filmmaking. It is also the best investment you will make because it protects the camera from the hazardous elements of an underwater environment.

The intent was to test our capability to realize an underwater video with an entry level kit (camera + housing).

The large monitor on the D3200 is clearly visible through the polycarbonate housing by Nimar and the start and stop button is easily located on the top, near the shutter button. To obtain good results, it is necessary to set parameters on the camera. It's nothing complicated, thanks to the user friendly menus which are just as easy to use underwater, giving you the best "setup" for your shoot.

Settings used for shooting video with a Nikon D3200:

VIDEO STANDARD: The first recording option to consider is the Video Mode option. Found on the Setup menu, this setting tells the camera whether you want your movies to adhere to the NTSC or PAL video standard. NTSC is used in North America; PAL is used in Europe and certain other countries. Your camera should already be set to match the country in which it was purchased, but it never hurts to check, especially because your decision affects what movie frame rate settings are available to you. (Don't worry about what NTSC and PAL mean – they're just acronyms for the technical names of the standards.)

VIDEO RESOLUTION: Full HD with dimensions of 1920 x1080 pixels at 25fps.

There are three frame sizes (resolutions) available, measured in pixels:

1920 X 1080: Produces a so-called Full HD (High-Definition) movie that has a 16:9 aspect ratio.

1280 X 720: Standard HD, also 16:9.

640 X 424: This setting gives you a regular definition (that is, not HD) movie with an approximate aspect ratio of 3:2. (This smaller resolution can be useful for online videos.)

FRAME RATE (FPS): The frame rate, measured in frames per second (fps), determines the smoothness of the playback. Assuming NTSC as the video standard, the following frame rate choices are available for the three frame sizes as follows:

- 1920 x 1080: 30 or 24fps
- 1280 x 720: 60fps
- 640 x 424: 30fps

Frame rate settings are listed as 30p, 24p, and 60p on the camera screen:

- 24fps is the standard for motion pictures, giving your videos a softer, more movie-like look.
- 30fps is the standard for most network broadcast TV and produces a crisper picture.
- 6fps is often used for creating slow-motion footage.

- For PAL, you can choose from 24p, 25p and 50p instead of 24p, 30p and 60p.

MOVIE QUALITY OPTION (BIT RATE): For each combination of frame rate and size, you can also choose a High or Normal setting via the Movie Quality option. Your choice determines how much compression is applied to the video file, which in turn affects the bit rate, or how much data is used to represent one second of video, measured in Mbps (megabytes per second. Without getting too technical, it is important to know that not all video is the same. As explained above, there are the obvious frame size differences, but more importantly, it's how your video is compressed. All video cameras use compressed video except the most high end digital cinematography cameras. The easiest way to understand this, is to think of a JPEG file. You can have the same image size, but you can save it as a quality of 10 or 5. The image would look very similar, but if you started heavy corrections on the smaller file, it would fall apart much quicker. The same is true with compressed video. The High setting results in a higher bit rate, which means better quality and larger files. Choose Normal for a lower bit rate and smaller files.

PICTURE CONTROL: Thanks to Nikon's Picture Control, you can manage parameters such as sharpness, contrast, brightness, saturation and hue. We opted for "Neutral", any adjustments will be made in post production when/where needed.

Normally, the camera automatically adjusts exposures for you during movie recording. Exposure is calculated using Matrix (whole frame) metering, regardless of which metering mode setting is selected. But if you set the camera's mode dial to M, S, A, or P – the advanced modes covered in Part III of the book – you have some control over exposure.

SHUTTER SPEED AND ISO: If you enable the Manual Movie Settings option on the Movie Settings menu, you can control shutter speed, ISO and the aperture (f-stop). To set f-stop on M mode, press the Exposure Compensation button while rotating the Command dial.

The slowest shutter speed depends on your chosen frame rate. For 24p, 25p, and 30p, you can drop as low as 1/30 second; for 50p, 1/50 second; and for 60p, 1/60 second. We set 1/50, consistent with the choice of working in PAL 25p. Unlike underwater photography, the shutter speed will remain relatively constant.

You can set the ISO value as low as 200 or as high as Hi 1. In the film days, ISO represented a film's sensitivity to light. In digital cameras, ISO works similarly. Light that hits a photodiode is converted to a signal and this signal is amplified. The higher the ISO, the more the signal is amplified. The net effect is that the camera appears to be more sensitive to light. Note that Auto ISO Sensitivity control doesn't work in movie mode; the camera sticks with your selected setting regardless of the available light. You can adjust ISO via the Shooting menu or Info Edit screen. In general, cameras with larger sensors will have less noise at higher ISOs. This is why a Nikon D800 photo can look good at ISO 800, where a photo from a compact camera at ISO 800 would look very noisy and grainy. (Note: the maximum ISO for a D800 is 6400). With our D3200 we moved between 200-400 during our test, starting from the working aperture (see below) and managing the consequent ISO sensitivity.

CAMERA OVERRIDE: Choose a shutter speed or ISO setting outside the stated ranges and the camera will slap your hand and choose the closest in-range setting automatically.

APERTURE (F-STOP): You can adjust the f-stop before recording if you set the Mode dial to A (aperture-priority auto exposure) or M (manual exposure). This option enables you to control depth of field (DOF) in your movies. The depth of field is an important concept. The depth of field is the area of a photo that is in focus. Areas outside of the DOF are blurry, with the blurriness increasing the further away they are. The sharpest area of the photo is the location your camera focused on. As the aperture is made smaller, the F-stop increases in number (e.g. F8, F11, F16) and the amount of light that enters through the lens decreases. So remember a small F-stop (e.g. F2.8) is a large aperture. As the F-stop number gets larger (e.g. F22), the aperture gets smaller. With the light conditions underwater, you can easily understand how important it is to set up the correct aperture. We the range of F8 to F16, depending on what we need.

WHITE BALANCE: Getting your white balance correct is extremely important when you shoot videos. The reason for adjusting White Balance is to get the colors in your images as accurate as possible. Unlike RAW files, the color information is burned into the video. If you use auto white balance, it will change depending on what is in view. Although this may seem like a good thing, it makes it very difficult to cut together in post production. By manually setting the White Balance underwater, you will compensate for colors that have been lost. A white slate is ideal for setting White Balance if it appears yellow. We set up the Automatic White Balance in order to test the features of the Nikon D3200 underwater and it gave us impressive results.

BUILT-IN MIC WITH AUTOMATIC SENSITIVITY: The built-in microphone worked correctly even underwater and inside the casing. The sensitivity function correctly handled the audio, allowing it to record the sounds of bubbles emitted underwater by breathing and other sounds.

THE OVERALL RESULTS? IMPRESSIVE: With a simple "setup" as described, we were able to obtain excellent quality footage, with dominant and very realistic colors, using only ambient light.

SOME EXTRA TIPS: When intensely using the video mode with live view, it is recommended to replace the battery every dive (assuming your dive is about an hour long). It is essential to use a memory card with excellent quality, suitable for recording video clips with at least a 16GB storage capacity. A spare card is recommended. The gorilla tripod can be very useful and practically indestructible, even underwater.

We had been given the chance to dive in Fujairah and Khor Fakkan, visiting Martini Rock, Inchcape 2 and Shark Island during my divemaster course with The Dive Shop (whose owner provided us with the photos and video footage we edited) in cooperation with 7SeasDivers.

THE DIVE SHOP DUBAI
34G European Business Center
Dubai Investment Park 1
Dubai, UAE
TEL: +971 4 813 5474
EMAIL: contact@thediveshopdubai.com

Here is a sample taken with the Nikon D3200 in Fujairah: **http://is.gd/4sgQRC**

DRAGONS OF THE CARIBBEAN

FEATURE AND PHOTOGRAPHY **BARNA TAKATS**

Mexico is one of the 17 megadiverse countries (identified by Conservation International in 1998) and if we are looking at the diversity of reptile species, it ranks as second after Australia with an impressive 837 identified species.

Most of the visitors come to Mexico to enjoy some time off on one of the amazing beaches or visit the Aztec, Mayan or many other historical sites which are found practically everywhere in this huge and amazingly rich country.

But Mexico is not only for those who are looking for a "traditional" vacation. This country has everything to offer adventure seekers and of course, divers. There are cave and cavern dives for every level of experience, world class shark dives, the second longest reef system in the world, whale sharks, manta rays and sailfish in amazing numbers, just to mention a few.

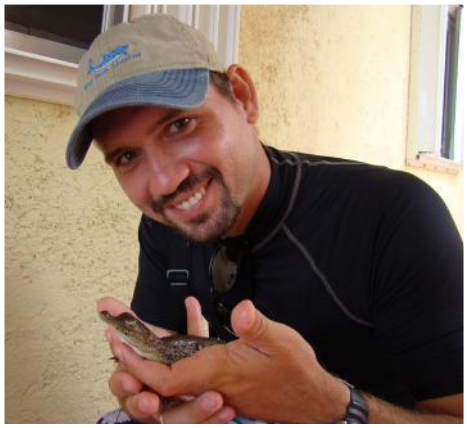
Mexico is one of the 17 megadiverse countries (identified by Conservation International in 1998) and if we are looking at the diversity of reptile species, it ranks as second after Australia with an impressive 837 identified species. Knowing this, it is not a surprise that one of the most exhilarating wildlife and diving activities can be found here in Mexico – namely getting in the water with nice big salt water crocodiles. So let's talk about this unique experience, let's talk about how it is to be in the water with the dragons of the Caribbean.

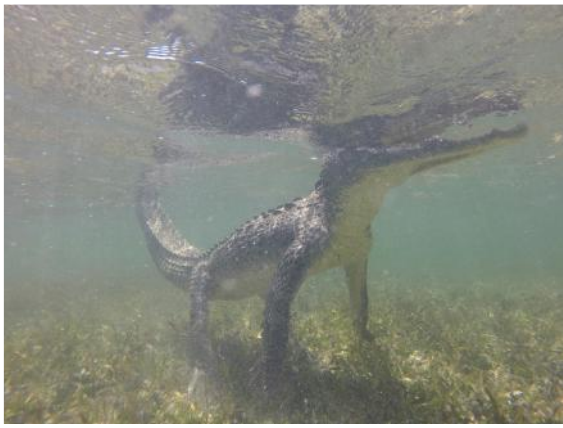
To get up-close and personal with salt water crocodiles, one needs to travel around a little bit. To be more exact, it is a five to six hour long drive from Cancun (which has an international airport with great connections) towards the Mexican-Belizean border line. There lies a small fishing village on the idyllic Caribbean beach called Xcalak which is the starting point of this extreme, unique and (well let's be honest) crazy adventure.

Xcalak, with its 375 inhabitants, is a small and hidden place, but for the nature lovers it offers some great opportunities – snorkelling trips on a nice and remote stretch of the Mesoamerican Barrier Reef, boat trips to look for Manatees and of course awesome diving. It is easy to spend days with great diving in Xcalak, but the real adventure starts 36 nautical miles offshore.

Banco Chinchorro is the biggest coral atoll on the whole northern hemisphere and it is a unique and very valuable habitat. Banco Chinchorro is really big, it covers an area of 800 square kilometers. It has three islands (Cayo Norte, Cayo Central and Cayo Lobos) but the overall land area of these is only 6.7 square kilometers. The natural vegetation on the islands is mostly mangroves, which gives space for open woodlands as you get further from the shore.

The surrounding reef system is one of the healthiest Caribbean underwater environments that a diver can visit these days, not to mention the numerous shipwrecks which having found their resting place here.





There are wrecks from different ages here, at least two Spanish Galleons and a huge ferry which was washed away from Cozumel by Hurricane Wilma in 2005.

Some divers are arriving from the coastal towns for two or three dive day trips to Chinchorro, but due to the distance, it never became a major destination. This is very good news for those few who decide to take the long trip from Cancun and sometimes wait days to get the right weather conditions to be able to cross there. Diving in the Caribbean is great, especially if you manage to dive on sites which are not visited by a huge amount of divers, but in the last two years something else started to draw the attention of visitors to Chinchorro. Something much bigger than the usual fauna of the reef system. Something big and very ancient – the Dragons of the Caribbean, the American (or Salt Water) Crocodiles (*Crocodylus acutus*).

There is a steady population of these crocodiles living on the islands within the mangrove channels and in the shallow waters surrounding the islands. They are sharing this habitat with a handful of local fishermen who are living in dwellings on stilts about 60-100 meters from the shore. This is the only way someone can live on Chinchorro since private construction is prohibited on the three islands. The only other residents are living on a research and ranger station and they are responsible for the protection of the crocodiles and the entire reserve (Chinchorro is a UNESCO Biosphere Reserve).

Fishing around the reserve is strictly regulated, only a handful of local fishermen have permits to do so and even they are only allowed to use simple and traditional fishing techniques which in these regulated numbers, will not affect the ecosystem of the park. These local fishermen living around Cayo Centro, are making the crocodile encounters possible (as are of course, the local authorities who supply the permits for this trip).

After a day of fishing, the fishermen come back to their little cabins over the shallow water and the first thing they do is clean freshly caught fish. The guts, the scales and the heads go straight into the water, along with the fish blood. The crocodiles living close by in the mangroves have learnt the habits of fishermen a long time ago, and as soon as the boats arrive back from a long day of work, the crocodiles come in closer as well. They wait patiently for the bits and pieces thrown into the water.

This is clearly a changed behavior for the crocodiles, but it is one which came from the co-existence of fishermen and the local wildlife around Banco Chinchorro. Crocodiles and humans live together in peace and since the local regulations try to respect both the

animals and the local traditional fishermen, this relationship has been left alone. In exchange, the fishermen allow or sometimes even help the researchers monitor the crocodile populations.

One of the families working and living (temporarily) around Cayo Centro, has offered to share their little and very simple hut with those coming here to get in the water with the crocodiles. This is the only way to stay in Banco Chinchorro and to plan a multi-day expedition which is essential to spend enough time in the water for a great encounter. Because of the limited space provided in the hut and to comply with the permit provided by the local authorities, only six people maximum can visit and stay on Banco Chinchorro at a time. Since the season for the crocodiles is relatively short (from June to early September due to temperature and weather) only a handful of people can experience this incredible encounter every year.

In order to be able to decide if you would want to be one of these chosen few, here is a personal description of the experience in second person. Just let your imagination free and let's see how you will feel – excited or scared out of your mind?

…it is early in the morning and you are waking up with the sunlight. You are rested, the hammock was more comfortable than you had expected. Slowly the others wake up as well and the excited conversation starts almost instantly. All of you have seen crocodiles before, but the thought of getting in the water with one (or more) makes everyone excited. Some of you have done many shark dives, but the idea of crocodiles, moves something even in the bravest of the brave.

The talk and excitement continues whilst having a morning coffee and breakfast. You can't wait to jump in the water but you know it is too early, the sun is not high enough and it is not warm enough. These ancient monsters need to warm up before they can come out to "play". You spend the remaining time setting up your camera, checking every detail methodically and then checking everything again. You want to be ready when the time comes.

Your guides are preparing themselves as well, instead of cameras, they have long sticks which will help to make sure the crocodiles keep their distance. Just the thought of it makes your heart pump a little faster, but they ensure you the use of those sticks is very rarely needed. The crocodiles feed only on fish on Chinchorro (no other food source) so you are not something they would have on their menu.

As the morning becomes warmer, your local captain starts to call the crocodiles. This is easier than you would think. All he needs to do is get a bucket, fill it with seawater, then pour it right back in to make a noise very similar to that when the fishermen are washing off the guts and blood of the freshly cleaned fish. He continues this process with stoic calmness while you start to scan the edge of the mangroves for something big, something swimming toward the cabin.

You don't need to wait too long, the first crocodile, a big one – almost three meters, appears at the edge of the vegetation and slowly but steadily starts to swim in your direction. You are happy that what you had planned for months, is soon to become a reality, but another process starts in your mind as well, a natural process – your body tries to signal to you that something is approaching, something big and scary, so you should get out of there. But you know this reaction from before, you were actually expecting and waiting for it. It's your addiction to adrenaline.

As the crocodile gets closer to the cabin and the small dive boat tied right next to it, you get ready. You put a weight belt on, clean your mask and make sure your camera is ready. Your guide slowly lowers himself in the water using the ladder on the dive boat. With the long stick in hand, he scans the area to make sure he

knows where the crocodile is at all times and that no other crocodile appears as a surprise. The captain puts the bucket down as it is no longer needed and picks up a long and strong fishing line prepared a while before. It has a dead lion fish tied to it without a hook – an invasive species in the Caribbean – a win-win situation for all participants. This bait is used to direct the crocodile to the desired spot to have it close to the divers, but in a safe position.

So everything is ready with safety measures in place and the beast is right where you want it to be. Two people get in the water at a time and you are lucky to be in the first round. Twenty minutes of face to face with a crocodile awaits you, so you take a slow and calming breath, then you carefully get in the water step by step. Your camera is in your hand soon after and you find yourself standing in the shallow water just a few meters from the crocodile. You have to take another big breath just to calm your nerves and lower yourself so your head is in the water. The visibility is great, even from where you are you can see the massive crocodile, but you know you have to get closer. You want to get closer…walking carefully and as slow as humanly possible, you approach the crocodile and your guide who is close to the monster. As you get close enough, he steps right next to you with the stick ready but still.

You lower yourself a bit more, the water is shallow enough to be on your knees, you take a quick look around just to make sure there is no other crocodile behind you, and then finally you stare right into its eyes. You are less than a meter away, your breath so slow and silent as never before. The crocodile knows about you, there is no question about it as it turns its head a bit, just enough to be able to stare back at you. It seems your vision plays tricks on you, one second all you see is the eye of the crocodile, the next second, the big pointy teeth sticking out of its mouth. It takes time for the level of adrenaline to lower enough to take the whole experience in at once – the massive reptile laying in front of you, the long tail, strong legs, the scales. It looks so different and so natural from in the water, that your image of crocodiles changes forever at that very moment.

You spend a full twenty minutes with the crocodile, watching it swim away for a bit, then it comes in close again and on one occasion, it did a close inspection around you just as if it wanted to look at you from every angle. Close to the end of your twenty minutes, you hear the captain calling from outside of the water just to tell you a second smaller crocodile is heading towards you. The smaller crocodile approaches quicker than the one before, but does not come close enough for the need of the guide's stick. You spend a few more minutes with the two animals in the water, then carefully exit the water to give space for the other two waiting their turn.

You sit at the edge of the cabin, warming up in the sun while watching the others in the water. It just looks surreal how close they are to the two crocodiles, probably more so, since you have been right where they are now. Your body relaxes slowly and finally you can smile, a smile triggered by happiness and a dozen of other mixed emotions. You know you have some time to relax, but you also know that in the next forty minutes, you are getting back in the water. And you also know, this was only the first day of your amazing expedition.

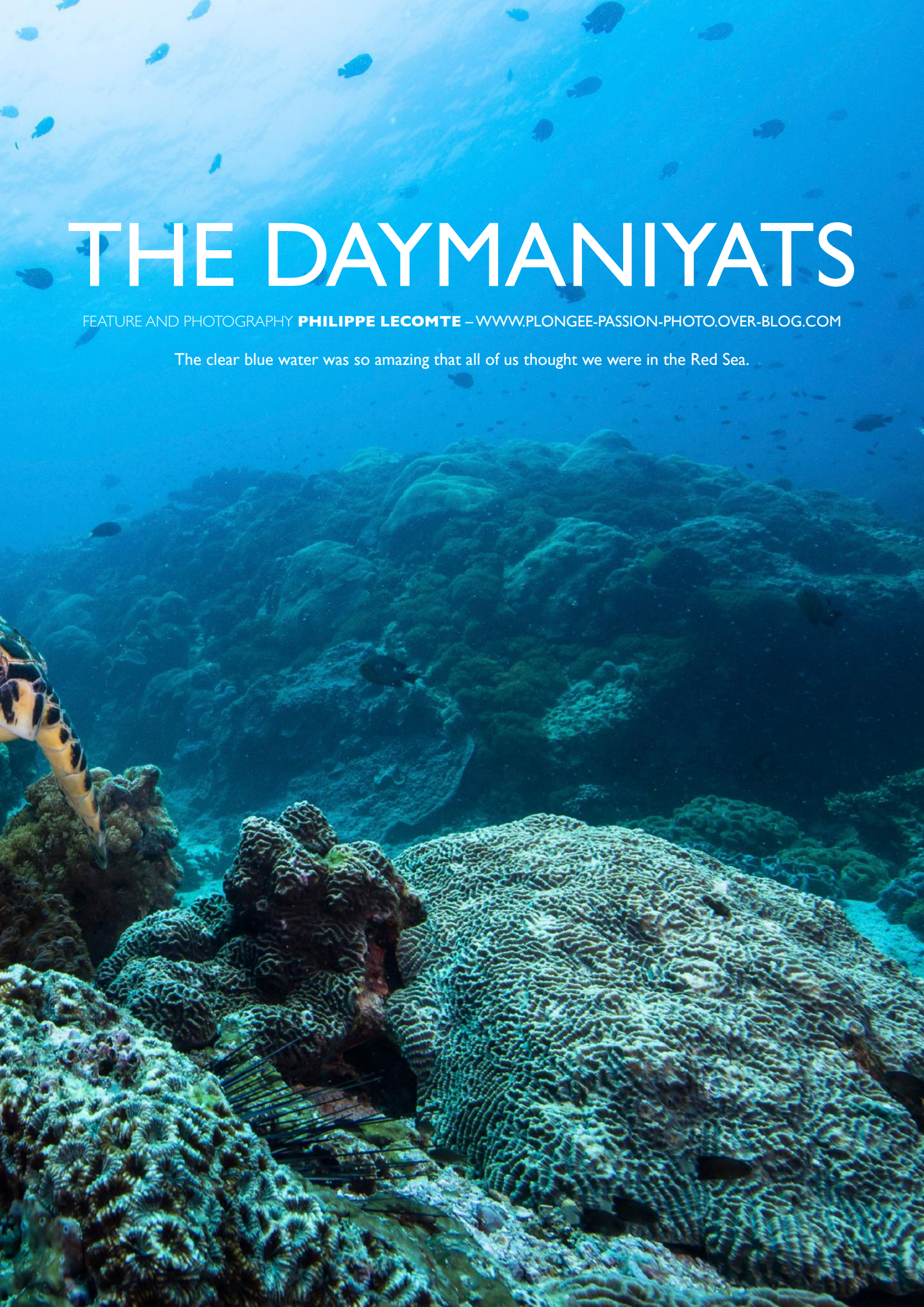
After reading this personal description, it becomes clear that even though this wildlife encounter is clearly one of the most amazing and exciting ones to have, at the same time, it is not for everyone.

If you felt fear or horror while reading it, you should probably not choose to do this, but in case you felt excitement, adrenaline and can't wait to hop on a plane and get to Chinchorro – well then act fast since the spots for 2015 are almost all gone and 2016 is booking up as well.

THE DAYMANIYATS

FEATURE AND PHOTOGRAPHY **PHILIPPE LECOMTE** – WWW.PLONGEE-PASSION-PHOTO.OVER-BLOG.COM

The clear blue water was so amazing that all of us thought we were in the Red Sea.



When summer arrives in the UAE, most people think about going on holiday back to their home countries. In fact, it could be a good chance to spend a weekend in a little paradise not too far from Abu Dhabi or Dubai. The wonderful "Daymaniyat islands" in Oman are accessible within a 4 hour drive via Al Ain.

For many divers, it's one of the best dive sites around here. The closest dive centre to dive there is in the Al Sawadi Beach Resort, 70km before Muscat. You have to drive towards Sohar, a little town on the border of the sea. Be aware of the road works that run all along the stretch to travel and the danger of surprises such as goats, pedestrians or crazy trucks.

I often go and dive the Daymaniyats in June. Firstly, the prices fall this time of year and secondly, they're the best dive sites around. This year I had asked 3 good friends to come along with me. We had booked our dates and headed down to Al Sawadi.

When we reached the resort, we were surprised to discover Extra Divers was moving to another resort further south of Muscat. Euro Divers is set to run the future dive operation hereafter.

After a shower and a good night's sleep, we woke up at 7am, enough time to eat our breakfast. At 8am we headed over to the dive centre in order to fill out the forms and to prepare our gear. With a sunny day and no wind upon us, we loaded the boat waiting for us on the beach. The captain gave his usual dive briefing before starting the boat and heading to our first dive site, Wadi Junn.

A 20-25 minute journey by boat and we arrive at our destination, the second island. With the clear weather, the first island can be seen just after passing the little peninsula of the Al Sawadi point. The Daymaniyats are made up of a group of 9 islands with a total area of 100 hectares, 18kms offshore. The Daymaniyat islands are a nature reserve. Turtles, dolphins, whale sharks and whales are regularly seen swimming around here.






The clear blue water was so amazing that all of us thought we were in the Red Sea. Diving at the Daymaniyats is not difficult and can be done by divers of all levels. Little walls, boulders on sandy bottoms, caves or fields of soft and hard corals are some of the beauty that the Daymaniyats offers. The marine life is vast with schools of Fusilier, Damselfish and Bat fish.

You will see new fish around these islands, in comparison to the Musandam or Khor Fakkan. One common resident to this place is the Leopard Shark. We unfortunately did not cross paths with this amazing shark this time round. But we know that he is around and commonly seen.

Macro life and huge Leopard Eels are also very common. Hawksbill or Green Turtles swim all around these islands. They even nest on some of the long beaches. They feast on some of the delicious corals or crabs here. During one dive, we managed to stay with a Hawksbill Turtle for about 15 minutes. She was eating a soft coral and our company was not disturbing her.

During the safety stop, we normally glide over some calm and large areas of Acropora. If you carefully look inside, you'll spot some crabs or a yellow goby looking out at you. Do not hesitate to look inside the many caves. You'll find Stingrays resting or disappear through a cloud of sand. As an offshore island, you will often experience thermoclines during the dives, so be prepared to pack both a thin and thick wetsuit. Cold water is not very comfortable and difficult to manage!

The dive center offers two dives in the morning with a surface interval in a safe creek. If there are enough people on the trip, four divers or more, the dive centre can also offer two afternoon dives. It's also a chance to see the reef change in ambiance as the colours change with the late afternoon light. A sunset dive is interesting at the best of times. Keep in mind that the Daymaniyats are a good destination all year round.

A RED SEA DIVE TRIP WITH CASSIOPEIA

FEATURE AND PHOTOGRAPHY **PETER MAINKA**

Every year by the end of Ramadan, I eagerly wait for the Eid Al Fitr holiday announcement. This year happened to be a full week off confirmed on the Thursday before.

Directly after hearing this news, I contacted my "Travel Agent" Kathleen from Al Mahara Divers as she has a lot of contacts and ideas of what can be done. She had given me a rough idea of what she would be looking for and this gave me the opportunity to look for possible flight connections to the different destinations she had in mind.

Soon enough, she came up with a liveaboard cruise from Hurghada to the Brothers, Daedalus, Elfinstone and more.

It took me some time to get suitable last minute flights and especially over Eid. Actually, it had to be issued via two tickets.

The first check in was Friday evening in Abu Dhabi on Royal Jordanian to Amman. Arriving there at 2am trying to get someone at the transfer desk was impossible. My connecting flight to Cairo on Egypt Air was scheduled for 6am. Someone was finally kind enough to issue me a transfer ticket, so I could leave the transfer area and enter the priority lounge.

By 4am, I went back to the transfer desk. Someone showed up by 4:30am took my ticket and went off. He called me by 5am that he had found my suitcase. By 5:30am he came back to me and handed over two boarding passes to Cairo and Hurghada, inclusive of an additional invitation to the lounge. There was no time for that anymore as I had just enough time to reach the plane. When boarding, I was seated in business class, economy seemed to be fully booked. This way I had some space, a great view flying over Jordan and Sinai, as well as a full breakfast.

I reached Cairo earlier than scheduled, but I still had just over an hour for transfer. I stayed on the same terminal as the connecting flight was Egypt Air again. For immigration I had to queue up for a visa stamp ($25 US – have that ready). While queuing up for immigration, the last call for my flight was announced and some official helped me jump the queue.

I had to run to the gate where they accepted my boarding pass. Running down the stairs through the waiting room, I could not find the exit. Someone was moving some big flower pots and opened the door for me. He talked to the driver in an empty bus and then this driver took me alone to the right plane. I could see the last passengers walking up the gangway. When I entered the plane, I had the same seat in business class as in the flight before, just a little bit more space. In fact I was the only one in business. These "last" passengers I had seen entering the plane, were the only ones in economy. Even on this short flight from Cairo to Hurghada, there was another full breakfast for me. All that for a last minute "cheapest" ticket from "Travel Papa".

Arriving in HRG there was no luggage, but help was available. They were guiding me around as my suitcase could have been unloaded in the international part of the airport. Finally, we ended up in the lost and found department. And the conclusion was that the transfer time was definitely too short for the luggage.

Luckily, I was a day early and went with a Taxi to a hotel nearby. Taxi fares have to be strongly negotiated as they start with a price 100 times above the normal fare.

As recommended, I called the lost and found agent after 3 hours and they found my suitcase. They were going to deliver it after another three hours and now I was complete.

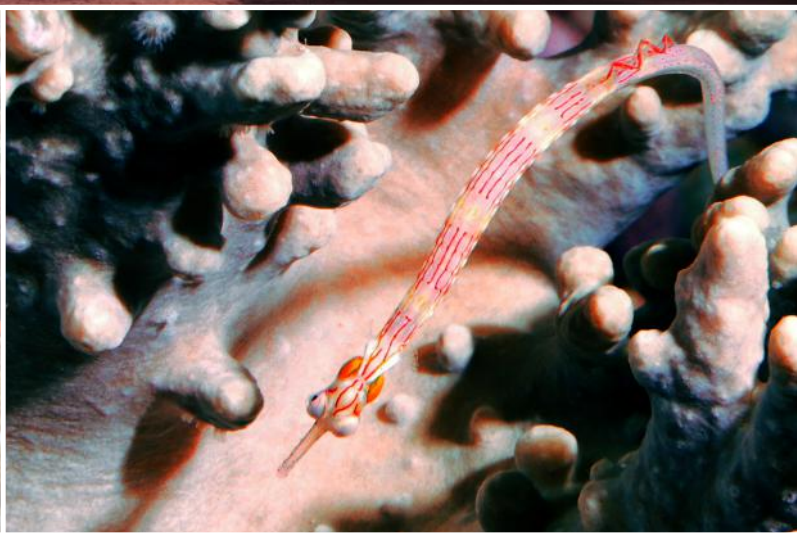
I called the livaboard's trip manager and arranged for the transfer to the boat the next morning.

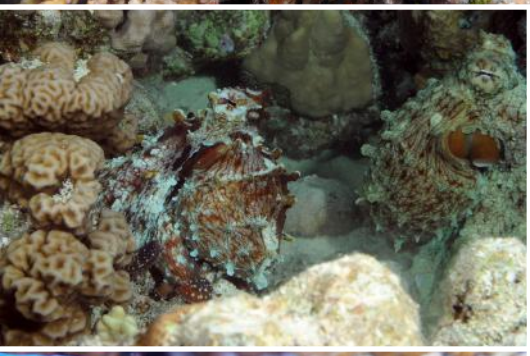
On Sunday morning I boarded Cassiopeia. It is 40m long, has an 8m beam, is 4 decks high and a five star diving tour boat. At this time the crew was still busy cleaning the boat from the last tour and preparing it for this next one.

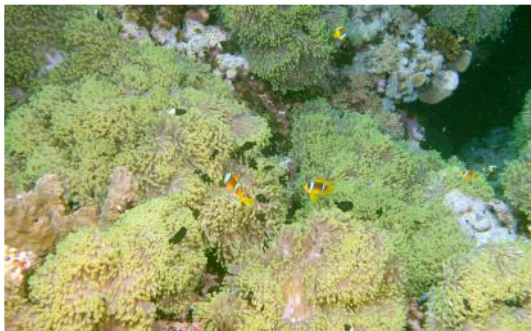
On board, they have 80cuft and 100cuft tanks with DIN valves. Of course INT adapters are available. The O-rings they had during our tour were not the best quality. I needed 3 O-rings replaced for my 20 dives. We were about 20 divers and on almost every dive, you could hear one O-ring give up. It would be a good idea to bring your own good quality O-rings. If you have a regulator with a DIN, bring that with you.

They have an Air Compressor and a Membrane EANx Compressor on board. That means they are offering Nitrox fillings for a little extra charge. To get Nitrox fillings you can take a "beanie" from the hook on the wall. This beanie was a green neoprene strap marked "NITROX". You push it over your tank and the crew would know which tank to top up with air or with EAN32. An Oxygen analyzer was provided.

The first destination on Monday was not far away. Ras Gota Abu Ramada is a nice shallow place to check whether your







underwater camera housing has survived the transportation. That is always recommended, even when you are travelling simply by car from Abu Dhabi to Dibba. Some people have flooded their cameras in the Musandam due to not checking.

On the first dive, we practiced how to enter a Zodiac. It was also a new experience how to hold the camera and how to enter and exit the water with it.

Underwater, we were welcomed by some curious Butterfly Fish. We saw four Blue Spotted Stingrays, a Stone Fish and a Scorpion Fish side by side. A Titan Trigger Fish caring for the breed. And two really big Common Moray Eels. All that happened in crystal clear water and in only 10-14m depths. The second dive gave us about the same presentation, but this time with more of everything.

We used the opportunity to do a night dive at this location as on the next one, the Brothers, night dives are not allowed.

We followed two big Octopuses wandering around side by side. Some squids were also present. One big red Lion Fish was hunting and feeding. It is surprising how fast they can be.

Cassiopeia has all the features to travel at night. Right after our night dive, we headed to the Brothers just so we could arrive early in the morning and dive before any other divers could disturb us.

The first dive on Tuesday morning started at 5:28am from the Zodiac with my camera and a negative buoyancy entry right down to 39m. There it was, my first Hammerhead Shark, a bit closer than only vaguely imagined in the far distance.

After breakfast we made another dive at this island, but in another spot. Lots of big and small fish. Napoleon Wrasse, Tunas and Barracudas. Everything is there to be seen.

During lunch, we moved from Little Brothers to the Big Brothers to do two dives over there. Here we encountered two Hammerheads and two Grey Reef Sharks, as well as a Turtle and some huge Barracudas. Not to mention, they have one of the nicest shipwrecks over here. The Numidia collided with the Big Brothers in 1901 and lays now on the reef in 10-85m depths. It has a lot of openings inviting experienced wreck divers to penetrate.

After the second afternoon dive, our dive guide gave us the option to stay here another day or to move on to Daedalus and stay there for two days. The majority wanted to move. So our boat went through the night to reach the next location early in the morning.

It was not that early, only 6:00am when we entered the water. Two Hammerhead Sharks were there as well as Tuna and Barracudas. On the second dive, we saw two Grey Reef Sharks out in the blue and a lot of other things on the reef. On the third dive we saw again two Hammerhead Sharks. We ended our dive in Animal Garden. There are a lot of anemones in one spot with hundreds of Anemone Fish (Clown Fish and others) swimming very busily around.

A visit to the Lighthouse rounded the day off. When we were back on the boat we watched and photographed a wonderful sunset, with the Lighthouse in the foreground.

On Thursday the next morning, on Daedalus, we hit the water by 5:15am. As now usual, negative buoyancy with the full camera set direct to 30m depths. There they were, four Hammerhead Sharks really close by. For a short moment I went down to 40m to get really close shots. When I was heading back up to 30m and shallower, it seemed they were coming up with me. When I viewed the recording on my GoPro, we had encounters over a period of 16 minutes.

The rest of the dive was also ok, but I had to process in my mind what I had seen just minutes before. We did another three dives on Daedalus with some more Hammerheads, big Barracudas, Tuna and lots of other big and small fish.

Over night we went to another famous spot in the Red Sea, Elphinstone. This is more a pinnacle, or as they call it in the Maldives, Thila. This is a rock, or a reef which comes up close to the surface but not breaking it.

On Friday morning we were welcomed by some dolphins on the surface really close to the boat. We made two dives on the wall/reef with a lot of big and small fish. I saw tiny Pipe Fish, big Scorpion Fish, Butterfly, Emperor, Angel and a lot of other fish.

During the lunch break, we went to a place called Marsa Shoona. We made an afternoon and a night dive here. In the afternoon I saw an old Stone Fish completely overgrown with green algae, my buddy did not see it so I carefully pointed him out with my pointer.

On Saturday morning we had one dive on Panorama Reef, Safaga with all the variety you can get near the coastline.

After breakfast we had one last chill out dive at Ras El Deira again with Blue Spotted Stingrays, a big Scorpion Fish and lots more.

We then headed back to Hurghada as some divers had to leave on the Saturday night, but the rest of us were able to stay the night on the boat. On the Sunday, transportation was arranged for everyone back to the airport and we could see the new divers arriving, waiting for their big adventure to begin.

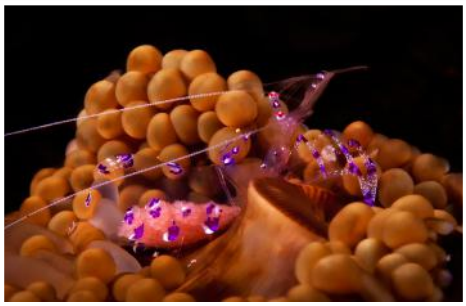






EL GALLEON BEACH RESORT, PUERTO GALERA, PHILIPPINES

FEATURE AND PHOTOGRAPHY **JASON SOCKETT**



It was the first overseas trip organized by THE Dive Centre and wow, what an amazing trip. A common destination for divers from Dubai and certainly one recommended to me by many great friends.

12 hours after leaving Dubai, we set foot on the island. Like any holiday, the holiday always starts at the airport and then there is the excitement of what is to come.

The one-hour boat journey from the mainland certainly made you feel…wow, this is going to be a great holiday! BLUE WATER! Oh yes!

On arrival, we literally checked in, took the kit to the dive centre and were then straight on a boat diving. A great way to get the holiday going.

The diving was great. The viz was not brilliant on some days, but hey, I am more than happy with a bad days viz being at 10m and then on other days, 20m+.

Jamie, our dive guide and a PADI Course Director certainly knew the dive sites like the back of his hand. Over 6 days, we did 16 dives. It was so nice being able to spend an hour on each dive just watching the underwater world.

We did 3 night dives during the trip, choosing to go back to Sepang Wrecks for the third night dive because it was just mind blowing. From the centre itself – apart from going to Verde island – all the dive sites are a 10-15 minute boat journey, some sites being a 10 second boat journey!

On the fourth day, we decided to only dive in the morning and then go and explore the island on mopeds! We headed off to 'White Beach' about a 40-minute ride. At the end of the beach is a lovely restaurant that is not only located in the most idyllic setting, but also serves the worlds largest pizzas.

After lunch, with a sly smile on Jamie's face, he said, "Lets go and have a look at the golf course up in the mountains."

It was not the golf course he really had in mind, it was the 'Zip Line' he wanted us to go on. It starts on one side of the valley and after 60 seconds, you're back at the golf course. Not being overly enthralled by heights, I went quiet and then I heard Kirsty shout, "Lets go!"…the word in my mind cannot be written down, but it rhymes with 'rap'.

Not to be outdone, with a false happy "Yeah me too", we had paid our money and were being weighed. But to be honest it has to be done, you see the most amazing scenery as you zip down the line, added with the novelty of it being cold and you being soaked…so glad we went.

But back to what we were really there for… the diving. Verde island is a must do dive. The currents are similar to what we have all experienced in the Straits of Hormuz. Definitely in my top 5 of dive sites to date. Another great dive is the Canyon. This is a fast drift dive where near the end of the reef, there are two small canyons you need to place a reef hook in and then you can just watch the world go by.

If you are looking for a great holiday and very reasonably priced, I can 100% recommend Asia Divers, Puerto Galera. If you go to THE Dive Centre Facebook page, you can see a 3 minute film about what you can expect to see and do. It is so great in fact, we are going back on February 21st 2015. Why not come and join us!

FRESHWATER FLORIDA
MEET THE MANATEES

FEATURE AND PHOTOGRAPHY **DAVID ROBINSON** AND **SIMON PIERCE**

Watching people, you could see the delight encountering a manatee created and all of those people left as advocates for manatee conservation.

MANATEE ROAD TRIPPIN'

In October 2013, friend and fellow underwater photographer and marine biologist Dr Simon Pierce and I travelled to Georgia in Atlanta to present at the International Whale Shark Conference being held at Georgia Aquarium. Delta has direct flights in to Atlanta airport, which made the journey direct and easy from Dubai. Before setting off, Simon had told me of his previous visits to Florida, which in US terms was relatively close by to Georgia, in fact, just the next state down. Simon told me about the amazing diversity of aquatic and terrestrial wildlife to be found all around the state of Florida and together we had soon formulated a plan…Road Trip!

After the conference had finished, we said our goodbyes and headed off to collect our hire car for the journey, as it was the US and we were heading off on the big US freeways, it seemed only right to hire ourselves a Mustang Convertible for the journey. So with the top down and sun cream on our noses, we set off for our first destination which was Jekyll Island on the coast of Georgia. Jekyll Island is home to the Georgia Sea Turtle Centre, which specialises in the rehabilitation and release of sea turtles. As I help to run the Dubai Turtle Rehabilitation Project, visiting the Georgia centre was an important part of our trip, not only to see the facilities but also to meet the fellow sea turtle rehabilitators and learn about their protocols. The journey from Atlanta took about five hours and we headed straight to the centre where we were greeted at the reception by Kira Stearns, who guided us on our tour of the facility and explained every aspect in detail. It soon became clear that Kira was a passionate and knowledgeable expert in her field and was dedicated to the fight to help preserve sea turtles. The centre itself was a very impressive and highly educational facility and I urge anyone who is in the vicinity to visit and support the project. We saw sea turtles undergoing surgery, which can be viewed by the public through a large glass screen, sea turtles in recovery and also an initiative to help preserve the local freshwater turtles. The visit was a valuable experience for both Simon and I and we both learned a lot and made some new friends.

We stayed overnight in a hotel on Jekyll Island

and then set off on the longest part of our journey, which was an eight-hour drive to Crystal River on the west coast of Florida. But to make the most of the journey, I had downloaded a 70s road-trip mega-mix which kept us entertained and calmed us during periods of GPS navigator related rage. The drive itself was interesting and our GPS seemed to want us to take a little bit longer about things and avoid the larger roads, which made for a more scenic route.

Our destination, Crystal River, is famous for encounters with the Florida manatee. Both Simon and I had seen photos and read recent articles, both for and against these encounters with a lot of opinions classing the interactions as controversial and so we wanted to investigate this for ourselves. Crystal River is the home of the famous Three Sisters Spring where the Florida manatees gather in large numbers during the winter months to enjoy the warmth of the spring water whilst the rest of the canal system around the area is quite chilly.

Upon arrival in Crystal River, we checked in with our tour operator, Birds Underwater, for the trip. We thoroughly investigated which tour operator to use before setting off and we had heard that it can get busy, so we had our bookings for our three-day manatee adventure reserved before arrival. We also booked our accommodation through Birds Underwater as they have a couple of houses right on the canal system, available for rent. The team recommended us to take the early morning trip, which departs from the dock shortly after 6am. So we checked into our new home and started to set up all of our camera equipment. The use of strobes is allowed, but we both decided against it as the canal system is actually quite shallow and we were worried our flash may bother the animals and the other people on our trip.

The next morning we rose bright, OK, not so bright, and very early and headed to Birds Underwater for our orientation. We were shown an informative video about how to interact with the manatees and what you can and cannot do. To my surprise, you are actually allowed to touch them when they aren't grazing, this really goes against other animal experiences I've had and as a diver we are

taught to look and not touch so I was a little dubious about this.

When we set off, it was still dark as we were there in October, it was starting to cool down but it wasn't cool enough for the manatees to gather at the springs like they do in the coldest of winter months, so we had a search on our hands. Our guide was very knowledgeable and obviously passionate about the manatees and you could tell that he really wanted everyone to have the best experience possible. After a bit of cruising around, our guide took us to a channel which is a popular manatee hangout and said that we could get in the water and search for a while if we wanted. As we were coming in to winter, the sun was still not up and it was cold. Despite the dark and cold, we enthusiastically jumped in and started to look around. Shortly after jumping in, I saw it, my first manatee! I was snorkelling away from the crowd and so I took a minute to watch this amazingly gentle creature and then summoned for the others to come over. It was still too dark to take any decent photographs, so I just watched and enjoyed and then when the masses arrived, I snorkelled off to find my next manatee.

We had two further encounters that morning, but it was clear that the morning trips were not going to be fruitful from a photography point of view as the sun didn't reach anything near the intensity we needed to take photographs until after 9:30 and the trip ended close to 11am. With that in mind, the next day we asked to do the afternoon tour which started at just after 11am and got back in the early afternoon. This was certainly the best thing we could have done. The manatees were feeding in nice light and the majority of people seemed to opt for the early morning tour, which meant that the afternoon was relatively quiet.

For the next couple of days, we stuck to the afternoon tours and searched the Crystal River waterways for agreeable manatees. Within the waterways there are a series of freshwater springs and the water in close proximity to them is crystal clear. Manatee encounters near to the springs was where the best photography occurred and made for the most enjoyable encounters. I watched as tourists stroked the manatees and much to my surprise, the animals seemed to enjoy the interaction, I was still dubious. On every trip we would visit the Three Sisters Spring which is where the manatees aggregate in the winter, this place is very special with clear water and an interesting root system formed by the bordering trees. On our first visit to the springs, Simon and I came across an alligator snapping turtle, this thing was huge and looked very formidable. We spent some time taking pictures before the turtle made his escape into the roots; I love the manatees but this was one of my favourite encounters of the trip.

Throughout the days, the animals we encountered were many and included dolphins feeding, different species of freshwater turtles, and varied species of bird and fish, including some huge tarpon near one of the fish packing plants, that appeared out of the murky water and resembled something out of a sci-fi movie.

On our last day, we were very lucky to have the boat to ourselves and spent the afternoon

with numerous manatees including a mother and a calf.

Throughout the trip, Simon and I had been discussing the manatee experience and we both came to the conclusion, that it was a positive experience for both manatee and visitor. Observing the manatees over the previous days, it was clear that their greatest threat came from boats, a lot of the animals had propeller scars from impacts with boats, but it can be safely said that this wasn't occurring from the tourist boats. Watching people, you could see the delight encountering a manatee created and all of those people left as advocates for manatee conservation. The manatees got a little belly scratch and in return gave the visitors something even more special. Watching them, I was wondering if they were using the people as fish use cleaner fish, whenever a manatee wanted a scratch it would approach someone and when it was satisfied, it would get back to munching on the weed. So, on my last afternoon and with the sun setting on our manatee encounter I reached over and I gave him a little belly scratch.

Next on our agenda was Shark Valley, this was a park within the Everglades National Park that you could travel around on bikes and spot wildlife, including alligators. Simon has a passion for all things reptilian, so this was an exciting part of the trip for him. So with our 70's road-trip mega-mix on full blast and the top down, we cruised down the freeway to Everglades City, not a city but a small town

very close to Shark Valley. Unfortunately for us, and a lot of other visitors to the US at the time, the government were having a few issues with funding which resulted in the closure of the majority of national parks throughout the US, including Shark Valley! We spent our first day cruising around and looking for things to do in the hope that the government would get its act together and the parks would open. Fortunately, they did, and on our last day we managed to access Shark Valley, hire bikes and set off on a photographic adventure. The bike ride is a 15km round trip and the diversity of wildlife within the park is simply incredible. On our trip we had amazing encounters with a highly venomous cottonmouth snake, large alligators, freshwater turtles, birds, insects and of course we enjoyed the stunning scenery. For our photos, we worked as a team with remote triggers and monopods to try and capture images as close as possible to the animals, this teamwork paid off for both of us and we came away with some great photos and memories.

The next day we had to set off back to Atlanta, which was a long journey, but there was no doubt in our minds that every part of the trip had been worthwhile and I highly recommend anyone visiting Florida to pop by and see the manatees, you won't regret it!

Delta Airlines have direct daily flights from Dubai to Atlanta | **www.delta.com**
Georgia Sea Turtle Centre | **http://gstc.jekyllisland.com**
Birds Underwater | **www.birdsunderwater.com**
Shark Valley | **www.nps.gov/ever/planyourvisit/svdirections.htm**

PRECONDITIONING AND DCI

FEATURE **BRIAN HARPER W-EMT, DMT** PHOTOGRAPHY **DIVERS ALERT NETWORK EUROPE**

It is generally accepted that the most important risk factors for decompression illness (DCI) are dive time and depth. Divers are also very interested in how other factors such as exercise and hydration status may affect DCI risk. Preconditioning describes the use of physiological or pharmacological stimuli to increase resistance to particular injuries or illnesses. In this article, we seek to understand whether there are particular preconditioning practices divers can employ that may reduce their risk of DCI. We ask the experts.

The prevailing recommendation with regard to exercise and diving is that divers avoid strenuous physical activity around diving, but it has been suggested that certain exercise may reduce DCI risk. How might exercise increase or decrease the risk of DCI and what advice would you give divers about exercise and diving?

CONSTANTINO BALESTRA: More and more researchers are demonstrating benefits of predive exercise. The mechanisms have not been definitively identified, but "movement" seems to be a clue. The benefit seems to lie in the concomitant actions of the heart, vascular system and lymphatic system.

MICHAEL BENNETT: The relationship between exercise and diving has become very interesting over the past few years. The traditional view is that predive exercise is a risk factor for DCI; this is based on the potential for increased tissue-nitrogen uptake with hyperdynamic circulation. However, recent evidence indicates this view may be too simplistic. Both animal and human studies suggest a single bout of moderate or strenuous exercise two to 24 hours before a simulated dive can reduce bubble formation (and presumably the risk of DCI). It is not yet clear why this should be so, but it seems likely the generation of nitric oxide (NO) during exercise may either favor the elimination of the nuclei where bubbles tend to form or otherwise alter the cells that line blood vessels (the endothelium). There are a number of alternative hypotheses, however and this is a very active area of research. Jean-Eric Blatteau and colleagues postulated, for example, that the protective effect is due to moderate hypovolemia. Currently I advise divers there is no evidence that exercise before diving is harmful up to about two hours before immersion, but I do not actively advise divers to undertake exercise.

There is less controversy around the effects of exercise at other times with regard to DCI risk. Exercise during a dive increases nitrogen uptake and distribution to the tissues and is thought to increase the risk, while gentle exercise during decompression has been advocated to assist offgassing and reduce the risk. Vigorous exercise after completing a dive is discouraged because of the potential to promote bubble formation by mechanical stimulation.

ALF BRUBAKK: Regular exercise is recommended for divers. Aerobic exercise prior to diving will reduce vascular bubble formation. Exercise after diving may increase or decrease bubble formation; the effects may be dependent upon general fitness levels. This is an area where information from which to make firm recommendations is lacking.

Most experts agree severe dehydration might increase DCI risk, but it has been suggested that mild to moderate dehydration may reduce the risk. What do you think about this, and what would you recommend divers do?

BALESTRA: There are points of view that assert a "normal" volume of blood plasma or even a moderately reduced plasma volume could possibly reduce the nitrogen saturation of the tissues during a dive. The actual take-home message is not to increase plasma volume too rapidly or too much as this will increase urine production and not really hydrate the tissues. My advice is to drink a glass of water every 15 or 20 minutes to allow the tissues to be hydrated without increasing plasma volume.

BENNETT: Some work investigating the effect of both exercise and exposure to heat on the risk of subsequent DCI may be interpreted as suggesting, somewhat paradoxically, that mild dehydration is protective. The suggestion is a consequence of one possible mechanism by

which these challenges provide protection against bubble formation. Blatteau and colleagues suggested the moderate dehydration and decreased blood volume (hypovolemia) induced by predive exercise or heat exposure in a sauna might decrease cardiac output and reduce the delivery of nitrogen to the tissues. There are a number of competing theories, however and I am not aware of any data that support this particular assertion.

The suggestion is actually rather surprising. Although the risks associated with dehydration have yet to be well defined, everything we know suggests predive fluids are a good thing rather than harmful. For example, in 2008 Gempp and colleagues published a crossover study that concluded – "Predive oral hydration decreases circulatory bubbles, thus offering a relatively easy means of reducing decompression sickness risk." In this study, prehydration with 1.3 liters of a saline/glucose mixture attenuated the dehydration and prevented the hypovolemia induced by diving but did not change plasma surface tension. My recommendation is divers should try to ensure adequate hydration before diving and actively avoid diving when dehydrated.

BRUBAKK: I do not know of any data that support this, and I do not think theory would suggest this. I recommend divers be well hydrated.

Some researchers have proposed predive administration of antioxidants such as Vitamin C, other nutrients, or drugs such as nitroglycerin to reduce the risk of DCI. How might such agents reduce risk?

BALESTRA: Experience shows this approach does not really interfere with bubble production but with endothelial function. After a dive, when endothelial function is transiently impaired, antioxidants can prevent such impairment, but there is no clear demonstration that bubble production can be reduced with such agents. Research on this subject is ongoing.

BENNETT: We have recently seen a growing interest in the modification of endothelial function by pharmacological means. In general, most interest is generated by agents that increase NO availability and the subsequent effect on sites (presumed to be on the endothelium) where gas bubbles form. Such bubble formation is likely to cause endothelial injury and promote both microvascular obstruction and activation of coagulation cascades – changes that might be directly responsible for the clinical picture of DCI. Indeed, although it is early, there is some experimental evidence from both animals and humans that administration of compounds such as those listed could significantly reduce the risk of DCI. Essentially, both NO donors (such as nitroglycerin) and antioxidants (such as Vitamin C) counteract the oxidative stress that is the cause of the endothelial damage that may be the reason bubble-induced injury produces such widespread effects in divers.

This is a fascinating area of research and may soon produce some definite recommendations for divers. At this time, however, we should exercise caution. Many of these agents have wide-ranging effects – some of which may result in considerably more harm than good – and as yet we have no practical evidence that clinical DCI can be prevented by these agents.

BRUBAKK: Antioxidants seem to reduce bubble formation. It may also be that antioxidants will reduce inflammatory responses that may play a role in DCI. This is an area that needs further study, but it is a promising approach. At present, we know too little about the effects of antioxidants on healthy people.

RUNE DJURHUUS: NO is a small signalling molecule that causes relaxation and dilatation of the blood vessels. Animal studies have indicated administration of a pharmacological agent (e.g. nitroglycerin) that releases NO in the blood stream may reduce gas bubble formation and increase survival after decompression. Conversely, inhibiting the enzyme nitric oxide synthase (NOS) that generates NO in the endothelial layer lining the inside of blood vessels markedly aggravated the symptoms of DCI. Moreover, physical exercise is also known to stimulate the generation of NO in the endothelium. A prevailing hypothesis has therefore been that NO generation plays a role in protecting the vascular system against adverse effects of gas bubbles during decompression.

Diving usually implies an elevated partial pressure of oxygen. We recently showed that such hyperoxic conditions had no effect on NOS's capability for generation of NO in isolated human endothelial cells. However, to function normally, the enzyme is dependent on several cofactors, in particular tetrahydrobiopterin (BH4). This compound is easily oxidized, and the oxidized form does not support NO synthesis. Exposing human endothelial cells to hyperoxic conditions (approximately three times the partial pressure of oxygen at sea level) caused the BH4 concentration to drop approximately 50 percent. The consequence of exposure to hyperoxic conditions while diving may therefore be a decreased level of BH4, which in turn limits NO generation by NOS and potentially increases the risk of DCI. It should be emphasized these results were obtained in an experimental model, but if the detailed mechanism can be elucidated and verified in animals (preferably humans), remedial actions seem possible. These might include counteraction of hyperoxic effects by additional supplies of BH4 or by administration of antioxidants that stabilize the cofactor in the reduced, active form. A simple antioxidant such as vitamin C has been shown to help sustain the level of BH4 in experimental models. As research progresses other factors may turn out to be more crucial.

Several other factors such as whole-body vibration before diving, oxygen prebreathing, work-up dives and predive sauna have also been proposed for preconditioning against DCI. Have any practical applications emerged from these proposals?

BALESTRA: These preconditioning techniques are directly related to moderate cardiac activity (sauna) or increasing lymphatic activity (whole body vibration, oxygen prebreathing). In some cases the oxygen prebreathing was performed too long before the dive for any denitrogenation effect to be considered. All the techniques listed are thought to be more related to moderate demicronucleation than denitrogenation.

BENNETT: All these proposed measures constitute attempts to reduce the chance of DCI through preconditioning against bubble formation. The only one commonly applied to divers is work-up dives, whereby divers aiming at a challenging dive (usually deep) will perform a series of dives of increasing depth as they approach the date of the planned deepest dive. While there is little evidence for or against true preconditioning with this approach, there are a number of good reasons why work-up dives may be useful, including familiarization with equipment and sea conditions, equipment checking in a nonchallenging environment and refamiliarization with good diving practices.

There are ongoing efforts, particularly in Europe, to assess the role of a number of preconditioning strategies, including those mentioned above. Blatteau and colleagues, for example, reported a predive sauna exposure to reduce bubble counts following a simulated dive in human volunteers. At this time they all remain theoretical and I am not aware of any practical applications that have come from this work to date.

BRUBAKK: No practical applications have emerged, but data suggest these techniques may reduce bubble formation.

MEET THE EXPERTS

Costantino Balestra, Ph.D., is vice president of research and education at DAN Europe, DAN Europe's area director for Benelux and France and vice president of the European Underwater and Baromedical Society (EUBS). He also directs the Environmental, Aging and Occupational Physiology Lab at Haute Ecole Paul-Henri Spaak in Brussels, Belgium. His primary research interests are in the physiology of extreme environments and sports science.

Michael Bennett, M.D., FANZCA, ANZCA Cert DHM, is a senior staff specialist at the Prince of Wales Hospital and tenured associate professor of hyperbaric medicine at the University of New South Wales in Sydney, Australia. He has 17 years of experience with the management of remote diving injuries in the South Pacific and received his doctorate for work on the evidence basis of diving and hyperbaric medicine.

Alf O. Brubakk, M.D., is professor of environmental physiology at the Norwegian University of Science and Technology in Trondheim, Norway. He has a background in cardiology and anesthesiology and he has studied decompression sickness for more than 20 years. He also studies other areas of environmental physiology, including the effects of cold and outer space.

Rune Djurhuus, Ph.D., is a principal scientist in biochemistry and toxicology at Norwegian Underwater Intervention in Bergen, Norway. His research focuses on chemical contamination of divers' breathing gas (hyperbaric toxicology) and cellular defense mechanisms related to endothelial damage due to decompression stress..

WHY DRINKING WATER IS SO IMPORTANT IN SCUBA DIVING

FEATURE **BARBARA KARIN VELA, MD** PHOTOGRAPHY **DIVERS ALERT NETWORK EUROPE**

Most of you who dive regularly in warm waters are aware of the fact that the dive crew gives you water and other fluids all the time, before and after the dive. There is a whole research behind it, mostly done by the Diver Alert Network. Following the research, DAN Europe launched a safety campaign for the hydration in diving called: "More water, less bubbles".

Our bodies are composed of 50-75% of water, averaging around 55-60%. People feel thirsty when they lose around 2-3% of their body water. Mental performance and physical coordination start to be impaired before the feeling of the thirst kicks in. Once a person realizes he/she is thirsty, it takes some time for the body to rehydrate. The best way of checking your hydration status is to observe the color of your urine. If the urine is pale and light yellow, the person is well hydrated, and if it's darker, the level of hydration is poor. The lowest status the hydration is indicated by a very dark color of the urine, which usually comes in small quantities as kidneys are trying to preserve as much body water as possible, but still having to get rid of the accumulated waste.

Hydration, or better said, dehydration, is very important in SCUBA diving. As we submerse our bodies whilst breathing, the compressed air, nitrogen accumulates in the tissues. On ascent and upon surfacing, our bodies are off-gassing, or getting rid of the accumulated nitrogen. If our bodies are dehydrated, the concentration of our plasma is thicker, which leads to poorer circulation and therefore the off-gassing is much slower which on the other hand, increases the risk of developing Decompression Sickness.

There are several contributing factors to dehydration in divers:

1. **EXCESSIVE SWEATING:** In warm or hot climates we all sweat and this is also present in the water, while wearing a wet suit.
2. **INCREASED URINE PRODUCTION:** During the dive (the immersion diuresis) appears as a consequence of the increased ambient pressure on the peripheral circulation which pushes blood into central circulation and increases filtration by the kidneys. No matter what the hydration status before the dive is/was, our kidneys work faster under water and our bladders get full within minutes. It means that the dive itself with its physiological redistribution of circulation, makes us lose a significant proportion of water in our bodies. Skipping a water bottle before the dive handed over by dive crew will not save a diver from a full bladder, it will happen anyway.
3. **BREATHING COMPRESSED AIR:** The air, which is put in the scuba cylinder, is dry and it has to be treated to remove any moisture so that the inside of the cylinder doesn't corrode. Breathing dry air dehydrates respiratory mucous membranes, which makes our bodies work much harder to warm up that air in cold water.
4. **SEA WATER:** When salty water dries on the skin, it leaves salt crystals on it, which again dehydrates our bodies by taking out the moisture out of the skin.
5. **THE SUN, WARM AIR AND THE WIND:** These three factors together dry out the skin a lot, even if we feel comfortable with a breeze on a sunny day.
6. **MEDICATION:** Some drugs can have diuretic effects, meaning they can increase water loss from our bodies.
7. **ALCOHOL:** Diving and drinking are not recommended because even a minimal consumption of alcohol one night before the dive, decreases the production of the anti-diuretic hormone. In other words, alcohol dehydrates us faster.
8. **SICKNESS OR DIARRHEA:** Vomiting or passing watery stools (like Traveler's Diarrhea) dehydrates the body by causing it to lose large amounts of fluids and electrolytes in the short period of time.
9. **FLIGHT:** More and more divers travel to dive in all the 7 oceans and flying to dive is becoming more common. The air in the aircraft is dry, the same as it is in the SCUBA tank, which causes the body to dehydrate. That means that a diver could reach his destination with dehydration. Most people drink coffee, tea, or alcohol on flights which dehydrates them even more.

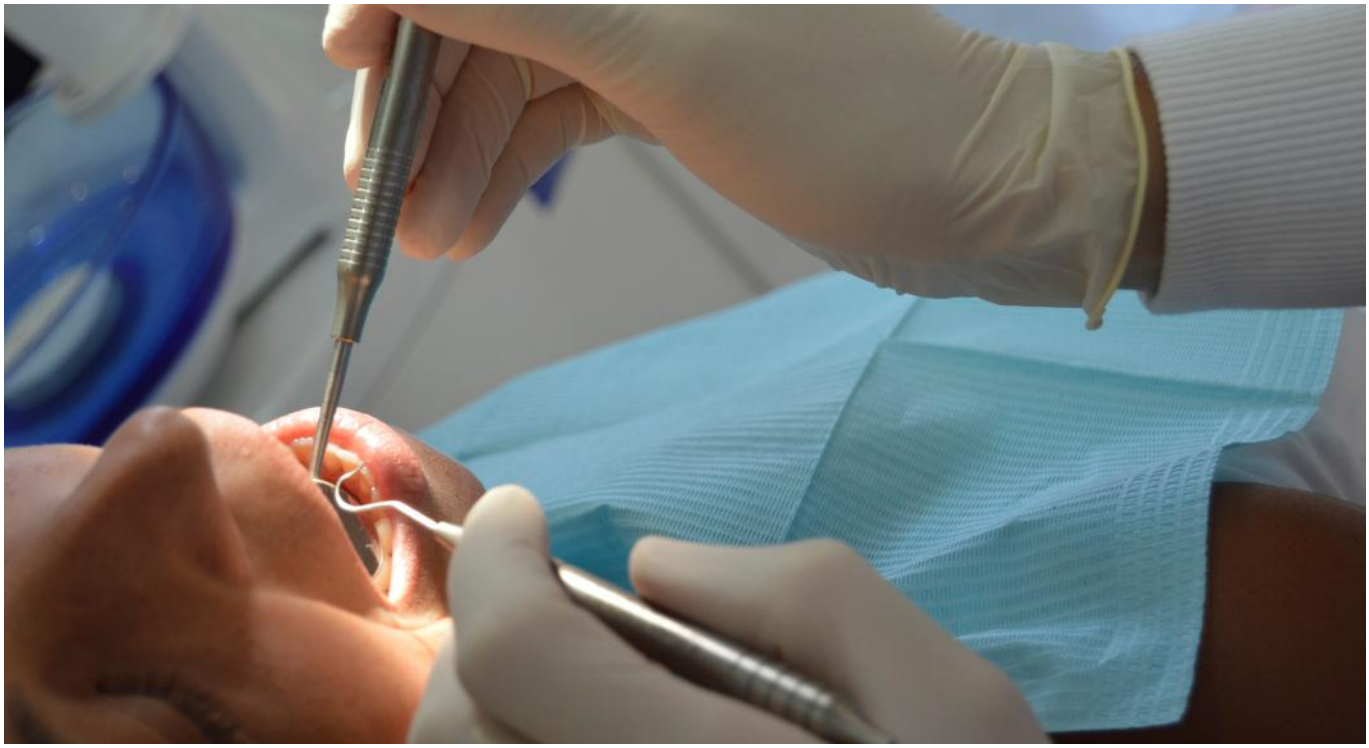
There are a few things divers should do to prevent dehydration:

- Keep wetsuits off until right before the dive itself.
- Protect themselves from the sun, avoid alcohol consumption and rinse salty water off after the dive.
- Of course, the most important thing to do is to drink enough water, one glass of water every 15-20 minutes in the hour before and after the dive.
- It's important to be well hydrated the night before the dive (observe the color of your urine), as it is difficult to correct even mild dehydration while on the way to the dive site, in warm weather, with the sun and the wind working against you.

DIVING DENTISTRY

REGULAR VISITS TO THE DENTIST SHOULD BE A PRIORITY ON A DIVER'S AGENDA

FEATURE **DR. MATTEO BIGNAMINI** – OWNER & DENTAL SURGEON OF THE DENTAL CENTER
PHOTOGRAPHY **NICO DE CORATO** – DUBAIBLOG, DIVER & HELI RESCUE SWIMMER



There are a number of dental issues that can cause problems for divers: muscle or joint pain, tooth squeeze and pain caused by ill-fitted dentures. If the regulator's bite tabs are over an implant site, biting forces can be applied directly or indirectly to the healing implant. This may even occur to implants that appear to be out of bite. Although the design of the demand valve, which regulates the air supply to the diver has been improved substantially, the mouthpiece by which the diver holds the demand valve in place, has undergone little or no development.

Commercially available scuba mouthpiece designs can result in temporomandibular joint and jaw muscle problems. Symptoms can be significantly reduced by the use of a fully customised mouthpiece; a fully customised design gives the greatest comfort, less effort and less mandibular displacement, and it is strictly recommended for divers who experience temporomandibular dysfunction while diving.

Also, biting down on a regulator mouthpiece for 30 or 45 minutes can place a little additional stress on teeth and dentures/ partial dentures. Some dentists say it's perfectly safe, so long as you are careful; but if you have a very small partial that could easily be swallowed, it's a good idea to remove it before diving. It's easy to inadvertently suck them in and either swallow or start choking on them – not particularly desirable when you're 30 meters below the surface.

You may have less risk when dentures are properly cemented or anchored.

In any case, follow the same advice as people with natural teeth. See your dentist to double-check that everything is properly fitted before your trip.

Likewise, diving with braces is generally safe, though it's a good idea to let your orthodontist know you'll be diving, because some braces are equipped with springs and wires that may come detached and could present a choking hazard.

Some types of dental work, particularly root canals with temporary caps or crowns covering unfinished work, are not compatible with diving at all. As you ascend and air pressure increases inside your tooth or teeth, your dental work could literally explode inside your mouth, causing injury or accidental inhalation or you could potentially swallow a portion of the dental structure.

If you have chronic dental pain of any type, you may find that diving causes the pain to increase. If you have problems with the roots of your teeth and if your dentist has recommended a pulpectomy or root canal to rectify those problems, you'll probably find that enjoyable diving is an impossibility until you have the problems fixed. Cavities, loose fillings and any other dental work that is not securely bonded, can cause pain and potential problems too. If you are considering porcelain crowns, you should know that they have been known to shatter at a depth of just 65 feet, as have other types of fragile dental work. If your teeth are fractured, or if you wear any type of dentures or orthodontics, they could also pose a problem whilst diving. Dry socket infections can also cause problems, if you have a dry socket infection, you'll probably have to wait between two and eight weeks before diving.

Some dentists specialize in providing dental work for divers. Some common services these dentists offer are tooth repairs that are compatible with diving, TMJ therapy to deal with the pain that can sometimes occur from the continuous jaw movements that are required to keep your regulator in place, and creating custom dentures for divers who cannot dive with standard partial dentures in place due to the risk of aspiration.

If you've just visited a dentist and have a temporary filling, make sure you tell him that you're planning a dive. That way it won't only be the sharks down there with a toothy grin.

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MISSION STATEMENT

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

LEGISLATION

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

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

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